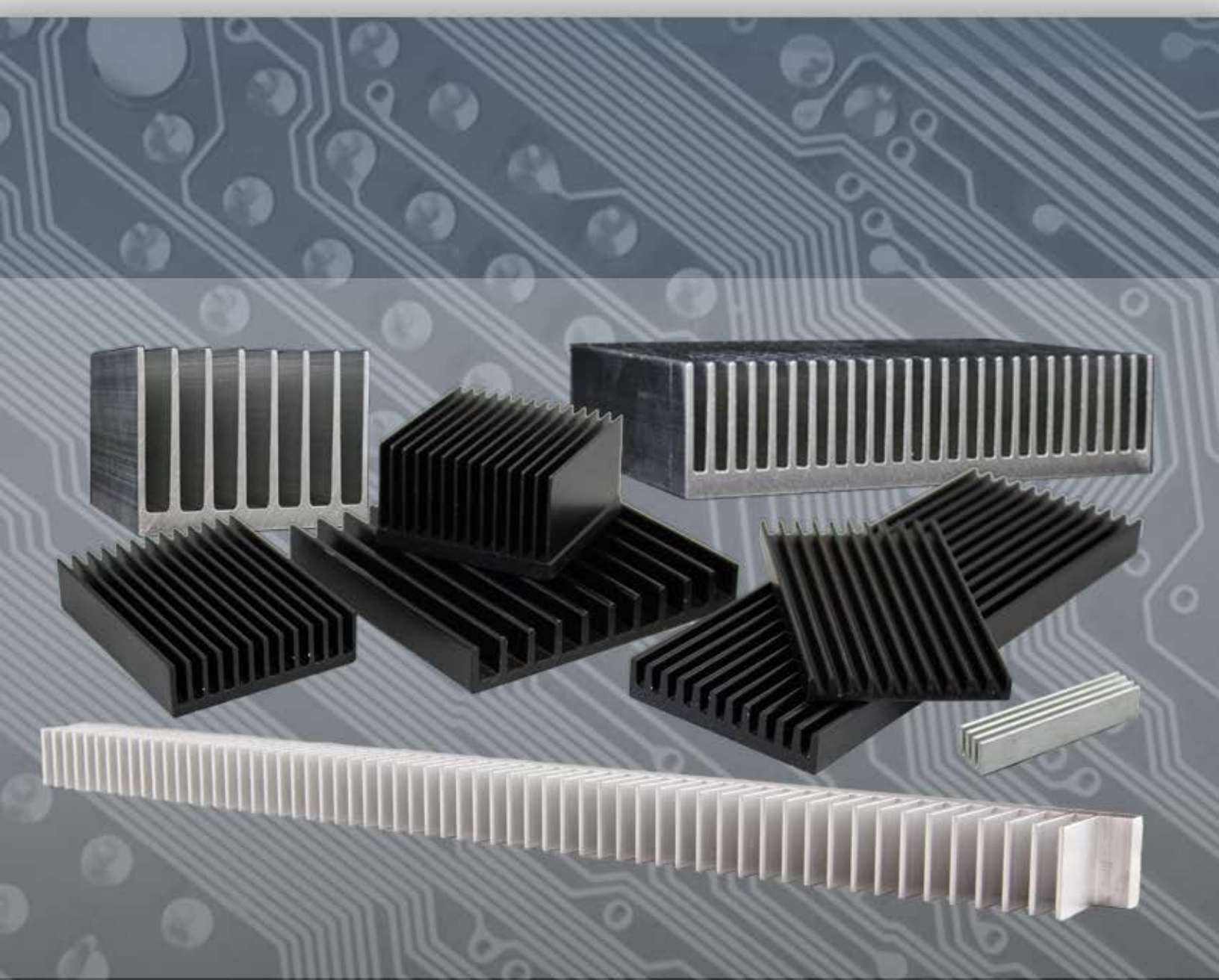
AAVID

THERMAL DIVISION OF BOYD CORPORATION

# Extrusion Selection Guide



Complete Thermal Management Solutions

# Aavid Thermalloy

## *THE WIDEST SELECTION OF EXTRUDED HEAT SINK SHAPES IN THE INDUSTRY*

**Why choose Aavid Thermalloy as your extrusion supplier?**

- Aavid Thermalloy has over 5,000 extrusion dies available for use. Chances are very good that we have a shape that will suit your needs. Our easy to use "Extrusion Search Tool" on our Web Site at **www.aavidthermalloy.com**, will guide you in choosing from our most popular shapes.
- At Aavid Thermalloy, we have built a singular source, under one name, for all your thermal management needs. We dedicate our varied resources to provide you with the optimum cooling solution in the fastest possible time. Establishing an alliance with Aavid Thermalloy at the start of your project will bring this full spectrum of capabilities to your design team.
- We have manufacturing locations throughout Europe, Asia and North America totaling over 600,000 square feet of manufacturing space. Using our global footprint, we can deliver product where you need it, anywhere in the world. Every one of our manufacturing facilities has the ability to produce any level of extrusion design, regardless of complexity.

**The Extrusion Process**

- Ideally, working with an existing shape (Aavid Thermalloy has over 5,000 dies available.) is the least expensive option. However, if a custom shape is required, an extrusion die must be produced. Prices for a new die range between $1,000 and $3,000 for most dies that fall within a 7-inch circle size. Prices vary for dies greater than a 7-inch circle size based on size and complexity.
- An aluminum billet (a round log of aluminum heated to about 900° F) is pushed through the "tool stack" to form the net shape. The tool stack normally involves:
    1. a feeder plate to form the billet into a rough geometry of the net shape
    2. the extrusion die which forms the net shape
    3. a backer and/or bolster plate to support the die plate
- Extrusion is pushed in 20 to 100 ft lengths, straightened and stretched. It is then cut to a length to suit the users needs. Aavid Thermalloy normally stocks product in 8 ft sections, however custom lengths are widely used. Consideration of the final cut length of the finished product is taken into account when determining "stick" length to maximize the yield.
- There is normally an industry standard minimum number of pounds involved in a typical "push" of extrusion. These minimums will range from about 500 pounds to 2,500 pounds based on the shape, size and weight of the part. Aavid Thermalloy offers a variety of our most popular shapes (labeled "A" class and "B" class) at significantly smaller order minimums than the industry standard. We can do this because we have multiple users of the same net shapes. In many instances we will have the more popular extrusions in stock and ready for immediate delivery or use in fabricating your end product. We have our on hand inventory as well as the class listed on our web site, **www.aavidthermalloy.com**, for your convenience in choosing your desired material.

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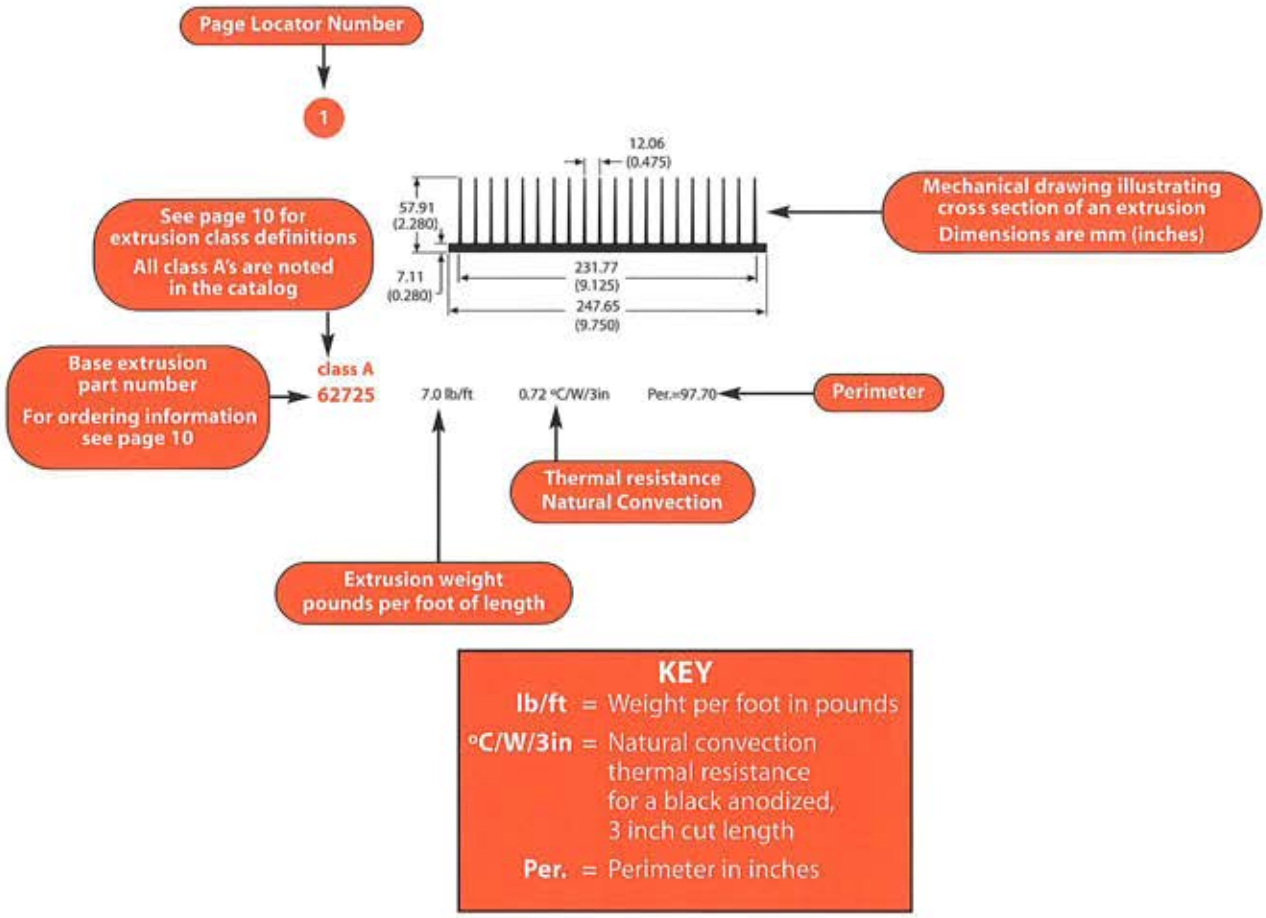
## Aavid Thermalloy, LLC RoHS Compliant Product Availability

Complete details on the Aavid Thermalloy RoHS program, including a parts listing, are available on the main page of its website: **www.aavidthermalloy.com**. In addition, each individual part data sheet has been updated to readily identify those products that are currently RoHS compliant as well as those that will become compliant in the near future. The Aavid Thermalloy RoHS specification and company statement regarding the program are also available to view or download.

Aavid Thermalloy, LLC maintains its commitment to customers to achieve full compliance prior to the July 1, 2006 deadline. As we work towards this goal, the website will be updated regularly with new compliant products.




**Thermal Resistance...What does it mean?**

Thermal resistance is a value that defines the relative performance efficiency of a heat sink in terms of a temperature differential with respect to the power dissipated of °C/W. In other words, the lower the thermal resistance, the better the performance. Since thermal performance is related to the total surface area (especially in natural convection), the lower the thermal resistance, the larger the heat sink.

**°C/W/3in...What is this term?**

It is a relative performance measurement used for comparing and sizing extruded heat sinks. It allows a simplified value to make general comparisons between different shapes. Also, since extrusion performance is determined by the cut length, the generally accepted convention is to use a 3.00" (76.2mm) cut length for comparison.

Some qualifiers to consider when using this term:

- It is based on a point source heat load. It assumes that there are some conductive losses in the part. If there are multiple heat sources or fully uniform heat loading, expect improved performance up to 20%.
- It is a natural convection only value. Any external air movement will improve performance.
- It is based on a 75°C temp. differential. Please refer to the temperature correction table on page 16.
- It is based on a 3.00" cut length. Please refer to the length correction table on page 16 for other lengths.
- It is based on a black anodized finish. This is preferred for natural convection heat sinks. Expect a double digit percentage increase in thermal resistance if a plain finish is used.
- It is based on the heat sink oriented in the optimal position. In natural convection, performance is very dependent on the ease of air movement through the heat sink. Positioning the heat sink in other orientations can DOUBLE the thermal resistance.

# Part Index



| Part # | Page # | Locator # | Width | Height | θn |
|---|---|---|---|---|---|
| 60050 | 48 | 3 | 4.750 | 1.250 | 2.28 |
| 60055 | 48 | 8 | 4.750 | 2.625 | 1.45 |
| 60060 | 52 | 12 | 4.750 | 4.500 | 0.98 |
| 60065 | 48 | 4 | 4.750 | 1.875 | 1.98 |
| 60070 | 52 | 3 | 2.000 | 0.562 | 6.96 |
| 60080 | 52 | 6 | 4.125 | 1.000 | 2.91 |
| 60095 | 34 | 20 | 4.125 | 1.750 | 1.90 |
| 60105 | 52 | 11 | 4.750 | 4.500 | 1.02 |
| 60110 | 44 | 14 | 3.687 | 0.562 | 4.79 |
| 60130 | 24 | 2 | 1.375 | 0.500 | 9.85 |
| 60140 | 38 | 6 | 6.080 | 1.750 | 1.39 |
| 60150 | 52 | 4 | 3.960 | 1.600 | 2.46 |
| 60180 | 53 | 3 | 1.750 | 2.250 | 2.94 |
| 60185 | 43 | 3 | 1.500 | 0.350 | 13.76 |
| 60215 | 37 | 9 | 5.561 | 1.312 | 1.68 |
| 60230 | 37 | 16 | 5.886 | 1.250 | 1.77 |
| 60245 | 48 | 2 | 4.750 | 1.250 | 2.11 |
| 60250 | 34 | 2 | 3.450 | 1.290 | 2.43 |
| 60255 | 52 | 7 | 4.000 | 4.000 | 1.09 |
| 60260 | 52 | 13 | 5.000 | 5.000 | 0.84 |
| 60265 | 52 | 15 | 6.250 | 6.250 | 0.67 |
| 60280 | 48 | 1 | 4.625 | 1.500 | 1.99 |
| 60340 | 38 | 12 | 6.437 | 1.312 | 1.28 |
| 60350 | 45 | 16 | 4.500 | 1.400 | 2.17 |
| 60355 | 47 | 14 | 4.000 | 2.060 | 2.31 |
| 60365 | 28 | 18 | 1.750 | 1.750 | 4.51 |
| 60395 | 45 | 4 | 3.937 | 0.750 | 3.54 |
| 60410 | 48 | 15 | 7.500 | 1.375 | 1.51 |
| 60440 | 46 | 14 | 6.000 | 1.187 | 2.18 |
| 60450 | 47 | 8 | 3.350 | 0.906 | 2.78 |
| 60455 | 47 | 9 | 3.359 | 2.000 | 2.03 |
| 60485 | 34 | 10 | 3.687 | 1.250 | 2.56 |
| 60490 | 32 | 2 | 2.562 | 0.375 | 5.19 |
| 60500 | 47 | 11 | 3.937 | 1.875 | 2.05 |
| 60520 | 41 | 8 | 9.875 | 1.312 | 0.90 |
| 60525 | 52 | 20 | 1.650 | 1.200 | 5.85 |
| 60540 | 51 | 1 | 5.000 | 2.250 | 1.24 |
| 60555 | 44 | 13 | 3.622 | 0.400 | 5.61 |
| 60560 | 35 | 7 | 4.375 | 1.290 | 1.91 |
| 60565 | 48 | 12 | 4.812 | 2.468 | 1.30 |
| 60570 | 44 | 17 | 3.750 | 1.335 | 2.62 |
| 60585 | 35 | 16 | 4.562 | 0.750 | 2.15 |
| 60595 | 29 | 7 | 1.875 | 1.000 | 4.30 |
| 60625 | 44 | 5 | 3.088 | 1.700 | 3.12 |
| 60630 | 45 | 2 | 3.900 | 1.281 | 2.29 |
| 60645 | 47 | 12 | 4.000 | 1.250 | 2.28 |
| 60650 | 52 | 10 | 4.751 | 3.000 | 1.14 |
| 60655 | 51 | 10 | 7.000 | 3.125 | 0.85 |
| 60660 | 34 | 15 | 4.000 | 1.188 | 2.22 |
| 60665 | 45 | 7 | 4.000 | 0.687 | 3.48 |
| 60725 | 44 | 15 | 3.688 | 0.562 | 3.14 |
| 60730 | 51 | 6 | 6.250 | 2.000 | 1.37 |
| 60755 | 47 | 16 | 4.000 | 2.625 | 1.51 |
| 60760 | 33 | 11 | 3.250 | 1.000 | 3.11 |
| 60765 | 33 | 13 | 3.250 | 1.500 | 2.35 |
| 60770 | 33 | 15 | 3.250 | 2.000 | 2.23 |
| 60780 | 48 | 7 | 4.750 | 2.625 | 1.61 |
| 60805 | 45 | 15 | 4.500 | 1.000 | 2.53 |
| 60815 | 40 | 11 | 8.350 | 2.000 | 1.22 |
| 60830 | 47 | 15 | 4.000 | 2.250 | 1.96 |
| 60835 | 47 | 18 | 4.50 | 2.500 | 1.54 |
| 60840 | 46 | 4 | 4.812 | 1.312 | 2.12 |
| 60845 | 46 | 7 | 5.312 | 0.875 | 3.58 |
| 60850 | 44 | 18 | 3.812 | 0.750 | 4.80 |
| 60865 | 44 | 2 | 2.687 | 0.687 | 5.71 |
| 60900 | 46 | 18 | 6.500 | 1.600 | 1.51 |
| 60905 | 45 | 12 | 4.000 | 1.400 | 2.22 |
| 60910 | 39 | 18 | 7.688 | 0.630 | 2.58 |
| 60925 | 53 | 9 | 5.625 | 1.875 | 2.31 |
| 60935 | 44 | 16 | 3.750 | 1.000 | 2.68 |
| 60950 | 43 | 5 | 1.750 | 0.500 | 8.70 |
| 60955 | 32 | 12 | 2.682 | 0.400 | 5.87 |
| 60970 | 46 | 12 | 5.886 | 0.815 | 2.77 |
| 60975 | 30 | 18 | 2.276 | 0.678 | 4.95 |
| 60985 | 43 | 17 | 2.440 | 0.720 | 5.99 |
| 60995 | 46 | 20 | 6.750 | 1.185 | 1.50 |
| 61015 | 52 | 17 | 9.250 | 6.750 | 0.60 |
| 61030 | 45 | 9 | 4.000 | 1.000 | 2.90 |
| 61035 | 44 | 9 | 3.250 | 0.935 | 3.19 |
| 61040 | 44 | 4 | 2.810 | 0.935 | 3.86 |
| 61050 | 45 | 3 | 3.920 | 1.688 | 2.87 |
| 61055 | 44 | 11 | 3.436 | 1.400 | 2.73 |
| 61060 | 44 | 10 | 3.270 | 1.281 | 2.84 |
| 61065 | 44 | 1 | 2.660 | 1.281 | 3.78 |
| 61070 | 38 | 14 | 6.500 | 1.600 | 1.30 |
| 61075 | 35 | 9 | 4.500 | 1.400 | 1.90 |
| 61080 | 28 | 7 | 1.560 | 0.750 | 5.79 |
| 61085 | 37 | 4 | 5.375 | 1.312 | 1.52 |
| 61090 | 34 | 19 | 4.125 | 1.312 | 1.93 |
| 61140 | 47 | 10 | 3.600 | 1.125 | 2.76 |
| 61150 | 49 | 18 | 1.250 | 2.500 | 4.35 |
| 61155 | 42 | 11 | 12.250 | 1.000 | 0.94 |
| 61175 | 52 | 9 | 4.250 | 4.300 | 1.25 |
| 61215 | 28 | 10 | 1.630 | 1.290 | 4.54 |
| 61230 | 46 | 19 | 6.750 | 0.734 | 2.11 |
| 61270 | 52 | 8 | 4.000 | 4.000 | 1.13 |
| 61285 | 50 | 15 | 4.562 | 0.500 | 3.31 |
| 61290 | 34 | 18 | 4.125 | 1.000 | 3.11 |
| 61310 | 51 | 7 | 6.250 | 2.000 | 1.37 |
| 61315 | 33 | 9 | 3.120 | 1.250 | 2.85 |
| 61325 | 50 | 10 | 2.260 | 1.380 | 4.96 |
| 61340 | 47 | 3 | 7.000 | 1.250 | 1.61 |
| 61350 | 53 | 12 | 6.375 | 2.862 | 1.19 |
| 61390 | 44 | 3 | 2.800 | 1.330 | 3.27 |
| 61420 | 43 | 9 | 2.000 | 0.375 | 6.83 |
| 61435 | 53 | 1 | 1.750 | 1.800 | 3.95 |
| 61445 | 45 | 6 | 4.000 | 0.687 | 4.13 |
| 61455 | 44 | 7 | 3.140 | 1.312 | 3.04 |
| 61460 | 30 | 15 | 2.250 | 1.250 | 3.96 |
| 61475 | 46 | 17 | 6.500 | 1.600 | 1.51 |
| 61485 | 50 | 14 | 4.543 | 1.220 | 2.58 |
| 61520 | 25 | 6 | 0.810 | 0.450 | 16.77 |
| 61540 | 51 | 13 | 9.800 | 2.900 | 0.65 |
| 61555 | 32 | 4 | 2.562 | 0.850 | 5.07 |
| 61565 | 24 | 7 | 0.250 | 0.190 | 40.42 |
| 61570 | 51 | 9 | 7.000 | 3.125 | 0.81 |
| 61585 | 34 | 14 | 4.000 | 0.300 | 3.47 |
| 61590 | 50 | 9 | 1.830 | 0.562 | 9.37 |
| 61605 | 27 | 17 | 1.400 | 1.500 | 5.47 |
| 61610 | 25 | 2 | 0.731 | 0.190 | 20.81 |
| 61640 | 50 | 18 | 5.000 | 2.000 | 1.42 |
| 61665 | 47 | 6 | 9.500 | 1.218 | 1.53 |
| 61680 | 32 | 7 | 2.600 | 1.000 | 5.03 |
| 61690 | 46 | 15 | 6.100 | 1.600 | 1.64 |
| 61710 | 47 | 1 | 6.750 | 1.210 | 1.50 |
| 61715 | 46 | 16 | 6.500 | 1.600 | 1.62 |
| 61745 | 36 | 14 | 4.990 | 1.260 | 2.06 |
| 61760 | 48 | 6 | 4.750 | 2.625 | 1.81 |
| 61770 | 43 | 6 | 1.750 | 0.710 | 6.13 |
| 61775 | 53 | 4 | 2.150 | 2.650 | 1.99 |
| 61780 | 41 | 10 | 9.884 | 0.575 | 1.89 |
| 61785 | 42 | 1 | 10.780 | 3.770 | 0.79 |
| 61790 | 37 | 10 | 5.750 | 0.687 | 3.00 |
| 61820 | 53 | 15 | 2.280 | 3.260 | 1.94 |
| 61830 | 39 | 5 | 6.900 | 1.540 | 1.42 |
| 61850 | 45 | 1 | 3.882 | 1.312 | 2.19 |
| 61875 | 50 | 13 | 2.750 | 1.500 | 4.25 |
| 61880 | 40 | 2 | 7.720 | 1.350 | 1.13 |
| 61895 | 32 | 14 | 2.800 | 1.250 | 2.94 |
| 61915 | 39 | 12 | 7.340 | 0.875 | 1.48 |
| 61925 | 53 | 17 | 2.350 | 2.350 | 3.30 |
| 61945 | 24 | 14 | 0.530 | 0.190 | 27.86 |
| 61960 | 52 | 19 | 2.000 | 2.120 | 2.00 |
| 61965 | 50 | 20 | 5.000 | 2.250 | 1.23 |
| 61980 | 37 | 2 | 5.180 | 1.350 | 1.60 |
| 61995 | 25 | 3 | 0.744 | 0.240 | 14.24 |
| 62000 | 24 | 15 | 0.530 | 0.400 | 15.30 |
| 62030 | 47 | 7 | 9.870 | 1.310 | 1.05 |
| 62035 | 27 | 2 | 1.250 | 0.580 | 8.22 |
| 62060 | 38 | 20 | 6.750 | 1.630 | 1.23 |
| 62100 | 51 | 18 | 6.000 | 6.875 | 0.47 |
| 62155 | 38 | 18 | 6.646 | 1.312 | 1.26 |
| 62160 | 48 | 16 | 7.990 | 1.060 | 1.01 |
| 62165 | 52 | 18 | 2.200 | 1.750 | 3.40 |
| 62180 | 32 | 13 | 2.682 | 0.406 | 5.95 |
| 62185 | 41 | 7 | 9.850 | 2.000 | 1.18 |
| 62190 | 51 | 2 | 5.000 | 2.250 | 1.42 |
| 62200 | 34 | 4 | 3.500 | 0.850 | 2.80 |
| 62215 | 43 | 12 | 2.120 | 1.500 | 4.09 |
| 62220 | 43 | 15 | 2.375 | 0.935 | 4.94 |
| 62230 | 26 | 11 | 1.150 | 1.300 | 5.26 |
| 62280 | 39 | 15 | 7.360 | 0.690 | 2.06 |
| 62285 | 38 | 19 | 6.750 | 1.630 | 1.23 |
| 62290 | 50 | 16 | 4.000 | 1.750 | 2.20 |
| 62310 | 48 | 10 | 4.760 | 2.500 | 1.55 |
| 62325 | 41 | 17 | 10.500 | 1.625 | 0.82 |
| 62335 | 42 | 19 | 19.000 | 1.312 | 0.44 |
| 62350 | 34 | 12 | 3.693 | 0.687 | 4.49 |
| 62355 | 43 | 10 | 2.075 | 1.315 | 5.10 |
| 62365 | 43 | 1 | 1.150 | 0.460 | 11.01 |
| 62375 | 51 | 17 | 4.921 | 5.374 | 0.76 |
| 62380 | 25 | 5 | 0.750 | 0.775 | 14.42 |
| 62410 | 46 | 10 | 5.640 | 2.000 | 1.38 |
| 62440 | 38 | 2 | 6.000 | 1.000 | 1.76 |
| 62460 | 46 | 9 | 5.640 | 1.000 | 2.25 |
| 62470 | 24 | 1 | 0.640 | 0.640 | 12.64 |
| 62475 | 45 | 10 | 4.000 | 1.250 | 2.46 |
| 62480 | 50 | 2 | 2.215 | 2.620 | 3.04 |
| 62495 | 47 | 4 | 8.500 | 1.500 | 1.13 |
| 62500 | 31 | 1 | 2.310 | 1.500 | 3.04 |
| 62510 | 39 | 8 | 7.062 | 1.062 | 1.60 |
| 62560 | 26 | 1 | 1.000 | 1.250 | 6.70 |
| 62580 | 22 | 17 | 3.520 | 2.705 | 1.53 |
| 62600 | 32 | 15 | 2.872 | 1.312 | 2.70 |
| 62620 | 36 | 15 | 5.000 | 0.467 | 3.89 |
| 62625 | 23 | 14 | 7.200 | 2.390 | 0.89 |
| 62645 | 42 | 14 | 13.680 | 1.000 | 0.97 |
| 62650 | 34 | 8 | 3.650 | 0.399 | 3.66 |
| 62655 | 36 | 11 | 4.870 | 1.312 | 1.68 |
| 62660 | 39 | 9 | 7.150 | 1.312 | 1.18 |
| 62675 | 53 | 14 | 1.832 | 0.770 | 5.80 |
| 62720 | 52 | 5 | 4.000 | 1.900 | 1.88 |
| 62725 | 41 | 6 | 9.750 | 2.280 | 0.72 |
| 62745 | 29 | 10 | 1.920 | 1.250 | 3.88 |
| 62750 | 25 | 1 | 0.731 | 0.120 | 28.66 |
| 62780 | 51 | 4 | 5.906 | 2.411 | 0.96 |
| 62805 | 40 | 8 | 8.034 | 0.575 | 2.28 |
| 62815 | 29 | 11 | 1.935 | 1.312 | 3.91 |
| 62875 | 33 | 14 | 3.250 | 2.000 | 2.41 |
| 62890 | 36 | 10 | 4.800 | 1.340 | 2.14 |
| 62905 | 51 | 15 | 4.921 | 5.315 | 0.77 |
| 62925 | 26 | 3 | 1.060 | 0.450 | 13.37 |
| 62935 | 29 | 17 | 2.032 | 0.800 | 5.70 |
| 62995 | 38 | 1 | 6.000 | 0.350 | 3.34 |
| 63005 | 49 | 16 | 2.100 | 1.250 | 3.93 |
| 63010 | 49 | 17 | 2.300 | 1.250 | 3.73 |
| 63020 | 22 | 11 | 2.996 | 2.000 | 1.90 |
| 63045 | 26 | 12 | 1.180 | 0.370 | 9.00 |
| 63060 | 45 | 14 | 4.436 | 1.375 | 2.54 |
| 63075 | 24 | 6 | 1.690 | 0.748 | 6.55 |
| 63115 | 34 | 17 | 4.056 | 0.880 | 2.76 |
| 63120 | 30 | 1 | 2.063 | 1.020 | 3.46 |
| 63130 | 24 | 3 | 1.650 | 1.000 | 5.54 |
| 63135 | 30 | 7 | 2.125 | 1.750 | 2.82 |
| 63140 | 48 | 11 | 4.770 | 2.000 | 1.71 |
| 63155 | 53 | 10 | 7.578 | 3.125 | 0.97 |
| 63215 | 50 | 11 | 2.5 | 1.000 | 6.00 |
| 63240 | 25 | 16 | 0.985 | 0.640 | 9.86 |
| 63250 | 50 | 5 | 4.120 | 2.900 | 2.01 |
| 63265 | 50 | 1 | 1.450 | 2.000 | 5.17 |
| 63275 | 45 | 13 | 4.140 | 1.400 | 2.21 |
| 63300 | 26 | 19 | 1.230 | 0.300 | 15.13 |
| 63340 | 42 | 18 | 17.000 | 1.312 | 0.49 |
| 63350 | 39 | 17 | 7.625 | 0.575 | 2.38 |
| 63380 | 50 | 6 | 1.400 | 0.900 | 9.19 |
| 63400 | 26 | 4 | 1.060 | 0.750 | 8.19 |
| 63455 | 26 | 15 | 1.187 | 0.260 | 13.85 |
| 63480 | 28 | 6 | 1.525 | 0.280 | 8.23 |



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| 63485 | 24 | 5 | 1.650 | 1.000 | 5.56 |
| 63565 | 37 | 3 | 5.250 | 1.200 | 1.89 |
| 63725 | 44 | 20 | 3.880 | 0.700 | 5.31 |
| 63730 | 22 | 12 | 2.996 | 2.250 | 1.88 |
| 63745 | 40 | 4 | 7.875 | 1.281 | 1.13 |
| 63840 | 24 | 19 | 0.690 | 0.880 | 12.14 |
| 63880 | 52 | 2 | 7.500 | 2.850 | 0.78 |
| 63885 | 51 | 11 | 7.500 | 2.850 | 0.70 |
| 63925 | 40 | 5 | 7.875 | 1.312 | 1.05 |
| 64160 | 52 | 14 | 5.250 | 3.159 | 1.69 |
| 64225 | 38 | 8 | 6.120 | 2.000 | 1.64 |
| 64245 | 47 | 13 | 4.000 | 1.281 | 2.13 |
| 64285 | 49 | 15 | 1.750 | 1.600 | 5.08 |
| 64300 | 50 | 8 | 1.880 | 0.500 | 9.05 |
| 64315 | 37 | 6 | 5.500 | 2.000 | 1.25 |
| 64350 | 26 | 10 | 1.120 | 0.600 | 7.69 |
| 64360 | 38 | 11 | 6.420 | 1.210 | 1.24 |
| 64375 | 48 | 13 | 5.120 | 1.250 | 1.71 |
| 64500 | 37 | 17 | 5.900 | 1.062 | 1.33 |
| 64635 | 29 | 4 | 1.846 | 0.643 | 4.67 |
| 64640 | 24 | 18 | 0.662 | 0.400 | 18.07 |
| 64660 | 29 | 3 | 1.843 | 0.800 | 5.73 |
| 64675 | 25 | 14 | 0.950 | 0.935 | 7.40 |
| 64690 | 30 | 14 | 2.250 | 0.810 | 3.97 |
| 64730 | 52 | 1 | 7.000 | 3.450 | 0.75 |
| 64795 | 36 | 7 | 4.702 | 2.312 | 1.64 |
| 64800 | 33 | 5 | 3.000 | 1.500 | 2.72 |
| 64835 | 44 | 8 | 3.140 | 1.312 | 3.04 |
| 64855 | 35 | 2 | 4.150 | 0.750 | 3.35 |
| 64870 | 34 | 9 | 3.687 | 0.562 | 2.49 |
| 65035 | 32 | 3 | 2.562 | 0.500 | 5.16 |
| 65060 | 28 | 17 | 1.750 | 0.250 | 6.65 |
| 65130 | 53 | 11 | 8.080 | 4.440 | 1.06 |
| 65245 | 27 | 4 | 1.260 | 1.650 | 4.43 |
| 65250 | 29 | 18 | 2.050 | 0.750 | 4.53 |
| 65295 | 50 | 12 | 2.600 | 0.690 | 6.40 |
| 65325 | 37 | 8 | 5.560 | 0.700 | 3.21 |
| 65330 | 35 | 8 | 4.500 | 0.710 | 2.66 |
| 65340 | 42 | 3 | 11.000 | 2.300 | 0.63 |
| 65350 | 36 | 8 | 4.750 | 0.500 | 3.50 |
| 65440 | 40 | 16 | 9.000 | 1.800 | 0.87 |
| 65445 | 39 | 13 | 7.340 | 1.312 | 1.12 |
| 65490 | 31 | 15 | 2.440 | 1.200 | 3.32 |
| 65515 | 40 | 14 | 8.656 | 1.462 | 1.18 |
| 65525 | 41 | 13 | 10.328 | 2.369 | 0.64 |
| 65535 | 42 | 10 | 12.203 | 2.885 | 0.60 |
| 65550 | 31 | 11 | 2.400 | 0.920 | 4.06 |
| 65555 | 46 | 1 | 4.600 | 0.920 | 2.08 |
| 65605 | 23 | 13 | 6.961 | 2.790 | 0.71 |
| 65615 | 40 | 17 | 9.031 | 2.594 | 0.67 |
| 65695 | 44 | 12 | 3.500 | 1.620 | 3.03 |
| 65715 | 25 | 15 | 0.985 | 0.390 | 15.23 |
| 65795 | 31 | 9 | 2.400 | 0.720 | 4.32 |
| 65930 | 53 | 16 | 2.000 | 2.000 | 2.96 |
| 65990 | 45 | 18 | 4.600 | 0.720 | 2.24 |
| 66000 | 31 | 6 | 2.400 | 0.420 | 6.33 |
| 66330 | 50 | 7 | 1.550 | 1.150 | 7.65 |
| 66340 | 48 | 14 | 7.220 | 0.960 | 1.47 |
| 66365 | 28 | 3 | 1.500 | 0.630 | 5.41 |
| 66385 | 31 | 7 | 2.400 | 0.515 | 6.47 |
| 66435 | 43 | 11 | 2.100 | 0.540 | 4.78 |
| 66450 | 27 | 15 | 1.400 | 0.650 | 5.98 |
| 66460 | 27 | 16 | 1.400 | 0.900 | 6.30 |
| 66470 | 53 | 5 | 1.700 | 2.430 | 3.00 |
| 66480 | 41 | 1 | 9.400 | 2.000 | 0.93 |
| 66635 | 46 | 3 | 4.812 | 1.312 | 2.49 |
| 66675 | 32 | 17 | 2.990 | 0.660 | 3.06 |
| 66690 | 38 | 9 | 6.200 | 0.650 | 1.85 |
| 66730 | 30 | 9 | 2.200 | 0.320 | 8.38 |
| 66880 | 39 | 14 | 7.340 | 1.330 | 1.18 |
| 66975 | 51 | 16 | 4.921 | 5.330 | 0.69 |
| 67075 | 48 | 9 | 4.750 | 2.625 | 1.56 |
| 67170 | 50 | 19 | 5.000 | 2.250 | 1.29 |
| 67260 | 33 | 2 | 3.000 | 0.450 | 5.33 |
| 67360 | 53 | 6 | 2.322 | 2.250 | 3.59 |
| 67490 | 36 | 18 | 5.000 | 1.750 | 1.57 |
| 67590 | 34 | 1 | 3.450 | 1.230 | 1.58 |
| 67605 | 25 | 13 | 0.945 | 0.592 | 8.74 |
| 67620 | 28 | 12 | 1.660 | 0.390 | 9.14 |
| 67655 | 33 | 6 | 3.040 | 1.200 | 2.21 |
| 67835 | 32 | 6 | 2.600 | 0.950 | 4.45 |
| 67870 | 45 | 17 | 4.500 | 1.580 | 3.37 |
| 67895 | 36 | 16 | 5.000 | 0.490 | 2.38 |
| 68020 | 53 | 13 | 9.420 | 2.870 | 1.37 |
| 68145 | 32 | 8 | 2.634 | 0.285 | 5.65 |
| 68255 | 49 | 14 | 1.000 | 1.440 | 7.13 |
| 68260 | 25 | 11 | 0.930 | 0.250 | 13.64 |
| 68265 | 24 | 12 | 0.437 | 0.250 | 29.13 |
| 68295 | 41 | 4 | 9.730 | 0.565 | 1.23 |
| 68360 | 51 | 3 | 5.000 | 2.500 | 1.28 |
| 68780 | 39 | 11 | 7.321 | 1.500 | 1.33 |
| 68830 | 46 | 6 | 5.120 | 0.710 | 2.52 |
| 68855 | 39 | 10 | 7.201 | 0.460 | 1.51 |
| 68995 | 38 | 3 | 6.000 | 1.312 | 1.41 |
| 69065 | 24 | 10 | 0.400 | 0.240 | 25.23 |
| 69180 | 38 | 15 | 6.500 | 2.165 | 1.07 |
| 69200 | 42 | 6 | 11.750 | 2.875 | 0.56 |
| 69545 | 48 | 18 | 9.870 | 2.320 | 0.51 |
| 69620 | 53 | 8 | 4.702 | 3.312 | 1.50 |
| 69695 | 41 | 14 | 10.433 | 1.615 | 0.98 |
| 69755 | 28 | 13 | 1.660 | 1.175 | 3.60 |
| 69800 | 38 | 17 | 6.625 | 1.781 | 0.94 |
| 69945 | 36 | 2 | 4.600 | 0.920 | 1.78 |
| 69960 | 42 | 12 | 12.600 | 2.321 | 0.55 |
| 70035 | 26 | 8 | 1.100 | 0.350 | 11.19 |
| 70165 | 42 | 8 | 12.000 | 1.780 | 0.61 |
| 70195 | 35 | 15 | 4.560 | 1.430 | 1.58 |
| 70400 | 40 | 10 | 8.320 | 2.000 | 1.22 |
| 70440 | 35 | 17 | 4.573 | 1.875 | 1.54 |
| 70455 | 47 | 5 | 8.910 | 0.530 | 2.24 |
| 70665 | 35 | 13 | 4.560 | 0.270 | 4.27 |
| 70675 | 31 | 4 | 2.360 | 0.970 | 3.70 |
| 70680 | 35 | 14 | 4.560 | 0.472 | 3.07 |
| 70685 | 31 | 3 | 2.360 | 0.270 | 8.60 |
| 70690 | 31 | 5 | 2.360 | 1.430 | 3.15 |
| 70920 | 24 | 11 | 0.400 | 0.400 | 20.43 |
| 70945 | 32 | 10 | 2.675 | 0.750 | 3.59 |
| 70970 | 36 | 6 | 4.650 | 2.110 | 1.38 |
| 71000 | 41 | 3 | 9.508 | 0.437 | 2.52 |
| 71115 | 45 | 8 | 4.000 | 0.700 | 2.09 |
| 71145 | 38 | 7 | 6.080 | 2.250 | 1.00 |
| 71150 | 37 | 13 | 5.815 | 1.150 | 1.81 |
| 71170 | 37 | 12 | 5.750 | 2.750 | 1.44 |
| 71235 | 40 | 7 | 8.000 | 1.125 | 1.48 |
| 71350 | 37 | 14 | 5.860 | 2.000 | 1.19 |
| 71390 | 40 | 12 | 8.500 | 1.400 | 1.20 |
| 71395 | 38 | 16 | 6.624 | 1.281 | 1.21 |
| 71770 | 42 | 16 | 14.500 | 1.062 | 0.75 |
| 71845 | 37 | 15 | 5.860 | 3.150 | 1.07 |
| 72085 | 35 | 18 | 4.600 | 0.570 | 2.20 |
| 72090 | 36 | 4 | 4.600 | 1.395 | 1.25 |
| 72095 | 22 | 6 | 2.600 | 2.190 | 1.57 |
| 72145 | 35 | 3 | 4.179 | 2.000 | 1.70 |
| 72185 | 50 | 4 | 2.500 | 3.500 | 1.52 |
| 72225 | 42 | 13 | 12.750 | 1.350 | 0.69 |
| 72330 | 25 | 7 | 0.843 | 0.354 | 13.94 |
| 72355 | 42 | 4 | 11.220 | 2.400 | 0.54 |
| 72385 | 38 | 4 | 6.000 | 1.600 | 1.13 |
| 72400 | 32 | 11 | 2.675 | 1.070 | 3.04 |
| 72425 | 43 | 18 | 2.480 | 0.380 | 5.52 |
| 72480 | 40 | 6 | 8.000 | 0.680 | 2.33 |
| 72505 | 27 | 1 | 1.250 | 0.580 | 7.63 |
| 72545 | 42 | 17 | 14.750 | 2.750 | 0.48 |
| 72695 | 42 | 20 | 1.055 | 0.417 | 11.30 |
| 72785 | 34 | 5 | 3.530 | 0.400 | 5.18 |
| 72845 | 28 | 8 | 1.580 | 0.450 | 5.86 |
| 72930 | 29 | 15 | 2.000 | 1.000 | 4.16 |
| 73110 | 53 | 18 | 7.480 | 5.280 | 0.50 |
| 73115 | 21 | 10 | 2.050 | 1.298 | 2.72 |
| 73265 | 41 | 9 | 9.880 | 0.650 | 1.36 |
| 73925 | 22 | 9 | 2.884 | 1.000 | 1.45 |
| 73980 | 34 | 3 | 3.460 | 1.280 | 1.59 |
| 74155 | 36 | 3 | 4.600 | 1.150 | 1.61 |
| 74200 | 27 | 6 | 1.300 | 0.200 | 17.95 |
| 74365 | 46 | 2 | 4.650 | 1.288 | 1.57 |
| 74385 | 21 | 4 | 1.755 | 1.450 | 2.82 |
| 74415 | 32 | 19 | 2.995 | 0.880 | 2.29 |
| 74455 | 30 | 10 | 2.220 | 0.880 | 2.84 |
| 74535 | 23 | 3 | 4.600 | 0.787 | 1.55 |
| 74645 | 38 | 5 | 6.026 | 0.700 | 1.98 |
| 74765 | 35 | 5 | 4.235 | 1.025 | 1.38 |
| 74785 | 22 | 1 | 2.400 | 1.645 | 1.79 |
| 74810 | 21 | 11 | 2.079 | 0.984 | 3.16 |
| 74815 | 30 | 2 | 2.077 | 0.197 | 9.61 |
| 74860 | 23 | 12 | 6.930 | 2.065 | 0.88 |
| 74910 | 24 | 13 | 0.525 | 0.300 | 19.69 |
| 74925 | 23 | 5 | 4.790 | 1.770 | 0.82 |
| 74930 | 25 | 8 | 0.850 | 0.235 | 24.19 |
| 74970 | 51 | 5 | 6.140 | 1.950 | 1.24 |
| 75100 | 26 | 5 | 1.095 | 1.350 | 6.21 |
| 75440 | 27 | 12 | 1.378 | 0.275 | 10.52 |
| 75450 | 27 | 13 | 1.378 | 1.100 | 4.31 |
| 75560 | 38 | 13 | 6.496 | 2.815 | 0.83 |
| 75625 | 30 | 13 | 2.250 | 0.750 | 3.67 |
| 75700 | 46 | 13 | 5.900 | 1.337 | 1.56 |
| 75720 | 34 | 7 | 3.600 | 0.570 | 2.60 |
| 75790 | 26 | 2 | 1.029 | 0.600 | 8.56 |
| 75890 | 42 | 2 | 10.820 | 1.750 | 0.74 |
| 75925 | 29 | 2 | 1.820 | 0.600 | 5.97 |
| 75985 | 32 | 5 | 2.598 | 1.312 | 3.31 |
| 76125 | 41 | 18 | 10.695 | 1.625 | 0.86 |
| 76135 | 26 | 18 | 1.213 | 1.069 | 4.85 |
| 76370 | 23 | 17 | 8.540 | 2.750 | 0.61 |
| 76375 | 23 | 18 | 11.140 | 3.600 | 0.45 |
| 76525 | 41 | 5 | 9.750 | 1.800 | 0.90 |
| 76535 | 39 | 1 | 6.800 | 1.230 | 1.53 |
| 76550 | 29 | 6 | 1.860 | 1.250 | 4.36 |
| 76560 | 23 | 15 | 7.230 | 2.822 | 0.76 |
| 76620 | 34 | 16 | 4.000 | 1.250 | 2.06 |
| 76625 | 45 | 5 | 3.960 | 0.565 | 3.21 |
| 76670 | 30 | 17 | 2.260 | 0.770 | 3.46 |
| 76750 | 26 | 17 | 1.200 | 0.750 | 5.95 |
| 76755 | 37 | 11 | 5.750 | 1.600 | 1.09 |
| 76830 | 27 | 14 | 1.378 | 1.433 | 3.85 |
| 76960 | 48 | 17 | 9.393 | 0.892 | 1.24 |
| 77015 | 33 | 7 | 3.062 | 1.250 | 2.67 |
| 77170 | 32 | 20 | 3.000 | 0.250 | 6.60 |
| 77175 | 36 | 12 | 4.900 | 1.062 | 1.55 |
| 77290 | 35 | 11 | 4.500 | 2.000 | 1.54 |
| 77335 | 40 | 19 | 9.355 | 3.495 | 0.66 |
| 77370 | 36 | 1 | 4.600 | 0.700 | 1.96 |
| 77495 | 50 | 17 | 5.000 | 1.155 | 2.20 |
| 77555 | 39 | 2 | 6.800 | 2.120 | 0.91 |
| 77810 | 41 | 11 | 10.125 | 1.312 | 0.85 |
| 77870 | 33 | 4 | 3.000 | 0.625 | 4.35 |
| 77915 | 35 | 10 | 4.500 | 1.920 | 1.67 |
| 77920 | 37 | 5 | 5.380 | 1.520 | 1.58 |
| 78010 | 49 | 10 | 1.339 | 2.953 | 1.89 |
| 78020 | 49 | 4 | 1.181 | 1.850 | 4.72 |
| 78030 | 49 | 13 | 2.895 | 2.362 | 1.76 |
| 78060 | 49 | 3 | 1.181 | 1.772 | 4.17 |
| 78065 | 48 | 19 | 0.764 | 1.102 | 6.93 |
| 78070 | 49 | 11 | 1.575 | 2.953 | 2.25 |
| 78075 | 49 | 8 | 1.495 | 2.126 | 3.03 |
| 78080 | 49 | 7 | 1.063 | 2.362 | 2.94 |
| 78220 | 49 | 9 | 1.181 | 2.362 | 3.65 |
| 78240 | 48 | 20 | 0.866 | 1.378 | 5.51 |
| 78245 | 49 | 5 | 1.062 | 2.362 | 2.97 |
| 78255 | 49 | 1 | 1.063 | 1.063 | 11.48 |
| 78265 | 49 | 2 | 0.866 | 1.122 | 8.72 |
| 78345 | 49 | 12 | 2.677 | 1.535 | 2.63 |
| 78440 | 23 | 4 | 4.600 | 1.770 | 0.84 |
| 78450 | 43 | 14 | 2.360 | 0.970 | 4.32 |
| 78550 | 31 | 18 | 2.500 | 0.950 | 4.21 |
| 78570 | 36 | 19 | 5.060 | 0.230 | 4.93 |
| 78580 | 34 | 6 | 3.600 | 0.225 | 5.36 |
| 78585 | 22 | 3 | 2.440 | 1.400 | 2.16 |
| 78590 | 31 | 12 | 2.400 | 0.950 | 3.23 |

# Part Index



| Part # | Page # | Locator # | Width | Height | θn |
|---|---|---|---|---|---|
| 78610 | 53 | 2 | 1.750 | 2.250 | 2.91 |
| 78670 | 31 | 2 | 2.322 | 1.400 | 2.75 |
| 78715 | 41 | 12 | 10.156 | 1.876 | 0.69 |
| 78735 | 30 | 19 | 2.280 | 0.950 | 3.26 |
| 78770 | 50 | 3 | 1.322 | 3.300 | 4.16 |
| 78780 | 35 | 1 | 4.125 | 1.750 | 1.90 |
| 78830 | 30 | 11 | 2.233 | 0.630 | 3.17 |
| 78875 | 33 | 3 | 3.000 | 0.475 | 3.82 |
| 78915 | 24 | 4 | 1.650 | 1.000 | 5.09 |
| 78950 | 46 | 5 | 5.000 | 1.500 | 1.76 |
| 79000 | 22 | 7 | 2.620 | 2.700 | 1.59 |
| 79010 | 22 | 2 | 2.400 | 2.020 | 1.82 |
| 79025 | 36 | 9 | 4.800 | 0.950 | 2.15 |
| 79075 | 48 | 5 | 4.750 | 2.000 | 1.73 |
| 79190 | 39 | 4 | 6.890 | 0.984 | 1.85 |
| 79200 | 27 | 7 | 1.300 | 0.490 | 8.05 |
| 79240 | 52 | 16 | 6.250 | 6.250 | 0.65 |
| 79255 | 31 | 16 | 2.496 | 0.450 | 6.18 |
| 79265 | 24 | 20 | 0.715 | 0.400 | 13.15 |
| 79290 | 22 | 10 | 2.952 | 2.380 | 1.19 |
| 79300 | 26 | 6 | 1.100 | 0.195 | 13.19 |
| 79360 | 49 | 6 | 1.181 | 2.204 | 3.98 |
| 79430 | 31 | 17 | 2.500 | 0.520 | 3.98 |
| 79435 | 23 | 10 | 6.750 | 1.781 | 0.81 |
| 79455 | 47 | 2 | 6.800 | 1.402 | 1.21 |
| 79820 | 30 | 12 | 2.250 | 0.740 | 4.35 |
| 79840 | 21 | 6 | 1.923 | 0.964 | 2.14 |
| 79920 | 28 | 14 | 1.700 | 0.350 | 8.38 |
| 79925 | 28 | 5 | 1.500 | 0.650 | 5.98 |
| 79930 | 28 | 20 | 1.800 | 0.275 | 9.51 |
| 79940 | 28 | 1 | 1.500 | 0.400 | 8.63 |
| 79945 | 31 | 10 | 2.400 | 0.750 | 3.68 |
| 79955 | 28 | 19 | 1.771 | 0.246 | 7.59 |
| 79975 | 33 | 8 | 3.062 | 1.312 | 2.70 |
| 79980 | 34 | 13 | 3.930 | 0.590 | 3.18 |
| 79985 | 28 | 4 | 1.500 | 0.650 | 5.76 |
| 80060 | 29 | 9 | 1.900 | 0.650 | 4.96 |
| 80070 | 25 | 9 | 0.850 | 0.520 | 11.62 |
| 80120 | 30 | 5 | 2.100 | 0.650 | 4.31 |
| 80170 | 43 | 8 | 1.938 | 0.935 | 6.92 |
| 80190 | 28 | 16 | 1.710 | 0.101 | 16.96 |
| 80220 | 28 | 15 | 1.700 | 0.650 | 5.07 |
| 80225 | 29 | 1 | 1.800 | 0.650 | 5.03 |
| 80235 | 25 | 10 | 0.850 | 1.000 | 8.54 |
| 80245 | 26 | 9 | 1.100 | 0.600 | 8.46 |
| 80250 | 27 | 11 | 1.358 | 0.650 | 6.61 |
| 80265 | 36 | 5 | 4.610 | 0.520 | 2.81 |
| 80325 | 32 | 1 | 2.500 | 1.400 | 3.48 |
| 80345 | 42 | 7 | 11.969 | 1.578 | 0.78 |
| 80350 | 35 | 4 | 4.220 | 1.200 | 1.35 |
| 80380 | 21 | 5 | 1.845 | 1.254 | 3.81 |
| 80400 | 47 | 17 | 4.500 | 1.032 | 3.13 |
| 80420 | 26 | 16 | 1.200 | 0.615 | 7.49 |
| 80430 | 28 | 2 | 1.500 | 0.615 | 6.01 |
| 80445 | 27 | 9 | 1.358 | 0.615 | 6.61 |
| 80455 | 24 | 8 | 0.375 | 0.190 | 27.50 |
| 80505 | 43 | 4 | 1.700 | 0.500 | 8.74 |
| 80510 | 40 | 15 | 9.000 | 1.312 | 0.98 |
| 80575 | 40 | 20 | 9.380 | 1.310 | 0.90 |
| 80580 | 40 | 9 | 8.100 | 1.310 | 0.90 |
| 80595 | 27 | 10 | 1.358 | 0.650 | 6.38 |
| 80600 | 26 | 14 | 1.185 | 0.500 | 7.73 |
| 80605 | 42 | 5 | 11.560 | 1.130 | 0.81 |
| 80615 | 30 | 16 | 2.260 | 0.300 | 5.34 |
| 80630 | 32 | 16 | 2.900 | 1.312 | 2.71 |
| 80640 | 36 | 17 | 5.000 | 1.550 | 1.27 |
| 80645 | 35 | 12 | 4.500 | 2.020 | 1.23 |
| 80655 | 32 | 18 | 2.990 | 0.676 | 3.12 |
| 80670 | 30 | 4 | 2.100 | 0.400 | 5.44 |
| 80675 | 35 | 6 | 4.254 | 0.575 | 3.35 |
| 80695 | 33 | 12 | 3.250 | 1.500 | 2.35 |
| 80700 | 27 | 3 | 1.250 | 0.920 | 6.31 |
| 80710 | 37 | 18 | 6.000 | 0.285 | 2.74 |
| 80715 | 40 | 13 | 8.600 | 0.667 | 1.57 |
| 80720 | 27 | 5 | 1.299 | 0.591 | 6.81 |
| 80725 | 43 | 2 | 1.464 | 0.296 | 10.55 |
| 80765 | 25 | 18 | 1.000 | 1.000 | 7.61 |
| 80815 | 39 | 16 | 7.434 | 0.875 | 1.50 |
| 80825 | 30 | 3 | 2.099 | 1.750 | 3.16 |
| 80965 | 36 | 13 | 4.900 | 1.680 | 2.61 |
| 81055 | 39 | 6 | 7.000 | 0.465 | 2.18 |
| 81060 | 44 | 6 | 3.140 | 1.312 | 2.90 |
| 81065 | 27 | 18 | 1.500 | 0.200 | 12.58 |
| 81085 | 30 | 8 | 2.158 | 0.433 | 5.21 |
| 81130 | 27 | 8 | 1.300 | 0.650 | 7.31 |
| 81190 | 21 | 2 | 1.575 | 1.630 | 2.60 |
| 81245 | 41 | 15 | 10.500 | 1.130 | 0.84 |
| 81255 | 53 | 7 | 2.800 | 2.250 | 1.72 |
| 81275 | 33 | 1 | 3.000 | 0.394 | 3.49 |
| 81295 | 29 | 8 | 1.900 | 0.400 | 7.12 |
| 81300 | 26 | 7 | 1.100 | 0.300 | 8.61 |
| 81395 | 24 | 17 | 0.591 | 0.295 | 24.85 |
| 81405 | 25 | 17 | 1.000 | 0.195 | 17.98 |
| 81410 | 40 | 3 | 7.875 | 0.687 | 2.05 |
| 81480 | 38 | 10 | 6.300 | 1.310 | 1.30 |
| 81520 | 39 | 3 | 6.850 | 1.000 | 2.55 |
| 81525 | 33 | 18 | 3.450 | 0.875 | 2.31 |
| 81640 | 42 | 9 | 12.000 | 1.810 | 0.58 |
| 81655 | 51 | 12 | 7.870 | 2.850 | 0.70 |
| 81760 | 46 | 8 | 5.600 | 1.035 | 2.02 |
| 81850 | 33 | 16 | 3.386 | 0.900 | 3.08 |
| 81855 | 33 | 17 | 3.386 | 1.400 | 2.68 |
| 81870 | 22 | 15 | 3.160 | 1.210 | 1.59 |
| 81880 | 46 | 11 | 5.859 | 1.347 | 1.03 |
| 81895 | 31 | 13 | 2.400 | 0.950 | 3.24 |
| 81905 | 43 | 16 | 2.400 | 0.450 | 4.71 |
| 81910 | 31 | 14 | 2.400 | 1.400 | 2.74 |
| 81915 | 30 | 20 | 2.280 | 1.400 | 2.77 |
| 81920 | 43 | 13 | 2.280 | 0.450 | 4.75 |
| 81940 | 33 | 10 | 3.190 | 2.000 | 1.92 |
| 81955 | 51 | 8 | 7.000 | 3.000 | 0.94 |
| 81965 | 32 | 9 | 2.660 | 0.350 | 5.48 |
| 81985 | 51 | 14 | 13.000 | 4.040 | 0.46 |
| 82030 | 23 | 6 | 4.850 | 1.750 | 0.87 |
| 82055 | 34 | 11 | 3.691 | 0.687 | 4.51 |
| 82070 | 23 | 1 | 3.750 | 3.020 | 0.84 |
| 82160 | 23 | 16 | 8.083 | 2.505 | 0.48 |
| 82165 | 21 | 1 | 1.575 | 0.900 | 2.88 |
| 82200 | 44 | 19 | 3.831 | 1.000 | 2.57 |
| 82260 | 23 | 8 | 5.200 | 2.280 | 0.78 |
| 82265 | 40 | 18 | 9.310 | 1.060 | 1.22 |
| 82290 | 24 | 9 | 0.384 | 0.250 | 30.53 |
| 82350 | 45 | 11 | 4.000 | 1.250 | 2.52 |
| 82360 | 29 | 5 | 1.850 | 0.750 | 3.62 |
| 82375 | 41 | 16 | 10.500 | 1.170 | 1.21 |
| 82395 | 23 | 9 | 5.800 | 2.790 | 0.85 |
| 82420 | 28 | 9 | 1.625 | 1.750 | 4.53 |
| 82435 | 29 | 12 | 1.950 | 0.500 | 4.06 |
| 82440 | 26 | 20 | 1.250 | 0.500 | 7.85 |
| 82445 | 42 | 15 | 13.800 | 2.885 | 0.54 |
| 82450 | 26 | 13 | 1.180 | 0.375 | 8.57 |
| 82455 | 20 | 3 | 1.180 | 0.906 | 3.72 |
| 82460 | 29 | 14 | 2.000 | 0.385 | 6.64 |
| 82495 | 28 | 11 | 1.655 | 0.450 | 5.35 |
| 82500 | 25 | 4 | 0.750 | 0.200 | 16.70 |
| 82520 | 24 | 16 | 0.540 | 0.590 | 14.11 |
| 82525 | 23 | 7 | 5.000 | 2.917 | 0.83 |
| 82555 | 39 | 7 | 7.020 | 1.198 | 1.12 |
| 82580 | 43 | 7 | 1.850 | 0.640 | 6.22 |
| 82590 | 41 | 2 | 9.429 | 1.420 | 0.65 |
| 82595 | 37 | 7 | 5.510 | 0.360 | 2.43 |
| 82610 | 37 | 1 | 5.135 | 0.540 | 3.28 |
| 82635 | 29 | 16 | 2.016 | 0.413 | 7.03 |
| 82665 | 25 | 12 | 0.942 | 0.370 | 13.17 |
| 82675 | 31 | 8 | 2.400 | 0.650 | 3.80 |
| 82705 | 36 | 20 | 5.118 | 0.955 | 2.12 |
| 82715 | 29 | 13 | 1.969 | 0.551 | 5.28 |
| 82740 | 40 | 1 | 7.700 | 0.660 | 1.18 |
| 82755 | 30 | 6 | 2.110 | 0.383 | 5.42 |
| 83115 | 20 | 1 | 0.984 | 0.986 | 3.07 |
| 83120 | 20 | 2 | 1.157 | 0.789 | 3.80 |
| 83130 | 20 | 4 | 1.280 | 0.986 | 2.99 |
| 83135 | 20 | 5 | 1.301 | 1.915 | 3.08 |
| 83140 | 20 | 6 | 1.414 | 1.683 | 2.10 |
| 83145 | 20 | 7 | 1.420 | 1.451 | 2.96 |
| 83150 | 20 | 8 | 1.565 | 1.543 | 2.08 |
| 83155 | 21 | 3 | 1.650 | 1.252 | 2.11 |
| 83160 | 21 | 7 | 1.923 | 1.498 | 1.22 |
| 83165 | 21 | 8 | 1.931 | 1.183 | 2.95 |
| 83170 | 21 | 9 | 2.031 | 1.108 | 1.47 |
| 83175 | 21 | 12 | 2.083 | 1.323 | 1.89 |
| 83180 | 21 | 13 | 2.103 | 1.262 | 1.27 |
| 83185 | 21 | 14 | 2.167 | 0.986 | 2.38 |
| 83190 | 21 | 15 | 2.167 | 1.537 | 1.52 |
| 83195 | 21 | 16 | 2.318 | 1.002 | 1.91 |
| 83200 | 21 | 18 | 2.364 | 1.813 | 1.15 |
| 83210 | 21 | 17 | 2.364 | 1.545 | 1.20 |
| 83215 | 22 | 4 | 2.500 | 1.185 | 1.44 |
| 83220 | 22 | 5 | 2.581 | 1.340 | 1.01 |
| 83225 | 22 | 8 | 2.716 | 1.888 | 0.86 |
| 83230 | 22 | 13 | 3.050 | 1.014 | 1.25 |
| 83235 | 22 | 14 | 3.150 | 1.059 | 1.43 |
| 83240 | 22 | 16 | 3.502 | 2.683 | 0.73 |
| 83245 | 22 | 18 | 3.650 | 1.106 | 0.89 |
| 83250 | 23 | 2 | 3.985 | 1.268 | 0.78 |
| 83255 | 23 | 11 | 6.903 | 3.716 | 0.64 |



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## HIGH FIN DENSITY

| Part # | Page # | Locator # | Width | Height | θn |
|---|---|---|---|---|---|
| 83115 | 20 | 1 | 0.984 | 0.986 | 3.07 |
| 83120 | 20 | 2 | 1.157 | 0.789 | 3.80 |
| 82455 | 20 | 3 | 1.180 | 0.906 | 3.72 |
| 83130 | 20 | 4 | 1.280 | 0.986 | 2.99 |
| 83135 | 20 | 5 | 1.301 | 1.915 | 3.08 |
| 83140 | 20 | 6 | 1.414 | 1.683 | 2.10 |
| 83145 | 20 | 7 | 1.420 | 1.451 | 2.96 |
| 83150 | 20 | 8 | 1.565 | 1.543 | 2.08 |
| 82165 | 21 | 1 | 1.575 | 0.900 | 2.88 |
| 81190 | 21 | 2 | 1.575 | 1.630 | 2.60 |
| 83155 | 21 | 3 | 1.650 | 1.252 | 2.11 |
| 74385 | 21 | 4 | 1.755 | 1.450 | 2.82 |
| 80380 | 21 | 5 | 1.845 | 1.254 | 3.81 |
| 79840 | 21 | 6 | 1.923 | 0.964 | 2.14 |
| 83160 | 21 | 7 | 1.923 | 1.498 | 1.22 |
| 83165 | 21 | 8 | 1.931 | 1.183 | 2.95 |
| 83170 | 21 | 9 | 2.031 | 1.108 | 1.47 |
| 73115 | 21 | 10 | 2.050 | 1.298 | 2.72 |
| 74810 | 21 | 11 | 2.079 | 0.984 | 3.16 |
| 83175 | 21 | 12 | 2.083 | 1.323 | 1.89 |
| 83180 | 21 | 13 | 2.103 | 1.262 | 1.27 |
| 83185 | 21 | 14 | 2.167 | 0.986 | 2.38 |
| 83190 | 21 | 15 | 2.167 | 1.537 | 1.52 |
| 83195 | 21 | 16 | 2.318 | 1.002 | 1.91 |
| 83210 | 21 | 17 | 2.364 | 1.545 | 1.20 |
| 83200 | 21 | 18 | 2.364 | 1.813 | 1.15 |
| 74785 | 22 | 1 | 2.400 | 1.645 | 1.79 |
| 79010 | 22 | 2 | 2.400 | 2.020 | 1.82 |
| 78585 | 22 | 3 | 2.440 | 1.400 | 2.16 |
| 83215 | 22 | 4 | 2.500 | 1.185 | 1.44 |
| 83220 | 22 | 5 | 2.581 | 1.340 | 1.01 |
| 72095 | 22 | 6 | 2.600 | 2.190 | 1.57 |
| 79000 | 22 | 7 | 2.620 | 2.700 | 1.59 |
| 83225 | 22 | 8 | 2.716 | 1.888 | 0.86 |
| 73925 | 22 | 9 | 2.884 | 1.000 | 1.45 |
| 79290 | 22 | 10 | 2.952 | 2.380 | 1.19 |
| 63020 | 22 | 11 | 2.996 | 2.000 | 1.90 |
| 63730 | 22 | 12 | 2.996 | 2.250 | 1.88 |
| 83230 | 22 | 13 | 3.050 | 1.014 | 1.25 |
| 83235 | 22 | 14 | 3.150 | 1.059 | 1.43 |
| 81870 | 22 | 15 | 3.160 | 1.210 | 1.59 |
| 83240 | 22 | 16 | 3.502 | 2.683 | 0.73 |
| 62580 | 22 | 17 | 3.520 | 2.705 | 1.53 |
| 83245 | 22 | 18 | 3.650 | 1.106 | 0.89 |
| 82070 | 23 | 1 | 3.750 | 3.020 | 0.84 |
| 83250 | 23 | 2 | 3.985 | 1.268 | 0.78 |
| 74535 | 23 | 3 | 4.600 | 0.787 | 1.55 |
| 78440 | 23 | 4 | 4.600 | 1.770 | 0.84 |
| 74925 | 23 | 5 | 4.790 | 1.770 | 0.82 |
| 82030 | 23 | 6 | 4.850 | 1.750 | 0.87 |
| 82525 | 23 | 7 | 5.000 | 2.917 | 0.83 |
| 82260 | 23 | 8 | 5.200 | 2.280 | 0.78 |
| 82395 | 23 | 9 | 5.800 | 2.790 | 0.85 |
| 79435 | 23 | 10 | 6.750 | 1.781 | 0.81 |
| 83255 | 23 | 11 | 6.903 | 3.716 | 0.64 |
| 74860 | 23 | 12 | 6.930 | 2.065 | 0.88 |
| 65605 | 23 | 13 | 6.961 | 2.790 | 0.71 |
| 62625 | 23 | 14 | 7.200 | 2.390 | 0.89 |
| 76560 | 23 | 15 | 7.230 | 2.822 | 0.76 |
| 82160 | 23 | 16 | 8.083 | 2.505 | 0.48 |
| 76370 | 23 | 17 | 8.540 | 2.750 | 0.61 |
| 76375 | 23 | 18 | 11.140 | 3.600 | 0.45 |

## BOARD LEVEL W/PINS

| Part # | Page # | Locator # | Width | Height | θn |
|---|---|---|---|---|---|
| 62470 | 24 | 1 | 0.640 | 0.640 | 12.64 |
| 60130 | 24 | 2 | 1.375 | 0.500 | 9.85 |
| 63130 | 24 | 3 | 1.650 | 1.000 | 5.54 |
| 63485 | 24 | 5 | 1.650 | 1.000 | 5.56 |
| 78915 | 24 | 4 | 1.650 | 1.000 | 5.09 |
| 63075 | 24 | 6 | 1.690 | 0.748 | 6.55 |

## FLATBACK

| Part # | Page # | Locator # | Width | Height | θn |
|---|---|---|---|---|---|
| 61565 | 24 | 7 | 0.250 | 0.190 | 40.42 |
| 80455 | 24 | 8 | 0.375 | 0.190 | 27.50 |
| 82290 | 24 | 9 | 0.384 | 0.250 | 30.53 |
| 69065 | 24 | 10 | 0.400 | 0.240 | 25.23 |
| 70920 | 24 | 11 | 0.400 | 0.400 | 20.43 |
| 68265 | 24 | 12 | 0.437 | 0.250 | 29.13 |
| 74910 | 24 | 13 | 0.525 | 0.300 | 19.69 |
| 61945 | 24 | 14 | 0.530 | 0.190 | 27.86 |
| 62000 | 24 | 15 | 0.530 | 0.400 | 15.30 |
| 82520 | 24 | 16 | 0.540 | 0.590 | 14.11 |
| 81395 | 24 | 17 | 0.591 | 0.295 | 24.85 |
| 64640 | 24 | 18 | 0.662 | 0.400 | 18.07 |
| 63840 | 24 | 19 | 0.690 | 0.880 | 12.14 |
| 79265 | 24 | 20 | 0.715 | 0.400 | 13.15 |
| 62750 | 25 | 1 | 0.731 | 0.120 | 28.66 |
| 61610 | 25 | 2 | 0.731 | 0.190 | 20.81 |
| 61995 | 25 | 3 | 0.744 | 0.240 | 14.24 |
| 82500 | 25 | 4 | 0.750 | 0.200 | 16.70 |
| 62380 | 25 | 5 | 0.750 | 0.775 | 14.42 |
| 61520 | 25 | 6 | 0.810 | 0.450 | 16.77 |
| 72330 | 25 | 7 | 0.843 | 0.354 | 13.94 |
| 74930 | 25 | 8 | 0.850 | 0.235 | 24.19 |
| 80070 | 25 | 9 | 0.850 | 0.520 | 11.62 |
| 80235 | 25 | 10 | 0.850 | 1.000 | 8.54 |
| 68260 | 25 | 11 | 0.930 | 0.250 | 13.64 |
| 82665 | 25 | 12 | 0.942 | 0.370 | 13.17 |
| 67605 | 25 | 13 | 0.945 | 0.592 | 8.74 |
| 64675 | 25 | 14 | 0.950 | 0.935 | 7.40 |
| 65715 | 25 | 15 | 0.985 | 0.390 | 15.23 |
| 63240 | 25 | 16 | 0.985 | 0.640 | 9.86 |
| 81405 | 25 | 17 | 1.000 | 0.195 | 17.98 |
| 80765 | 25 | 18 | 1.000 | 1.000 | 7.61 |
| 62560 | 26 | 1 | 1.000 | 1.250 | 6.70 |
| 75790 | 26 | 2 | 1.029 | 0.600 | 8.56 |
| 62925 | 26 | 3 | 1.060 | 0.450 | 13.37 |
| 63400 | 26 | 4 | 1.060 | 0.750 | 8.19 |
| 75100 | 26 | 5 | 1.095 | 1.350 | 6.21 |
| 79300 | 26 | 6 | 1.100 | 0.195 | 13.19 |
| 81300 | 26 | 7 | 1.100 | 0.300 | 8.61 |
| 70035 | 26 | 8 | 1.100 | 0.350 | 11.19 |
| 80245 | 26 | 9 | 1.100 | 0.600 | 8.46 |
| 64350 | 26 | 10 | 1.120 | 0.600 | 7.69 |
| 62230 | 26 | 11 | 1.150 | 1.300 | 5.26 |
| 63045 | 26 | 12 | 1.180 | 0.370 | 9.00 |
| 82450 | 26 | 13 | 1.180 | 0.375 | 8.57 |
| 80600 | 26 | 14 | 1.185 | 0.500 | 7.73 |
| 63455 | 26 | 15 | 1.187 | 0.260 | 13.85 |
| 80420 | 26 | 16 | 1.200 | 0.615 | 7.49 |
| 76750 | 26 | 17 | 1.200 | 0.750 | 5.95 |
| 76135 | 26 | 18 | 1.213 | 1.069 | 4.85 |
| 63300 | 26 | 19 | 1.230 | 0.300 | 15.13 |
| 82440 | 26 | 20 | 1.250 | 0.500 | 7.85 |
| 62035 | 27 | 2 | 1.250 | 0.580 | 8.22 |
| 72505 | 27 | 1 | 1.250 | 0.580 | 7.63 |
| 80700 | 27 | 3 | 1.250 | 0.920 | 6.31 |
| 65245 | 27 | 4 | 1.260 | 1.650 | 4.43 |
| 80720 | 27 | 5 | 1.299 | 0.591 | 6.81 |
| 74200 | 27 | 6 | 1.300 | 0.200 | 17.95 |
| 79200 | 27 | 7 | 1.300 | 0.490 | 8.05 |
| 81130 | 27 | 8 | 1.300 | 0.650 | 7.31 |
| 80445 | 27 | 9 | 1.358 | 0.615 | 6.61 |
| 80250 | 27 | 11 | 1.358 | 0.650 | 6.61 |
| 80595 | 27 | 10 | 1.358 | 0.650 | 6.38 |
| 75440 | 27 | 12 | 1.378 | 0.275 | 10.52 |
| 75450 | 27 | 13 | 1.378 | 1.100 | 4.31 |
| 76830 | 27 | 14 | 1.378 | 1.433 | 3.85 |
| 66450 | 27 | 15 | 1.400 | 0.650 | 5.98 |
| 66460 | 27 | 16 | 1.400 | 0.900 | 6.30 |
| 61605 | 27 | 17 | 1.400 | 1.500 | 5.47 |
| 81065 | 27 | 18 | 1.500 | 0.200 | 12.58 |
| 79940 | 28 | 1 | 1.500 | 0.400 | 8.63 |
| 80430 | 28 | 2 | 1.500 | 0.615 | 6.01 |
| 66365 | 28 | 3 | 1.500 | 0.630 | 5.41 |
| 79925 | 28 | 5 | 1.500 | 0.650 | 5.98 |
| 79985 | 28 | 4 | 1.500 | 0.650 | 5.76 |
| 63480 | 28 | 6 | 1.525 | 0.280 | 8.23 |
| 61080 | 28 | 7 | 1.560 | 0.750 | 5.79 |
| 72845 | 28 | 8 | 1.580 | 0.450 | 5.86 |
| 82420 | 28 | 9 | 1.625 | 1.750 | 4.53 |
| 61215 | 28 | 10 | 1.630 | 1.290 | 4.54 |
| 82495 | 28 | 11 | 1.655 | 0.450 | 5.35 |
| 67620 | 28 | 12 | 1.660 | 0.390 | 9.14 |
| 69755 | 28 | 13 | 1.660 | 1.175 | 3.60 |
| 79920 | 28 | 14 | 1.700 | 0.350 | 8.38 |
| 80220 | 28 | 15 | 1.700 | 0.650 | 5.07 |
| 80190 | 28 | 16 | 1.710 | 0.101 | 16.96 |
| 65060 | 28 | 17 | 1.750 | 0.250 | 6.65 |
| 60365 | 28 | 18 | 1.750 | 1.750 | 4.51 |
| 79955 | 28 | 19 | 1.771 | 0.246 | 7.59 |
| 79930 | 28 | 20 | 1.800 | 0.275 | 9.51 |
| 80225 | 29 | 1 | 1.800 | 0.650 | 5.03 |
| 75925 | 29 | 2 | 1.820 | 0.600 | 5.97 |
| 64660 | 29 | 3 | 1.843 | 0.800 | 5.73 |
| 64635 | 29 | 4 | 1.846 | 0.643 | 4.67 |
| 82360 | 29 | 5 | 1.850 | 0.750 | 3.62 |
| 76550 | 29 | 6 | 1.860 | 1.250 | 4.36 |
| 60595 | 29 | 7 | 1.875 | 1.000 | 4.30 |
| 81295 | 29 | 8 | 1.900 | 0.400 | 7.12 |
| 80060 | 29 | 9 | 1.900 | 0.650 | 4.96 |
| 62745 | 29 | 10 | 1.920 | 1.250 | 3.88 |
| 62815 | 29 | 11 | 1.935 | 1.312 | 3.91 |
| 82435 | 29 | 12 | 1.950 | 0.500 | 4.06 |
| 82715 | 29 | 13 | 1.969 | 0.551 | 5.28 |
| 82460 | 29 | 14 | 2.000 | 0.385 | 6.64 |
| 72930 | 29 | 15 | 2.000 | 1.000 | 4.16 |
| 82635 | 29 | 16 | 2.016 | 0.413 | 7.03 |
| 62935 | 29 | 17 | 2.032 | 0.800 | 5.70 |
| 65250 | 29 | 18 | 2.050 | 0.750 | 4.53 |
| 63120 | 30 | 1 | 2.063 | 1.020 | 3.46 |
| 74815 | 30 | 2 | 2.077 | 0.197 | 9.61 |
| 80825 | 30 | 3 | 2.099 | 1.750 | 3.16 |
| 80670 | 30 | 4 | 2.100 | 0.400 | 5.44 |
| 80120 | 30 | 5 | 2.100 | 0.650 | 4.31 |
| 82755 | 30 | 6 | 2.110 | 0.383 | 5.42 |
| 63135 | 30 | 7 | 2.125 | 1.750 | 2.82 |
| 81085 | 30 | 8 | 2.158 | 0.433 | 5.21 |
| 66730 | 30 | 9 | 2.200 | 0.320 | 8.38 |
| 74455 | 30 | 10 | 2.220 | 0.880 | 2.84 |
| 78830 | 30 | 11 | 2.233 | 0.630 | 3.17 |
| 79820 | 30 | 12 | 2.250 | 0.740 | 4.35 |
| 75625 | 30 | 13 | 2.250 | 0.750 | 3.67 |
| 64690 | 30 | 14 | 2.250 | 0.810 | 3.97 |
| 61460 | 30 | 15 | 2.250 | 1.250 | 3.96 |
| 80615 | 30 | 16 | 2.260 | 0.300 | 5.34 |
| 76670 | 30 | 17 | 2.260 | 0.770 | 3.46 |
| 60975 | 30 | 18 | 2.276 | 0.678 | 4.95 |
| 78735 | 30 | 19 | 2.280 | 0.950 | 3.26 |
| 81915 | 30 | 20 | 2.280 | 1.400 | 2.77 |
| 62500 | 31 | 1 | 2.310 | 1.500 | 3.04 |
| 78670 | 31 | 2 | 2.322 | 1.400 | 2.75 |
| 70685 | 31 | 3 | 2.360 | 0.270 | 8.60 |
| 70675 | 31 | 4 | 2.360 | 0.970 | 3.70 |
| 70690 | 31 | 5 | 2.360 | 1.430 | 3.15 |
| 66000 | 31 | 6 | 2.400 | 0.420 | 6.33 |
| 66385 | 31 | 7 | 2.400 | 0.515 | 6.47 |
| 82675 | 31 | 8 | 2.400 | 0.650 | 3.80 |
| 65795 | 31 | 9 | 2.400 | 0.720 | 4.32 |
| 79945 | 31 | 10 | 2.400 | 0.750 | 3.68 |
| 65550 | 31 | 11 | 2.400 | 0.920 | 4.06 |
| 78590 | 31 | 12 | 2.400 | 0.950 | 3.23 |
| 81895 | 31 | 13 | 2.400 | 0.950 | 3.24 |
| 81910 | 31 | 14 | 2.400 | 1.400 | 2.74 |
| 65490 | 31 | 15 | 2.440 | 1.200 | 3.32 |
| 79255 | 31 | 16 | 2.496 | 0.450 | 6.18 |
| 79430 | 31 | 17 | 2.500 | 0.520 | 3.98 |
| 78550 | 31 | 18 | 2.500 | 0.950 | 4.21 |
| 80325 | 32 | 1 | 2.500 | 1.400 | 3.48 |
| 60490 | 32 | 2 | 2.562 | 0.375 | 5.19 |
| 65035 | 32 | 3 | 2.562 | 0.500 | 5.16 |

# Shape Index

| Part # | Page # | Locator # | Width | Height | θn |
|---|---|---|---|---|---|
| 61555 | 32 | 4 | 2.562 | 0.850 | 5.07 |
| 75985 | 32 | 5 | 2.598 | 1.312 | 3.31 |
| 67835 | 32 | 6 | 2.600 | 0.950 | 4.45 |
| 61680 | 32 | 7 | 2.600 | 1.000 | 5.03 |
| 68145 | 32 | 8 | 2.634 | 0.285 | 5.65 |
| 81965 | 32 | 9 | 2.660 | 0.350 | 5.48 |
| 70945 | 32 | 10 | 2.675 | 0.750 | 3.59 |
| 72400 | 32 | 11 | 2.675 | 1.010 | 3.04 |
| 60955 | 32 | 12 | 2.682 | 0.400 | 5.87 |
| 62180 | 32 | 13 | 2.682 | 0.406 | 5.95 |
| 61895 | 32 | 14 | 2.800 | 1.250 | 2.94 |
| 62600 | 32 | 15 | 2.872 | 1.312 | 2.70 |
| 80630 | 32 | 16 | 2.900 | 1.312 | 2.71 |
| 66675 | 32 | 17 | 2.990 | 0.660 | 3.06 |
| 80655 | 32 | 18 | 2.990 | 0.676 | 3.12 |
| 74415 | 32 | 19 | 2.995 | 0.880 | 2.29 |
| 77170 | 32 | 20 | 3.000 | 0.250 | 6.60 |
| 81275 | 33 | 1 | 3.000 | 0.394 | 3.49 |
| 67260 | 33 | 2 | 3.000 | 0.450 | 5.33 |
| 78875 | 33 | 3 | 3.000 | 0.475 | 3.82 |
| 77870 | 33 | 4 | 3.000 | 0.625 | 4.35 |
| 64800 | 33 | 5 | 3.000 | 1.500 | 2.72 |
| 67655 | 33 | 6 | 3.040 | 1.200 | 2.21 |
| 77015 | 33 | 7 | 3.062 | 1.250 | 2.67 |
| 79975 | 33 | 8 | 3.062 | 1.312 | 2.70 |
| 61315 | 33 | 9 | 3.120 | 1.250 | 2.85 |
| 81940 | 33 | 10 | 3.190 | 2.000 | 1.92 |
| 60760 | 33 | 11 | 3.250 | 1.000 | 3.11 |
| 60765 | 33 | 13 | 3.250 | 1.500 | 2.35 |
| 80695 | 33 | 12 | 3.250 | 1.500 | 2.35 |
| 60770 | 33 | 15 | 3.250 | 2.000 | 2.23 |
| 62875 | 33 | 14 | 3.250 | 2.000 | 2.41 |
| 81850 | 33 | 16 | 3.386 | 0.900 | 3.08 |
| 81855 | 33 | 17 | 3.386 | 1.400 | 2.68 |
| 81525 | 33 | 18 | 3.450 | 0.875 | 2.31 |
| 67590 | 34 | 1 | 3.450 | 1.230 | 1.58 |
| 60250 | 34 | 2 | 3.450 | 1.290 | 2.43 |
| 73980 | 34 | 3 | 3.460 | 1.280 | 1.59 |
| 62200 | 34 | 4 | 3.500 | 0.850 | 2.80 |
| 72785 | 34 | 5 | 3.530 | 0.400 | 5.18 |
| 78580 | 34 | 6 | 3.600 | 0.225 | 5.36 |
| 75720 | 34 | 7 | 3.600 | 0.570 | 2.60 |
| 62650 | 34 | 8 | 3.650 | 0.399 | 3.66 |
| 64870 | 34 | 9 | 3.687 | 0.562 | 2.49 |
| 60485 | 34 | 10 | 3.687 | 1.250 | 2.56 |
| 82055 | 34 | 11 | 3.691 | 0.687 | 4.51 |
| 62350 | 34 | 12 | 3.693 | 0.687 | 4.49 |
| 79980 | 34 | 13 | 3.930 | 0.590 | 3.18 |
| 61585 | 34 | 14 | 4.000 | 0.300 | 3.47 |
| 60660 | 34 | 15 | 4.000 | 1.188 | 2.22 |
| 76620 | 34 | 16 | 4.000 | 1.250 | 2.06 |
| 63115 | 34 | 17 | 4.056 | 0.88 | 2.76 |
| 61290 | 34 | 18 | 4.125 | 1.000 | 3.11 |
| 61090 | 34 | 19 | 4.125 | 1.312 | 1.93 |
| 60095 | 34 | 20 | 4.125 | 1.750 | 1.90 |
| 78780 | 35 | 1 | 4.125 | 1.750 | 1.90 |
| 64855 | 35 | 2 | 4.150 | 0.750 | 3.35 |
| 72145 | 35 | 3 | 4.179 | 2.000 | 1.70 |
| 80350 | 35 | 4 | 4.220 | 1.200 | 1.35 |
| 74765 | 35 | 5 | 4.235 | 1.025 | 1.38 |
| 80675 | 35 | 6 | 4.254 | 0.575 | 3.35 |
| 60560 | 35 | 7 | 4.375 | 1.290 | 1.91 |
| 65330 | 35 | 8 | 4.500 | 0.710 | 2.66 |
| 61075 | 35 | 9 | 4.500 | 1.400 | 1.90 |
| 77915 | 35 | 10 | 4.500 | 1.920 | 1.67 |
| 77290 | 35 | 11 | 4.500 | 2.000 | 1.54 |
| 80645 | 35 | 12 | 4.500 | 2.020 | 1.23 |
| 70665 | 35 | 13 | 4.560 | 0.270 | 4.27 |
| 70680 | 35 | 14 | 4.560 | 0.472 | 3.07 |
| 70195 | 35 | 15 | 4.560 | 1.430 | 1.58 |
| 60585 | 35 | 16 | 4.562 | 0.750 | 2.15 |
| 70440 | 35 | 17 | 4.573 | 1.875 | 1.54 |
| 72085 | 35 | 18 | 4.600 | 0.570 | 2.20 |
| 77370 | 36 | 1 | 4.600 | 0.700 | 1.96 |
| 69945 | 36 | 2 | 4.600 | 0.920 | 1.78 |
| 74155 | 36 | 3 | 4.600 | 1.150 | 1.61 |
| 72090 | 36 | 4 | 4.600 | 1.395 | 1.25 |
| 80265 | 36 | 5 | 4.610 | 0.520 | 2.81 |
| 70970 | 36 | 6 | 4.650 | 2.110 | 1.38 |
| 64795 | 36 | 7 | 4.702 | 2.312 | 1.64 |
| 65350 | 36 | 8 | 4.750 | 0.500 | 3.50 |
| 79025 | 36 | 9 | 4.800 | 0.950 | 2.15 |
| 62890 | 36 | 10 | 4.800 | 1.340 | 2.14 |
| 62655 | 36 | 11 | 4.870 | 1.312 | 1.68 |
| 77175 | 36 | 12 | 4.900 | 1.062 | 1.55 |
| 80965 | 36 | 13 | 4.900 | 1.680 | 2.61 |
| 61745 | 36 | 14 | 4.990 | 1.260 | 2.06 |
| 62620 | 36 | 15 | 5.000 | 0.467 | 3.89 |
| 67895 | 36 | 16 | 5.000 | 0.490 | 2.38 |
| 80640 | 36 | 17 | 5.000 | 1.550 | 1.27 |
| 67490 | 36 | 18 | 5.000 | 1.750 | 1.57 |
| 78570 | 36 | 19 | 5.060 | 0.230 | 4.93 |
| 82705 | 36 | 20 | 5.118 | 0.955 | 2.12 |
| 82610 | 37 | 1 | 5.135 | 0.540 | 3.28 |
| 61980 | 37 | 2 | 5.180 | 1.350 | 1.60 |
| 63565 | 37 | 3 | 5.250 | 1.200 | 1.89 |
| 61085 | 37 | 4 | 5.375 | 1.312 | 1.52 |
| 77920 | 37 | 5 | 5.380 | 1.520 | 1.58 |
| 64315 | 37 | 6 | 5.500 | 2.000 | 1.25 |
| 82595 | 37 | 7 | 5.510 | 0.360 | 2.43 |
| 65325 | 37 | 8 | 5.560 | 0.700 | 3.21 |
| 60215 | 37 | 9 | 5.561 | 1.312 | 1.68 |
| 61790 | 37 | 10 | 5.750 | 0.687 | 3.00 |
| 76755 | 37 | 11 | 5.750 | 1.600 | 1.09 |
| 71170 | 37 | 12 | 5.750 | 2.750 | 1.44 |
| 71150 | 37 | 13 | 5.815 | 1.150 | 1.81 |
| 71350 | 37 | 14 | 5.860 | 2.000 | 1.19 |
| 71845 | 37 | 15 | 5.860 | 3.150 | 1.07 |
| 60230 | 37 | 16 | 5.886 | 1.250 | 1.77 |
| 64500 | 37 | 17 | 5.900 | 1.062 | 1.33 |
| 80710 | 37 | 18 | 6.000 | 0.285 | 2.74 |
| 62995 | 38 | 1 | 6.000 | 0.350 | 3.34 |
| 62440 | 38 | 2 | 6.000 | 1.000 | 1.76 |
| 68995 | 38 | 3 | 6.000 | 1.312 | 1.41 |
| 72385 | 38 | 4 | 6.000 | 1.600 | 1.13 |
| 74645 | 38 | 5 | 6.026 | 0.700 | 1.98 |
| 60140 | 38 | 6 | 6.0800 | 1.750 | 1.39 |
| 71145 | 38 | 7 | 6.0800 | 2.250 | 1.00 |
| 64225 | 38 | 8 | 6.120 | 2.000 | 1.64 |
| 66690 | 38 | 9 | 6.200 | 0.650 | 1.85 |
| 81480 | 38 | 10 | 6.300 | 1.310 | 1.30 |
| 64360 | 38 | 11 | 6.420 | 1.210 | 1.24 |
| 60340 | 38 | 12 | 6.437 | 1.312 | 1.28 |
| 75560 | 38 | 13 | 6.496 | 2.815 | 0.83 |
| 61070 | 38 | 14 | 6.500 | 1.600 | 1.30 |
| 69180 | 38 | 15 | 6.500 | 2.165 | 1.07 |
| 71395 | 38 | 16 | 6.624 | 1.281 | 1.21 |
| 69800 | 38 | 17 | 6.625 | 1.781 | 0.94 |
| 62155 | 38 | 18 | 6.646 | 1.312 | 1.26 |
| 62060 | 38 | 20 | 6.750 | 1.630 | 1.23 |
| 62285 | 38 | 19 | 6.750 | 1.630 | 1.23 |
| 76535 | 39 | 1 | 6.800 | 1.230 | 1.53 |
| 77555 | 39 | 2 | 6.800 | 2.120 | 0.91 |
| 81520 | 39 | 3 | 6.850 | 1.000 | 2.55 |
| 79190 | 39 | 4 | 6.890 | 0.984 | 1.85 |
| 61830 | 39 | 5 | 6.900 | 1.540 | 1.42 |
| 81055 | 39 | 6 | 7.000 | 0.465 | 2.18 |
| 82555 | 39 | 7 | 7.020 | 1.198 | 1.12 |
| 62510 | 39 | 8 | 7.062 | 1.062 | 1.60 |
| 62660 | 39 | 9 | 7.150 | 1.312 | 1.18 |
| 68855 | 39 | 10 | 7.201 | 0.460 | 1.51 |
| 68780 | 39 | 11 | 7.321 | 1.500 | 1.33 |
| 61915 | 39 | 12 | 7.340 | 0.875 | 1.48 |
| 65445 | 39 | 13 | 7.340 | 1.312 | 1.12 |
| 66880 | 39 | 14 | 7.340 | 1.330 | 1.18 |
| 62280 | 39 | 15 | 7.360 | 0.690 | 2.06 |
| 80815 | 39 | 16 | 7.434 | 0.875 | 1.50 |
| 63350 | 39 | 17 | 7.625 | 0.575 | 2.38 |
| 60910 | 39 | 18 | 7.688 | 0.630 | 2.58 |
| 82740 | 40 | 1 | 7.700 | 0.660 | 1.18 |
| 61880 | 40 | 2 | 7.720 | 1.350 | 1.13 |
| 81410 | 40 | 3 | 7.875 | 0.687 | 2.05 |
| 63745 | 40 | 4 | 7.875 | 1.281 | 1.13 |
| 63925 | 40 | 5 | 7.875 | 1.312 | 1.05 |
| 72480 | 40 | 6 | 8.000 | 0.680 | 2.33 |
| 71235 | 40 | 7 | 8.000 | 1.125 | 1.48 |
| 62805 | 40 | 8 | 8.034 | 0.575 | 2.28 |
| 80580 | 40 | 9 | 8.100 | 1.310 | 0.90 |
| 70400 | 40 | 10 | 8.320 | 2.000 | 1.22 |
| 60815 | 40 | 11 | 8.350 | 2.000 | 1.22 |
| 71390 | 40 | 12 | 8.500 | 1.400 | 1.20 |
| 80715 | 40 | 13 | 8.600 | 0.667 | 1.57 |
| 65515 | 40 | 14 | 8.656 | 1.462 | 1.18 |
| 80510 | 40 | 15 | 9.000 | 1.312 | 0.98 |
| 65440 | 40 | 16 | 9.000 | 1.800 | 0.87 |
| 65615 | 40 | 17 | 9.031 | 2.594 | 0.67 |
| 82265 | 40 | 18 | 9.310 | 1.060 | 1.22 |
| 77335 | 40 | 19 | 9.355 | 3.495 | 0.66 |
| 80575 | 40 | 20 | 9.380 | 1.310 | 0.90 |
| 66480 | 41 | 1 | 9.400 | 2.000 | 0.93 |
| 82590 | 41 | 2 | 9.429 | 1.420 | 0.65 |
| 71000 | 41 | 3 | 9.508 | 0.437 | 2.52 |
| 68295 | 41 | 4 | 9.730 | 0.565 | 1.23 |
| 76525 | 41 | 5 | 9.750 | 1.800 | 0.90 |
| 62725 | 41 | 6 | 9.750 | 2.280 | 0.72 |
| 62185 | 41 | 7 | 9.850 | 2.000 | 1.18 |
| 60520 | 41 | 8 | 9.875 | 1.312 | 0.90 |
| 73265 | 41 | 9 | 9.880 | 0.650 | 1.36 |
| 61780 | 41 | 10 | 9.884 | 0.575 | 1.89 |
| 77810 | 41 | 11 | 10.125 | 1.312 | 0.85 |
| 78715 | 41 | 12 | 10.156 | 1.876 | 0.69 |
| 65525 | 41 | 13 | 10.328 | 2.369 | 0.64 |
| 69695 | 41 | 14 | 10.433 | 1.615 | 0.98 |
| 81245 | 41 | 15 | 10.500 | 1.130 | 0.84 |
| 82375 | 41 | 16 | 10.500 | 1.170 | 1.21 |
| 62325 | 41 | 17 | 10.500 | 1.625 | 0.82 |
| 76125 | 41 | 18 | 10.695 | 1.625 | 0.86 |
| 61785 | 42 | 1 | 10.780 | 3.770 | 0.79 |
| 75890 | 42 | 2 | 10.820 | 1.750 | 0.74 |
| 65340 | 42 | 3 | 11.000 | 2.300 | 0.63 |
| 72355 | 42 | 4 | 11.220 | 2.400 | 0.54 |
| 80605 | 42 | 5 | 11.560 | 1.130 | 0.81 |
| 69200 | 42 | 6 | 11.750 | 2.875 | 0.56 |
| 80345 | 42 | 7 | 11.969 | 1.578 | 0.78 |
| 70165 | 42 | 8 | 12.000 | 1.780 | 0.61 |
| 81640 | 42 | 9 | 12.000 | 1.810 | 0.58 |
| 65535 | 42 | 10 | 12.203 | 2.885 | 0.60 |
| 61155 | 42 | 11 | 12.250 | 1.000 | 0.94 |
| 69960 | 42 | 12 | 12.600 | 2.321 | 0.55 |
| 72225 | 42 | 13 | 12.750 | 1.350 | 0.69 |
| 62645 | 42 | 14 | 13.680 | 1.000 | 0.97 |
| 82445 | 42 | 15 | 13.800 | 2.885 | 0.54 |
| 71770 | 42 | 16 | 14.500 | 1.062 | 0.75 |
| 72545 | 42 | 17 | 14.750 | 2.750 | 0.48 |
| 63340 | 42 | 18 | 17.000 | 1.312 | 0.49 |
| 62335 | 42 | 19 | 19.000 | 1.312 | 0.44 |

## FLATBACK W/GAPS

| | | | | | |
|---|---|---|---|---|---|
| 72695 | 42 | 20 | 1.055 | 0.417 | 11.30 |
| 62365 | 43 | 1 | 1.150 | 0.460 | 11.01 |
| 80725 | 43 | 2 | 1.464 | 0.296 | 10.55 |
| 60185 | 43 | 3 | 1.500 | 0.350 | 13.76 |
| 80505 | 43 | 4 | 1.700 | 0.500 | 8.74 |
| 60950 | 43 | 5 | 1.750 | 0.500 | 8.70 |
| 61770 | 43 | 6 | 1.750 | 0.710 | 6.13 |
| 82580 | 43 | 7 | 1.850 | 0.640 | 6.22 |
| 80170 | 43 | 8 | 1.938 | 0.935 | 6.92 |
| 61420 | 43 | 9 | 2.000 | 0.375 | 6.83 |
| 62355 | 43 | 10 | 2.075 | 1.315 | 5.10 |
| 66435 | 43 | 11 | 2.100 | 0.540 | 4.78 |
| 62215 | 43 | 12 | 2.120 | 1.500 | 4.09 |
| 81920 | 43 | 13 | 2.280 | 0.450 | 4.75 |
| 78450 | 43 | 14 | 2.360 | 0.970 | 4.32 |
| 62220 | 43 | 15 | 2.375 | 0.935 | 4.94 |
| 81905 | 43 | 16 | 2.400 | 0.450 | 4.71 |
| 60985 | 43 | 17 | 2.440 | 0.720 | 5.99 |



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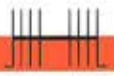
| Part # | Page # | Locator # | Width | Height | θn |
|---|---|---|---|---|---|
| 72425 | 43 | 18 | 2.480 | 0.380 | 5.52 |
| 61065 | 44 | 1 | 2.660 | 1.281 | 3.78 |
| 60865 | 44 | 2 | 2.687 | 0.687 | 5.71 |
| 61390 | 44 | 3 | 2.800 | 1.330 | 3.27 |
| 61040 | 44 | 4 | 2.810 | 0.935 | 3.86 |
| 60625 | 44 | 5 | 3.088 | 1.700 | 3.12 |
| 61455 | 44 | 7 | 3.140 | 1.312 | 3.04 |
| 64835 | 44 | 8 | 3.140 | 1.312 | 3.04 |
| 81060 | 44 | 6 | 3.140 | 1.312 | 2.90 |
| 61035 | 44 | 9 | 3.250 | 0.935 | 3.19 |
| 61060 | 44 | 10 | 3.270 | 1.281 | 2.84 |
| 61055 | 44 | 11 | 3.436 | 1.400 | 2.73 |
| 65695 | 44 | 12 | 3.500 | 1.620 | 3.03 |
| 60555 | 44 | 13 | 3.622 | 0.400 | 5.61 |
| 60110 | 44 | 14 | 3.687 | 0.562 | 4.79 |
| 60725 | 44 | 15 | 3.688 | 0.562 | 3.14 |
| 60935 | 44 | 16 | 3.750 | 1.000 | 2.68 |
| 60570 | 44 | 17 | 3.750 | 1.335 | 2.62 |
| 60850 | 44 | 18 | 3.812 | 0.750 | 4.80 |
| 82200 | 44 | 19 | 3.831 | 1.000 | 2.57 |
| 63725 | 44 | 20 | 3.880 | 0.700 | 5.31 |
| 61850 | 45 | 1 | 3.882 | 1.312 | 2.19 |
| 60630 | 45 | 2 | 3.900 | 1.281 | 2.29 |
| 61050 | 45 | 3 | 3.920 | 1.688 | 2.87 |
| 60395 | 45 | 4 | 3.937 | 0.750 | 3.54 |
| 76625 | 45 | 5 | 3.960 | 0.565 | 3.21 |
| 60665 | 45 | 7 | 4.000 | 0.687 | 3.48 |
| 61445 | 45 | 6 | 4.000 | 0.687 | 4.13 |
| 71115 | 45 | 8 | 4.000 | 0.700 | 2.09 |
| 61030 | 45 | 9 | 4.000 | 1.000 | 2.90 |
| 62475 | 45 | 10 | 4.000 | 1.250 | 2.46 |
| 82350 | 45 | 11 | 4.000 | 1.250 | 2.52 |
| 60905 | 45 | 12 | 4.000 | 1.400 | 2.22 |
| 63275 | 45 | 13 | 4.140 | 1.400 | 2.21 |
| 63060 | 45 | 14 | 4.436 | 1.375 | 2.54 |
| 60805 | 45 | 15 | 4.500 | 1.000 | 2.53 |
| 60350 | 45 | 16 | 4.500 | 1.400 | 2.17 |
| 67870 | 45 | 17 | 4.500 | 1.580 | 3.37 |
| 65990 | 45 | 18 | 4.600 | 0.720 | 2.24 |
| 65555 | 46 | 1 | 4.600 | 0.920 | 2.08 |
| 74365 | 46 | 2 | 4.650 | 1.288 | 1.57 |
| 60840 | 46 | 4 | 4.812 | 1.312 | 2.12 |
| 66635 | 46 | 3 | 4.812 | 1.312 | 2.49 |
| 78950 | 46 | 5 | 5.000 | 1.500 | 1.76 |
| 68830 | 46 | 6 | 5.120 | 0.710 | 2.52 |
| 60845 | 46 | 7 | 5.312 | 0.875 | 3.58 |
| 81760 | 46 | 8 | 5.600 | 1.035 | 2.02 |
| 62460 | 46 | 9 | 5.640 | 1.000 | 2.25 |
| 62410 | 46 | 10 | 5.640 | 2.000 | 1.38 |
| 81880 | 46 | 11 | 5.859 | 1.347 | 1.03 |
| 60970 | 46 | 12 | 5.886 | 0.815 | 2.77 |
| 75700 | 46 | 13 | 5.900 | 1.337 | 1.56 |
| 60440 | 46 | 14 | 6.000 | 1.187 | 2.18 |
| 61690 | 46 | 15 | 6.100 | 1.600 | 1.64 |
| 60900 | 46 | 18 | 6.500 | 1.600 | 1.51 |
| 61475 | 46 | 17 | 6.500 | 1.600 | 1.51 |
| 61715 | 46 | 16 | 6.500 | 1.600 | 1.62 |
| 61230 | 46 | 19 | 6.750 | 0.734 | 2.11 |
| 60995 | 46 | 20 | 6.750 | 1.185 | 1.50 |
| 61710 | 47 | 1 | 6.750 | 1.210 | 1.50 |
| 79455 | 47 | 2 | 6.800 | 1.402 | 1.21 |
| 61340 | 47 | 3 | 7.000 | 1.250 | 1.61 |
| 62495 | 47 | 4 | 8.500 | 1.500 | 1.13 |
| 70455 | 47 | 5 | 8.910 | 0.530 | 2.24 |
| 61665 | 47 | 6 | 9.500 | 1.218 | 1.53 |
| 62030 | 47 | 7 | 9.870 | 1.310 | 1.05 |

## DOUBLE SIDED



| | | | | | |
|---|---|---|---|---|---|
| 60450 | 47 | 8 | 3.350 | 0.906 | 2.78 |
| 60455 | 47 | 9 | 3.359 | 2.000 | 2.03 |
| 61140 | 47 | 10 | 3.600 | 1.125 | 2.76 |
| 60500 | 47 | 11 | 3.937 | 1.875 | 2.05 |
| 60645 | 47 | 12 | 4.000 | 1.250 | 2.28 |
| 64245 | 47 | 13 | 4.000 | 1.281 | 2.13 |
| 60355 | 47 | 14 | 4.000 | 2.060 | 2.31 |
| 60830 | 47 | 15 | 4.000 | 2.250 | 1.96 |
| 60755 | 47 | 16 | 4.000 | 2.625 | 1.51 |
| 80400 | 47 | 17 | 4.500 | 1.032 | 3.13 |
| 60835 | 47 | 18 | 4.500 | 2.500 | 1.54 |
| 60280 | 48 | 1 | 4.625 | 1.500 | 1.99 |
| 60050 | 48 | 3 | 4.750 | 1.250 | 2.28 |
| 60245 | 48 | 2 | 4.750 | 1.250 | 2.11 |
| 60065 | 48 | 4 | 4.750 | 1.875 | 1.98 |
| 79075 | 48 | 5 | 4.750 | 2.000 | 1.73 |
| 60055 | 48 | 8 | 4.750 | 2.625 | 1.45 |
| 60780 | 48 | 7 | 4.750 | 2.625 | 1.61 |
| 61760 | 48 | 6 | 4.750 | 2.625 | 1.81 |
| 67075 | 48 | 9 | 4.750 | 2.625 | 1.56 |
| 62310 | 48 | 10 | 4.760 | 2.500 | 1.55 |
| 63140 | 48 | 11 | 4.770 | 2.000 | 1.71 |
| 60565 | 48 | 12 | 4.812 | 2.468 | 1.30 |
| 64375 | 48 | 13 | 5.120 | 1.250 | 1.71 |
| 66340 | 48 | 14 | 7.220 | 0.960 | 1.47 |
| 60410 | 48 | 15 | 7.500 | 1.375 | 1.51 |
| 62160 | 48 | 16 | 7.990 | 1.060 | 1.01 |
| 76960 | 48 | 17 | 9.393 | 0.892 | 1.24 |
| 69545 | 48 | 18 | 9.870 | 2.320 | 0.51 |

## MAX CLIP

| | | | | | |
|---|---|---|---|---|---|
| 78065 | 48 | 19 | 0.764 | 1.102 | 6.93 |
| 78265 | 49 | 2 | 0.866 | 1.122 | 8.72 |
| 78240 | 48 | 20 | 0.866 | 1.378 | 5.51 |
| 78245 | 49 | 5 | 1.062 | 2.362 | 2.97 |
| 78255 | 49 | 1 | 1.063 | 1.063 | 11.48 |
| 78080 | 49 | 7 | 1.063 | 2.362 | 2.94 |
| 78060 | 49 | 3 | 1.181 | 1.772 | 4.17 |
| 78020 | 49 | 4 | 1.181 | 1.850 | 4.72 |
| 78220 | 49 | 9 | 1.181 | 2.362 | 3.65 |
| 78010 | 49 | 10 | 1.339 | 2.953 | 1.89 |
| 78075 | 49 | 8 | 1.495 | 2.126 | 3.03 |
| 78070 | 49 | 11 | 1.575 | 2.953 | 2.25 |
| 79360 | 49 | 6 | 1.181 | 2.204 | 3.98 |
| 78345 | 49 | 12 | 2.677 | 1.535 | 2.63 |
| 78030 | 49 | 13 | 2.895 | 2.362 | 1.76 |

## T'S W FINS

| | | | | | |
|---|---|---|---|---|---|
| 78770 | 50 | 3 | 1.322 | 3.300 | 4.16 |
| 68255 | 49 | 14 | 1.000 | 1.440 | 7.13 |
| 64285 | 49 | 15 | 1.750 | 1.600 | 5.08 |
| 63265 | 50 | 1 | 1.450 | 2.000 | 5.17 |
| 63005 | 49 | 16 | 2.100 | 1.250 | 3.93 |
| 62480 | 50 | 2 | 2.215 | 2.620 | 3.04 |
| 63010 | 49 | 17 | 2.300 | 1.250 | 3.73 |
| 61150 | 49 | 18 | 1.250 | 2.500 | 4.35 |
| 72185 | 50 | 4 | 2.500 | 3.500 | 1.52 |
| 63250 | 50 | 5 | 4.120 | 2.900 | 2.01 |

## RAIL

| | | | | | |
|---|---|---|---|---|---|
| 64300 | 50 | 8 | 1.880 | 0.500 | 9.05 |
| 63380 | 50 | 6 | 1.400 | 0.900 | 9.19 |
| 66330 | 50 | 7 | 1.550 | 1.150 | 7.65 |
| 61590 | 50 | 9 | 1.830 | 0.562 | 9.37 |
| 61325 | 50 | 10 | 2.260 | 1.380 | 4.96 |
| 63215 | 50 | 11 | 2.500 | 1.000 | 6.00 |
| 65295 | 50 | 12 | 2.600 | 0.690 | 6.40 |
| 61875 | 50 | 13 | 2.750 | 1.500 | 4.25 |
| 61485 | 50 | 14 | 4.543 | 1.220 | 2.58 |
| 61285 | 50 | 15 | 4.562 | 0.500 | 3.31 |

| Part # | Page # | Locator # | Width | Height | θn |
|---|---|---|---|---|---|

## MISCELLANEOUS

| | | | | | |
|---|---|---|---|---|---|
| 60525 | 52 | 20 | 1.650 | 1.200 | 5.85 |
| 61435 | 53 | 1 | 1.750 | 1.800 | 3.95 |
| 60180 | 53 | 3 | 1.750 | 2.250 | 2.94 |
| 78610 | 53 | 2 | 1.750 | 2.250 | 2.91 |
| 60070 | 52 | 3 | 2.000 | 0.562 | 6.96 |
| 65930 | 53 | 16 | 2.000 | 2.000 | 2.96 |
| 61960 | 52 | 19 | 2.000 | 2.120 | 2.00 |
| 61775 | 53 | 4 | 2.150 | 2.650 | 1.99 |
| 61820 | 53 | 15 | 2.280 | 3.260 | 1.94 |
| 67360 | 53 | 6 | 2.322 | 2.250 | 3.59 |
| 81255 | 53 | 7 | 2.800 | 2.250 | 1.72 |
| 60150 | 52 | 4 | 3.960 | 1.600 | 2.46 |
| 62290 | 50 | 16 | 4.000 | 1.750 | 2.20 |
| 62720 | 52 | 5 | 4.000 | 1.900 | 1.88 |
| 60255 | 52 | 7 | 4.000 | 4.000 | 1.09 |
| 61270 | 52 | 8 | 4.000 | 4.000 | 1.13 |
| 60080 | 52 | 6 | 4.125 | 1.000 | 2.91 |
| 61175 | 52 | 9 | 4.250 | 4.300 | 1.25 |
| 69620 | 53 | 8 | 4.702 | 3.312 | 1.50 |
| 60060 | 52 | 12 | 4.750 | 4.500 | 0.98 |
| 60105 | 52 | 11 | 4.750 | 4.500 | 1.02 |
| 60650 | 52 | 10 | 4.751 | 3.000 | 1.14 |
| 62905 | 51 | 15 | 4.921 | 5.315 | 0.77 |
| 66975 | 51 | 16 | 4.921 | 5.330 | 0.69 |
| 77495 | 50 | 17 | 5.000 | 1.155 | 2.20 |
| 61640 | 50 | 18 | 5.000 | 2.000 | 1.42 |
| 60540 | 51 | 1 | 5.000 | 2.250 | 1.24 |
| 61965 | 50 | 20 | 5.000 | 2.250 | 1.23 |
| 62190 | 51 | 2 | 5.000 | 2.250 | 1.42 |
| 67170 | 50 | 19 | 5.000 | 2.250 | 1.29 |
| 68360 | 51 | 3 | 5.000 | 2.500 | 1.28 |
| 60260 | 52 | 13 | 5.000 | 5.000 | 0.84 |
| 64160 | 52 | 14 | 5.250 | 3.159 | 1.69 |
| 62375 | 51 | 17 | 4.921 | 5.374 | 0.76 |
| 60925 | 53 | 9 | 5.625 | 1.875 | 2.31 |
| 62780 | 51 | 4 | 5.906 | 2.411 | 0.96 |
| 74970 | 51 | 5 | 6.140 | 1.950 | 1.24 |
| 60730 | 51 | 6 | 6.250 | 2.000 | 1.37 |
| 61310 | 51 | 7 | 6.250 | 2.000 | 1.37 |
| 60265 | 52 | 15 | 6.250 | 6.250 | 0.67 |
| 79240 | 52 | 16 | 6.250 | 6.250 | 0.65 |
| 61350 | 53 | 12 | 6.375 | 2.862 | 1.19 |
| 62100 | 51 | 18 | 6.000 | 6.875 | 0.47 |
| 81955 | 51 | 8 | 7.000 | 3.000 | 0.94 |
| 60655 | 51 | 10 | 7.000 | 3.125 | 0.85 |
| 61570 | 51 | 9 | 7.000 | 3.125 | 0.81 |
| 64730 | 52 | 1 | 7.000 | 3.450 | 0.75 |
| 63880 | 52 | 2 | 7.500 | 2.850 | 0.78 |
| 63885 | 51 | 11 | 7.500 | 2.850 | 0.70 |
| 63155 | 53 | 10 | 7.578 | 3.125 | 0.97 |
| 81655 | 51 | 12 | 7.870 | 2.850 | 0.70 |
| 65130 | 53 | 11 | 8.080 | 4.440 | 1.06 |
| 61015 | 52 | 17 | 9.250 | 6.750 | 0.60 |
| 68020 | 53 | 13 | 9.420 | 2.870 | 1.37 |
| 61540 | 51 | 13 | 9.800 | 2.900 | 0.65 |
| 81985 | 51 | 14 | 13.000 | 4.040 | 0.46 |
| 61925 | 53 | 17 | 2.350 | 2.350 | 3.30 |
| 62165 | 52 | 18 | 2.200 | 1.750 | 3.40 |
| 73110 | 53 | 18 | 7.480 | 5.280 | 0.50 |
| 62675 | 53 | 14 | 1.832 | 0.770 | 5.80 |
| 66470 | 53 | 5 | 1.700 | 2.430 | 3.00 |

## STRUCTURAL

Page 54

## How to Order Extrusion Profiles

### General Information:

Extrusions are available in standard bar lengths which are normally 8 foot long sections, but length may vary for some shapes.
Extrusions are unfinished and may be ordered with a black anodize or chromate finish when purchased cut to size. The standard tolerance of all cut to length extrusions is ± 0.015 inches (± 0.38mm).

### Creating an Extrusion Part Number

To order most Aavid Thermalloy extrusions in bar form or cut to size, you must construct a 12 digit part number.
For custom fabricated, Aavid Thermalloy will use the customer drawing number and revision level as the part number.

**65605 X X XXXXX**

**Custom cut length**
0 0 0 0 0 = For cut length options 1 and 2 use 5 zeros.
*Indicate length in inches to three decimal places; if the part is less than 10 inches, the first of these 5 digits (the 7th of the 12 digit series) would be a zero (0). See example below.*

**Finish**
F = Mill as extruded finish. Used for bar length ordering.
U = Unfinished / Wash*
B = Black anodize
C = Gold Chromate

**Cutting options**
1 = Full stick length—sold by the foot (normally 8 feet).
2 = Half stick length—sold by the foot (small cut fee).
3 = Cut to custom length specified using digits 8–12. Sold by the piece. *See example below.*

**Extrusion profile base part number**

### Examples

If you wanted to simply order extrusion 62335 in standard bar form, the part number would be: 623351F00000. The unit price would be sold by the foot.

If you wanted extrusion 60520 cut to a length of 6.500" and black anodized, the part number would be: 605203B06500. The unit price would be by the piece.

If you wanted extrusion 61155 cut to a length of 14.725" and a wash finish, the part number would be: 611553U14725. The unit price would be by the piece.

*For unfinished extrusions with cut lengths other than half bar, the finish designation is a U.

### Part Class (Popularity Code)

Based on current popularity, the part class gives an indication of how likely a part is to be in stock. We have labeled all class A extrusions in this catalog. Look for the class A designation above the part numbers in the profile pages. Please visit **www.aavidthermalloy.com** for stock and classification details.

**Class A**
Popular extrusion used by multiple customers. Safety stock is set up on Aavid Thermalloy's system to try and keep some inventory on hand at all times (unless depleted by sudden demand). Re-order points are set up so that we normally have a flow of material within short lead times. Class A extrusions are noted in this catalog above the part number.

**Class B**
Moderately popular extrusion used by multiple customers. Strong likelihood of some material being available from stock or on backorder. When inventory is depleted we will re-order upon demand with minimal lead times and NO set up charges.

**Class C**
Low demand / low usage extrusion with few / one customer demand. About a 35% chance of material in stock at time of order. If material is not in stock at time of order, a set up charge will apply. Normal minimum run is generally 500 pounds for less than 7" circle size, 1,000+ pounds for greater than 7" circle size. Contact your sales associate or visit **www.aavidthermalloy.com** for current inventory status.



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## How to calculate aluminum extrusion weight per unit length

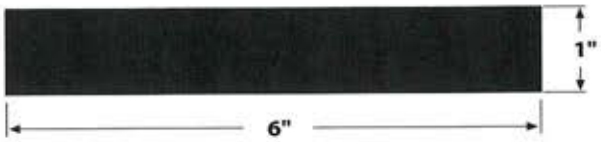
**To calculate the approximate weight per foot, the formula is as follows:**

Cross-section area of the part (in square inches) times the density of aluminum (0.097 lbs/in³) times 12 inches/foot

To calculate the approximate metric weight per meter, the formula is as follows:
Cross section of the part (in square meters) times the density of aluminum (2,700 kg/m³).

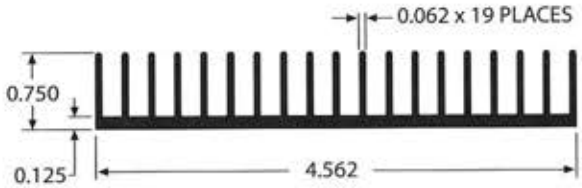
As more material is pushed through the extrusion die and there is wear on the die, the weight per foot will increase slightly. This method for calculating weight is approximate only. Actual weight needs to be determined after the extrusion is pushed.

Example:




If the bar stock above is 6 inches wide by 1 inch thick, weight per foot would be calculated as follows:
6 inches wide x 1in tall x 0.097 lb/in³ (density of aluminum) x 12 in/ft = 6.984 lb/ft

Example:




For the finned extrusion above, 60585, you have to make a couple of calculations to determine the weight; you need to calculate the base and fins separately.

**Base:**
4.562 in wide x 0.125 in thick x 0.097 lb/in³ (density of aluminum) x 12 in/ft = 0.664 lb/ft

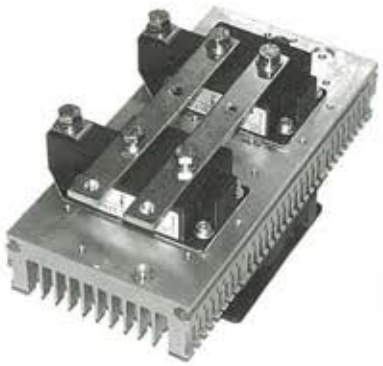
**Fins:**
19 fins x 0.625 in tall x 0.062 in thick x 0.097 lb/in³ (density of aluminum) x 12 in/ft = 0.857 lb/ ft

**Total Shape:**
0.664 lb/ft for base + 0.857 lb/ft for fins = 1.521 lb/ft

NOTE: To convert weight per foot in tables to metric weight per meter, multiply by 1.488.

## Aavid Thermalloy's Extrusion Design and Machining Capabilities

**Let Aavid Thermalloy assist you with product design or fabrication needs:**



- **Assistance with new product design**
  - New custom extrusions profiles to meet your mechanical and thermal requirements.
    - Let our engineers aid you in designing the most cost-effective solution for your application. We have thousands of shapes and sizes to choose from; if none suits your application, we can design a new shape that will satisfy all your needs.
- **Supply of full or cut to length standard shapes**
  - Raw extrusion sold by the foot in bar form (typically 8 foot lengths)
  - Extrusion cut to precision length and cut ends deburred
  - Simple wash or corrosion inhibiting finishes
- **Complete "Build to Print" fabricated assemblies**
  - Completely machined and finished to your drawing specifications. We have factories throughout North America, Europe and Asia with complete machining and finishing capabilities for aluminum extrusion assemblies. The majority of extruded product supplied is custom fabricated to customer specification.
    - Cutting to length with saws capable of holding precision tolerances on cut length and squareness
    - Large or small bed CNC machining for single or multiple axis which are capable of consistently holding .001"/" flatness as well as close tolerances for feature to feature dimensions.
    - Finishing / Plating
      - Anodize
      - Chromate / Irridite Conversion
      - Caustic Etch / Wash
      - Nickel or Tin Plate
      - Powder Coat
      - Paint
      - Silkscreen
      - Marking

Aavid Thermalloy can deliver all your extrusion needs regardless of how

- Large or small
- Simple or complex
- Conceptual or fully 3D CAD designed



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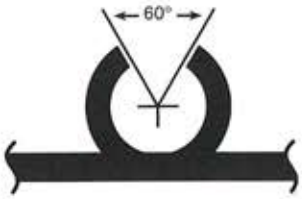
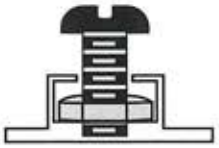
## Extrusion Design Suggestions

There are a number of design suggestions in the section below. Incorporating some/many of these design suggestions into your final product should allow you to come up with a more cost effective design.




- Incorporate a "screw boss" into the design to save the cost of drilling a hole. You can use a thread-forming / self-tapping screw during assembly. Recommended opening of 60 degrees for ease of extrudability.

- Add an "ID" mark such as a small depression or ridge to a non-exposed surface/area of the extrusion design. This could serve as a guide to where holes should go, allow people to tell one side from another during machining or assembly or to differentiate material between two or more suppliers of the same shape.

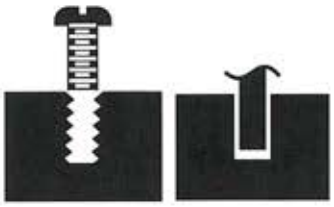


- Incorporate bolt head channels for bolt heads or nuts to facilitate assembly.

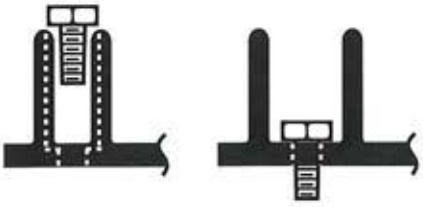
- Dove-tails, interlocking or snap-fit joints can be designed to mate pieces together. Try designing a 2-piece extrusion as it may reduce the cost of secondary fabrication or it may be less costly to manufacture in terms of material and/or tooling costs.

**Other criteria for the design and selection of a heat sink should include:**

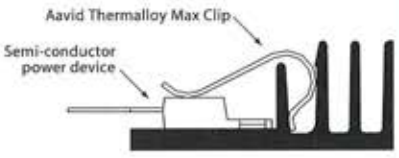
- Base plate thickness
- Ease of manufacturing
- Fin height, spacing, thickness
- Orientation of fins
- Type of material
- Weight



- To save machining time, incorporate PC board slots or serrated extruded slots for threaded hardware into the extrusion design.



- When locating a thru or tapped hole in the extrusion, make an effort to allow clearance on the other side or design such that the hole does not break through. If a thru or tapped holes falls into a fin or other feature on the opposite side, it makes it difficult to hold the integrity of the thread, the location of the hole and it also makes it difficult to remove burrs caused by the machining.

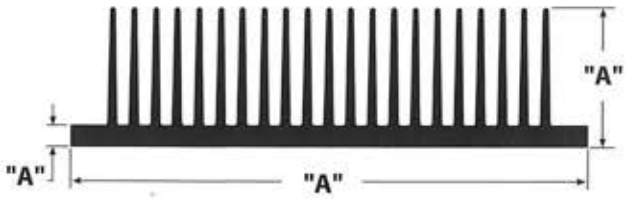



- Extruded rails for mounting clips saves assembly costs.


- When designing fins or other related features, attempt to keep the features as uniform in thickness as possible to allow for the extrusion to fill properly. Do not design heavy masses adjacent to smaller/narrow features. Adding a taper to a fin (thicker at base, thinner at tip) allows for easier extrudability.

## Dimensional Tolerances for Aluminum Extrusions

Aavid Thermalloy aluminum extrusions meet or exceed the standard commercial tolerances established by the Aluminum Association, Inc. The tolerance for an extrusion dimension is a function of the size of the particular dimension and the diameter of the extrusion die as shown in Table A. The illustration shown is a typical flatback extrusion. Tolerances for extreme ratios and some large extrusions tend to exceed the tolerances listed on this table and, conversely, some of the smaller (less than 7 inch diagonal) extrusions can be supplied with tighter tolerances.




When defining machined flatness, use the statement of 0.001"/in. to preclude steps allowable with other methods of defining flatness. See Table B on page 15.

Aavid Thermalloy standard machining tolerances are +/- 0.010 in. for lead-in dimensions from edge/datum line, and +/- 0.005 in. thereafter from feature to feature. Due to the nature of extruded aluminum, this may not coincide exactly with the generic tolerances listed on most drawing title blocks. In the majority of cases, however, it is sufficient. If you require tighter tolerance, we can accommodate this need with additional machining. Please contact our Applications Engineering Department with any questions or concerns regarding these tolerances.

Table C, on page 15, lists the typical properties of 6063-T5 Aluminum Extrusion Alloy.

### Table A: Typical Tolerances for Aluminum Extrusions

| | +/- Tolerance on "A" Diameter of Extrusion Die | |
|---|---|---|
| **Dimension A** | **Up to 10" (254 mm)** | **10" (254 mm)** |
| Less than 0.125 (3.0) | 0.006 (0.15) | 0.014 (0.36) |
| 0.125–0.249 (3.0–6.3) | 0.007 (0.18) | 0.015 (0.38) |
| 0.250–0.499 (6.4–12.6) | 0.008 (0.21) | 0.016 (0.41) |
| 0.500–0.749 (12.7–19.0) | 0.009 (0.23) | 0.017 (0.43) |
| 0.750–0.999 (19.1–25.3) | 0.01 (0.25) | 0.018 (0.46) |
| 1.000–1.499 (25.4–38.1) | 0.012 (0.30) | 0.019 (0.48) |
| 1.500–1.999 (38.2–50.7) | 0.014 (0.35) | 0.024 (0.61) |
| 2.000–3.999 (50.8–101.6) | 0.024 (0.61) | 0.034 (0.86) |
| 4.000–5.999 (101.7–152.4) | 0.034 (0.86) | 0.044 (1.12) |
| 6.000–7.999 (152.5–203.2) | 0.044 (1.12) | 0.054 (1.37) |
| 8.000–9.999 (203.3–254.0) | 0.054 (1.37) | 0.064 (1.63) |
| 10.000–11.999 (254.1–304.7) | | 0.074 (1.88) |
| 12.000–13.999 (304.8–355.5) | | 0.084 (2.13) |
| 14.000–15.999 (355.6–406.3) | | 0.094 (2.39) |
| 16.000–17.999 (406.4–457.1) | | 0.104 (2.64) |
| 18.000–19.999 (457.2–508.0) | | 0.114 (2.90) |



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## Dimensional Tolerances for Aluminum Extrusions

Flatness and surface roughness tolerances of extruded surfaces are also useful for heat sink applications. The following table lists typical ranges:

### Table B: Flatness and Surface Roughness Table

| Aluminum Surface | Flatness (in/in) | Surface Roughness (RMS) |
|---|---|---|
| As Extruded | 0.004 (up to 0.006 for wider shapes) | 250–125 |
| Timesaver Sanding (except for edge rounding) | 0.002/.003 | 64–32 |
| Machined | 0.001 | 64 or better |

### Table C:Typical Properties of 6063-T5 Aluminum Extrusion Alloy*

| | Value | |
|---|---|---|
| **Physical Property** | **English** | **Metric** |
| Average Coefficient of Thermal Expansion | 13.0 µin/in °F (68°–212 °F) | 23.4µm/m °C (20–100C) |
| Approximate Melting Range | 1140°F–1210°F | 610–654°C |
| Thermal Conductivity | 1450 BTU-in/ft²-hr-°F (@ 77°F) | 209 W/m-K (@ 25 °C) |
| Electrical Resistivity | 2.8 µOhm-cm (@ 68°F) | SAME |
| Ultimate Strength | 27,000 PSI | 186 MPa |
| Yield Strength | 21,000 PSI | 145 MPa |
| Elongation | 12% (1/16"(1.6mm) thick specimen) | SAME |
| Hardness Brinell No. | 60 (500 kg load, 10 mm ball) | SAME |
| Ultimate Sheer Strength | 17,000 PSI | 117 MPa |
| Fatigue Endurance Limit | 10,000 PSI (500 x $10^8$ cycles Moore Mach.) | 68.9 MPa |
| Modulus of Elasticity | 10 x$10^6$ PSI | 68.9 GPa |

* Source: Aluminum Standards and Data, 1988 Aluminum Association Inc.

### Typical Machining Tolerances

| | |
|---|---|
| Edge to datum | +/- 0.010 |
| Feature to feature | +/- 0.005 |

## Temperature Correction Considerations

Since natural convection heat sink efficiency degrades with decreasing sink-to-ambient temperature differential, a correction factor must be applied to the published data if an application requires a sink-to-ambient temperature rise of less than 75°C. The corrected thermal resistance is obtained by multiplying published °C/W/3-in data by the appropriate factor from the following table:

| Temperature Rise (ΔTsa) | Correction Factor |
|---|---|
| 75°C | 1.000 |
| 70°C | 1.017 |
| 60°C | 1.057 |
| 50°C | 1.106 |
| 40°C | 1.170 |
| 30°C | 1.257 |

For any extrusion profile in natural convection, the thermal resistance (°C/W) is more than 25% higher at ΔTsa = 30°C than at ΔTsa = 75°C.

## Length Correction Considerations

The published extrusion data shows natural convection performance for a three inch section with a centrally located point source heat load. However, thermal resistance does not change linearly with length. (The ends of a very long extrusion would be cooler than the center and therefore the transfer of heat to the surrounding air is less efficient.) It is therefore necessary to apply a correction factor to published data for extrusion lengths shorter or longer than three inches. The corrected thermal resistance for different lengths of extrusion is obtained by multiplying published °C/W/3-in data by the appropriate factor from the following table:

| Heat Sink Length | Correction Factor |
|---|---|
| 1.0 inch (25.4mm) | 1.80 |
| 2.0 inch (50.8mm) | 1.25 |
| 3.0 inch (76.2mm) | 1.00 |
| 4.0 inch (101.6mm) | 0.87 |
| 5.0 inch (127.0mm) | 0.78 |
| 6.0 inch (152.4mm) | 0.73 |
| 7.0 inch (177.8mm) | 0.67 |
| 8.0 inch (203.2mm) | 0.64 |
| 9.0 inch (228.6mm) | 0.60 |
| 10.0 inch (254.0mm) | 0.58 |
| 11.0 inch (279.4mm) | 0.56 |
| 12.0 inch (304.8mm) | 0.54 |
| 13.0 inch (330.2mm) | 0.52 |
| 14.0 inch (355.6mm) | 0.51 |
| 15.0 inch (381.0mm) | 0.50 |

This Extrusion Length Correction Factor Table can also be used to determine the length of extrusion required to obtain a desired thermal resistance. Divide the desired thermal resistance by the published thermal resistance for a three inch section to obtain the correction factor, which can be used to determine the correct length.



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## Performance Factor Table ( to approximate performance)

This table can be used to either determine the approximate perimeter to meet a thermal resistance goal or to determine the approximate thermal resistance of a custom shape.

**To calculate a needed perimeter**
Example: Heat sink with 0.5 °C/W requirement and 6.0" long in forced convection at 300ft/min:
Performance Factor divided by thermal resistance equals perimeter required

$$\frac{21.58}{0.5} = 43.16 \text{ inches of exposed perimeter is required}$$

**To calculate the thermal resistance**
Example: Heat sink with 55 inches of expanded perimeter, 3.0" long in natural convection and black anodized:
Performance Factor divided by perimeter equals thermal resistance

$$\frac{69.92}{55} = 1.27 \text{ °C/W (at 75°C rise and black anodized)}$$

| EXTRUSION LENGTH (in) | NATURAL CONVECTION (at 75 °C) | FORCED CONVECTION, AIR VELOCITY (ft/min) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 |
| 0.25 | 242.20 | 183.33 | 129.63 | 105.84 | 91.66 | 81.98 | 74.84 | 69.29 | 64.81 | 61.11 | 57.97 | 55.27 | 52.92 |
| 0.50 | 171.27 | 129.63 | 91.66 | 74.84 | 64.81 | 57.97 | 52.92 | 48.99 | 45.83 | 43.21 | 40.99 | 39.08 | 37.42 |
| 1.00 | 121.10 | 91.61 | 64.77 | 52.89 | 45.80 | 40.96 | 37.40 | 34.62 | 32.38 | 30.53 | 28.97 | 27.62 | 26.44 |
| 2.00 | 85.63 | 64.89 | 45.88 | 37.46 | 32.44 | 29.02 | 26.49 | 24.52 | 22.94 | 21.63 | 20.52 | 19.56 | 18.73 |
| 3.00 | 69.92 | 52.88 | 37.39 | 30.53 | 26.44 | 23.64 | 21.58 | 19.98 | 18.69 | 17.62 | 16.72 | 15.94 | 15.26 |
| 4.00 | 60.55 | 45.81 | 32.39 | 26.45 | 22.90 | 20.49 | 18.70 | 17.31 | 16.19 | 15.27 | 14.48 | 13.81 | 13.22 |
| 5.00 | 54.16 | 40.99 | 28.98 | 23.66 | 20.49 | 18.33 | 16.73 | 15.49 | 14.49 | 13.66 | 12.96 | 12.36 | 11.83 |
| 6.00 | 49.44 | 37.39 | 26.44 | 21.58 | 18.69 | 16.72 | 15.26 | 14.13 | 13.22 | 12.46 | 11.82 | 11.27 | 10.79 |
| 7.00 | 45.77 | 34.61 | 24.47 | 19.98 | 17.30 | 15.48 | 14.13 | 13.08 | 12.23 | 11.53 | 10.94 | 10.43 | 9.99 |
| 8.00 | 42.82 | 32.39 | 22.90 | 18.70 | 16.19 | 14.48 | 13.22 | 12.24 | 11.45 | 10.79 | 10.24 | 9.76 | 9.35 |
| 9.00 | 40.37 | 30.53 | 21.58 | 17.62 | 15.26 | 13.65 | 12.46 | 11.53 | 10.79 | 10.17 | 9.65 | 9.20 | 8.81 |
| 10.00 | 38.30 | 28.97 | 20.48 | 16.72 | 14.48 | 12.95 | 11.82 | 10.94 | 10.24 | 9.65 | 9.16 | 8.73 | 8.36 |
| 11.00 | 36.51 | 27.62 | 19.53 | 15.95 | 13.81 | 12.35 | 11.27 | 10.44 | 9.76 | 9.20 | 8.73 | 8.32 | 7.97 |
| 12.00 | 34.96 | 26.44 | 18.69 | 15.26 | 13.22 | 11.82 | 10.79 | 9.99 | 9.34 | 8.81 | 8.36 | 7.97 | 7.63 |
| 13.00 | 33.59 | 25.40 | 17.96 | 14.66 | 12.70 | 11.36 | 10.37 | 9.60 | 8.98 | 8.46 | 8.03 | 7.66 | 7.33 |
| 14.00 | 32.37 | 24.48 | 17.31 | 14.13 | 12.24 | 10.95 | 9.99 | 9.25 | 8.65 | 8.16 | 7.74 | 7.38 | 7.06 |

## Effects of Anodization on Radiational Heat Transfer

Heat sinks cooled by natural convection may benefit from an anodized finish, but the added cost of the finish may not be justified when the part is used in forced convection cooling.

Surface emissivity limits the amount of heat transfer due to radiational cooling. With 1.0 being perfect (black body), the emissivity of anodized aluminum is 0.85 and unfinished is 0.05.

Heat transfer due to radiation is proportional to the heat sink surface area exposed to its surroundings and to the temperature rise above ambient (in absolute °K) raised to the 4th power (T sink-ambient)$^4$. In natural convention on small heat sinks with open fins, radiational heat transfer may be as much as 25% of the total.

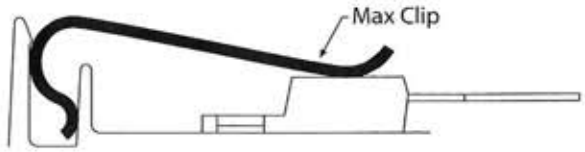
Relatively large extrusions and those used at low temperature rise, as in many high power applications, will only gain up to 10% by the addition of an anodized surface.

With forced ventilation (using a fan) convective heat transfer is about 4 times higher than in natural convection. This changes the proportion of heat transfer due to radiation. An anodized finish will only add 4 -8% to the overall cooling effect in forced air. This percentage again, depends on fin spacing and heat sink dimensions. The color of the anodized finish makes little impact on emissivity since most radiational heat loss occurs at wave lengths higher than visible light.

As a rule of thumb, if anodization is not required for aesthetic or corrosion protection, we recommend it only for small, open finned heat sinks in natural convection.

## Extrusion Accessories

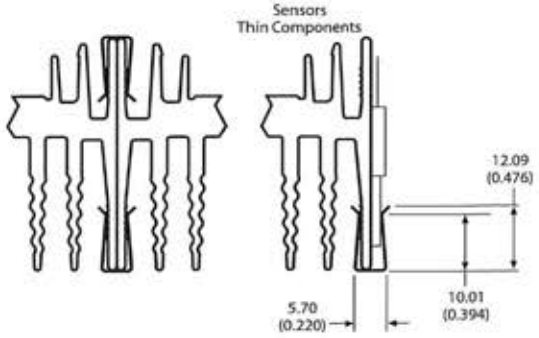
### Max Clips




The Max Clip System™ for discrete power semiconductors is a high performance, low cost thermal solution that eliminates mounting holes, screws, rivets and the thermal inefficiency associated with using loose hardware to attach components to a heat sink. It also simplifies electrical isolation. This quick, robust attachment method saves on labor and hardware cost while increasing performance and design flexibility. The Max Clip System™ features unique Max extrusion profiles that should be accompanied by Max Clips to complete the system.

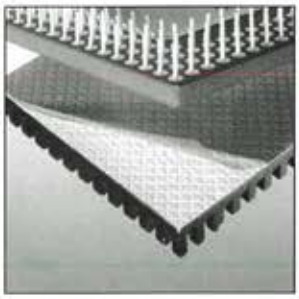
To learn more about the Max Clip System™ visit **www.aavidthermalloy** and use our Max Clip search tool or request a copy of out new Max Clip catalog.

### Clips




Clips can be used to attach semiconductors to conventional extrusions or plates. These clips provide the necessary force to maintain proper thermal performance.

### Double-Sided Tape

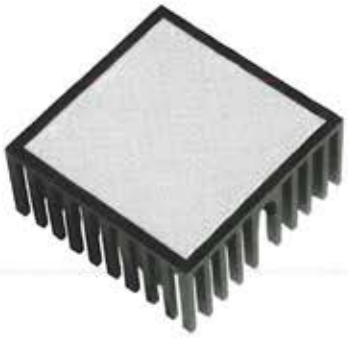


| Tape Option |
|---|
| T404 |
| T405 |
| T410 |
| T411 |
| T412 |

Double-sided thermal tapes adhere the heat sink to the device and offer good thermal characteristics. They are easy to apply, require no curing time, can be electrically conductive or isolating, and need no mechanical support to provide thermal or physical contact between the device and the heat sink. Aavid Thermalloy can apply one side to a heat sink.

Tapes are available in many standard sizes and can also be designed in just about any custom size that you need.

### Interface Material/Pads



**Kon Dux**
a factory applied cost-effective alternative to grease, it is thermally conductive

**In-Sil 8**
Thermally conductive and electrically isolating

Thermal interface pads are thicker than double-sided tapes, but can be provided without adhesive if removal of the pad may be necessary. Pads can also be either electrically conductive or isolating. Performance of the interface pad is dependent on maintaining correct, constant mounting pressure.

Pads are available in many standard sizes and can also be designed in just about any custom size you need.

For more information about extrusion accessories, contact your local Aavid Thermalloy sales office.



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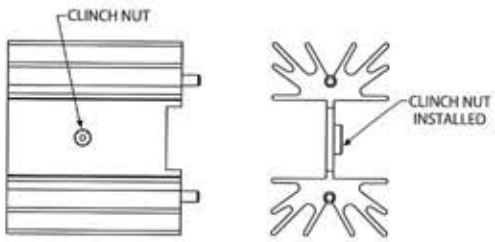
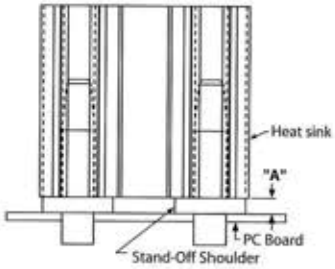
## Extrusion Accessories

### Clinch Nuts




Clinch nuts are threaded nuts that allow quick assembly of the device to the heat sink. A single screw mounts the device to the heat sink, reducing your hardware requirements. Clinch nuts are permanently pressed into the heatsink, and come in a variety of English and Metric threads. (CNE designates an English thread, and CNM designates a Metric thread.)

### Solderable Pins




Vertical mounted, extruded heat sinks are converted to wave solderable with the addition of solderable roll pins. Roll pins are available with stand-off shoulders in different heights for easier cleaning after wave soldering and electrical isolation from PBC traces.

### Grease & Epoxy

Aavid Thermalloy offers a wide variety of thermal greases and epoxies, available in many sizes.

**Popular Greases:**

- Sil-Free™ — A metal-oxide-filled, silicone-free synthetic grease
- Ther-O-Link™ — A silicone-based thermal compound
- Ultrastick™ — A unique phase-change thermal interface material, silicone-free
- Thermalcote™ — A silicone-based thermal grease
- Thermalcote II™ — A silicone-free synthetic grease

**Popular Epoxies:**

- Thermalbond™ — A thixotropic (smooth paste) thermally conductive epoxy
- Ther-O-Bond™ Adhesive — A thermally conductive, high strength epoxy adhesive

For more information about extrusion accessories, contact your local Aavid Thermalloy sales office.

# High Fin Density

## High Fin Density Extrusions

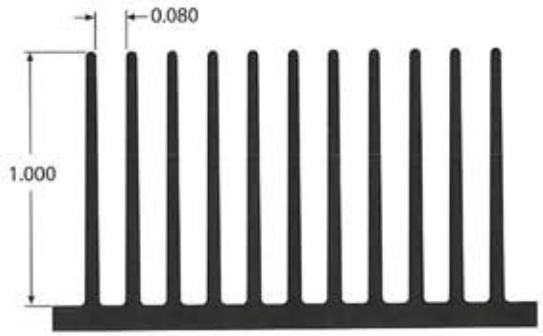
**What's the advantage of higher fin ratio extrusions?**

- Increased surface area (more fins in smaller volume) will result in improved heat dissipation in most designs.
- Design trends are heading toward more power dissipation in a limited space.
- Alternatives (forced fan cooling, bonded fins, fluid cooling) increase total unit cost. Extruded higher fin ratio heat sinks can simplify design, and reduce unit cost.

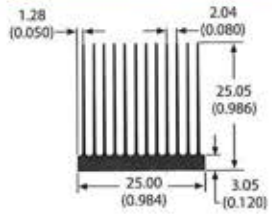
**Calculating Fin Ratios:**

$$\text{Fin ratio} = \frac{\text{Area of spacing between fins}}{(\text{gap between fins})^2}$$

In the figure to the right, the spacing between fins is 0.080. The fin height is 1.000 (not including the base). Spacing area is 0.08 sq. in. / divided by 0.0064 (0.080 x 0.080), therefore the fin ration = 12.5:1. If there is a radius on the fin tips, this radius would be subtracted from the fin height before calculating.

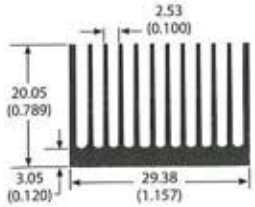



1



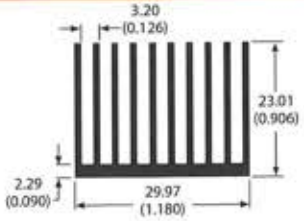

**83115** 0.4 lb/ft 3.07 °C/W/3in Per.=22.76

2



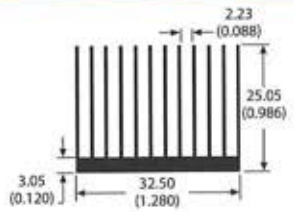

**83120** 0.4 lb/ft 3.80 °C/W/3in Per.=18.38

3



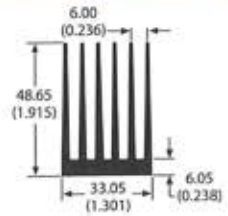

**82455** 0.6 lb/ft 3.72 °C/W/3in Per.=18.78

4




**83130** 0.5 lb/ft 2.99 °C/W/3in Per.=23.35

5




**83135** 1.4 lb/ft 3.08 °C/W/3in Per.=22.73

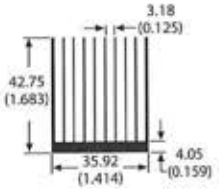
**KEY**

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

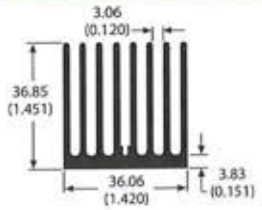
**Per.** = Perimeter in inches

6



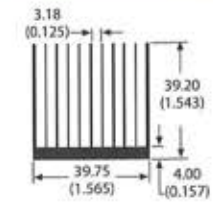

**83140** 0.8 lb/ft 2.10 °C/W/3in Per.=33.30

7




**83145** 1.2 lb/ft 2.96 °C/W/3in Per.=23.63

8




**83150** 0.8 lb/ft 2.08 °C/W/3in Per.=33.62



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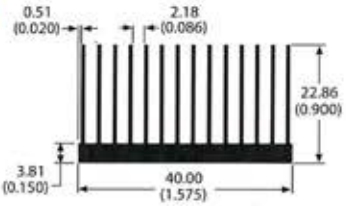
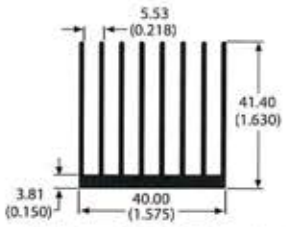
1



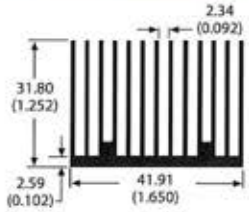

**82165** 0.6 lb/ft 2.88 °C/W/3in Per.=24.32

2



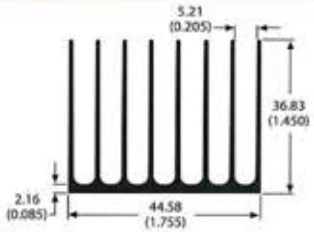

**81190** 1.0 lb/ft 2.60 °C/W/3in Per.=26.90

3



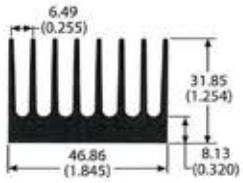

**83155** 1.0 lb/ft 2.11 °C/W/3in Per.=33.09

4



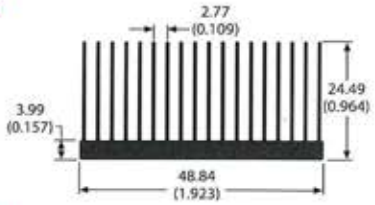

**74385** 0.8 lb/ft 2.82 °C/W/3in Per.=24.82

5



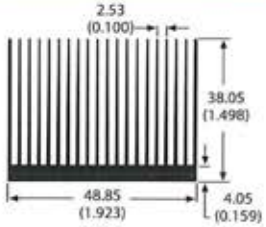

**80380** 1.4 lb/ft 3.81 °C/W/3in Per.=18.36

6



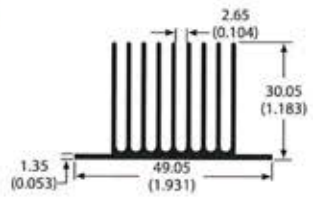

**79840** 0.9 lb/ft 2.14 °C/W/3in Per.=32.71

7



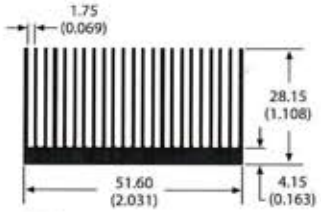

**83160** 1.3 lb/ft 1.22 °C/W/3in Per.=57.39

8




**83165** 0.7 lb/ft 2.95 °C/W/3in Per.=23.74

9




**83170** 1.0 lb/ft 1.47 °C/W/3in Per.=47.51

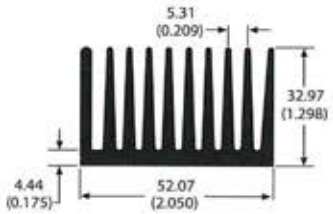
## Extrusion Information

**Gap** – This is the distance between two fins, formed by a tongue in the extrusion die. The gap should not be below 0.090", dependent on the ratio.

**Fin** – Fins can be extruded as straight, tapered, or have serrations. Fin thickness can be as low as 0.030". Thinner fins require more pressure while extruding.

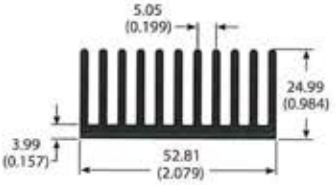
**Base Plate** – The base of the extrusion should not be thinner than the fins. The base thickness is typically not more then 5x the fin thickness.

10



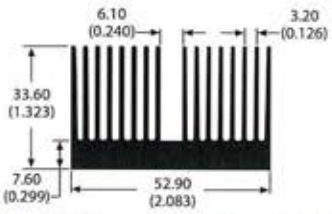

**73115** 1.8 lb/ft 2.72 °C/W/3in Per.=25.71

11



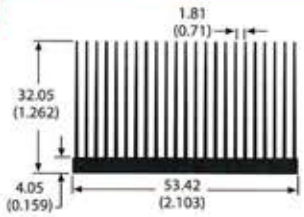

**74810** 1.3lb/ft 3.16 °C/W/3in Per.=22.15

12



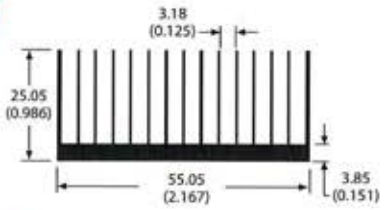

**83175** 1.5 lb/ft 1.89 °C/W/3in Per.=36.92

13



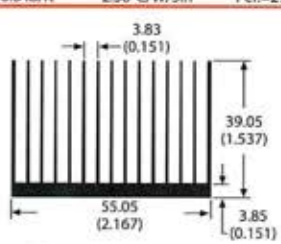

**83180** 1.3 lb/ft 1.27 °C/W/3in Per.=54.91

14



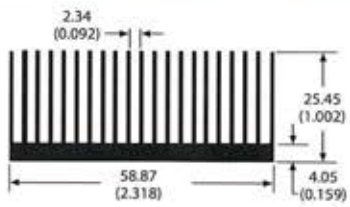

**83185** 0.8 lb/ft 2.38°C/W/3in Per.=29.39

15



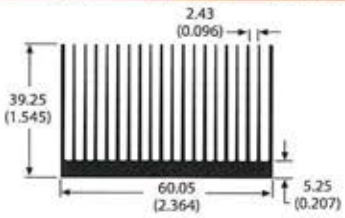

**83190** 1.1 lb/ft 1.52 °C/W/3in Per.=45.91

16



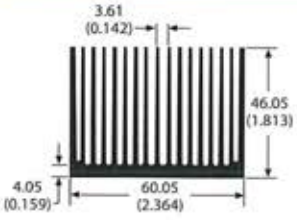

**83195** 0.9 lb/ft 1.91 °C/W/3in Per.=36.65

17




**83210** 1.7 lb/ft 1.20 °C/W/3in Per.=58.27

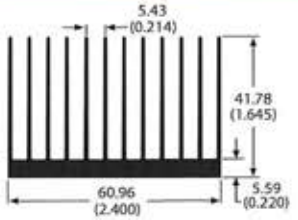
18




**83200** 2.0 lb/ft 1.15 °C/W/3in Per.=60.95

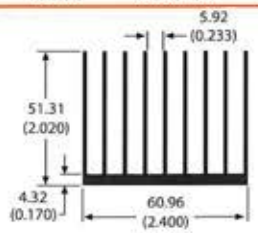
# High Fin Density

**1**



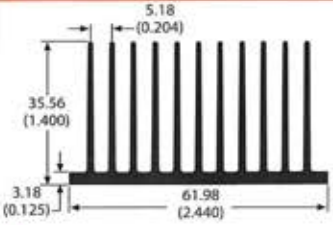

74785 1.5 lb/ft 1.79 °C/W/3in Per.=39.02

**2**



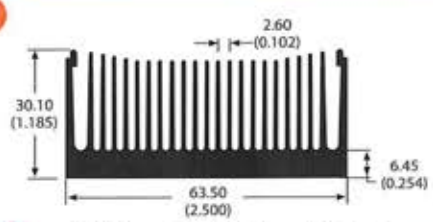

79010 1.6 lb/ft 1.82 °C/W/3in Per.=38.37

**3**




78585 1.3 lb/ft 2.16 °C/W/3in Per.=32.44

**4**

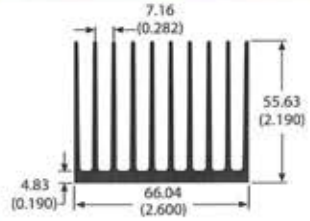



83215 1.7 lb/ft 1.44 °C/W/3in Per.=48.46

**5**

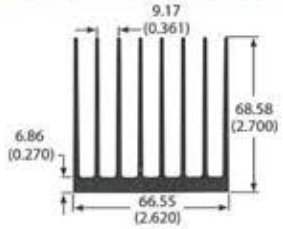

83220 1.6 lb/ft 1.01 °C/W/3in Per.=68.94

**6**



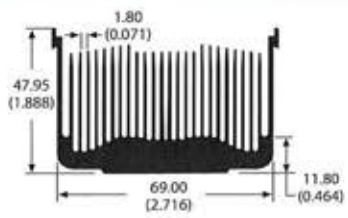

72095 2.3 lb/ft 1.57 °C/W/3in Per.=44.56

**7**



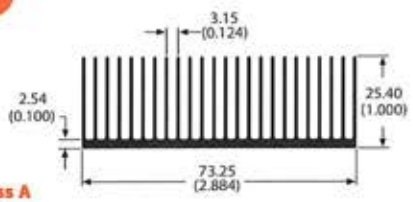

79000 2.6 lb/ft 1.59 °C/W/3in Per.=43.84

**8**



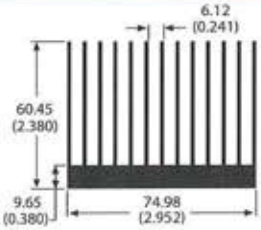

83225 2.1 lb/ft 0.86 °C/W/3in Per.=81.18

**9**



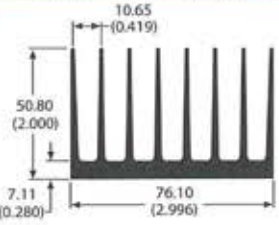

class A
73925 1.2 lb/ft 1.45 °C/W/3in Per.=48.21

**10**




79290 3.1 lb/ft 1.19 °C/W/3in Per.=58.56

**11**

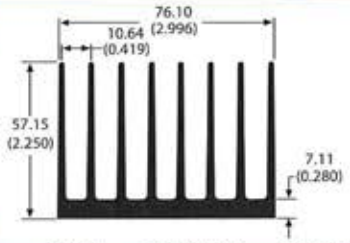



63020 2.3 lb/ft 1.90 °C/W/3in Per.=36.80

## Fabrication Capabilities

If the thermal solution requires complete fabrication of an extruded profile heat sink, Aavid Thermalloy is equipped for virtually any secondary operation. From a simple routine cut, deburr, and wash to complex milling, punching, finishing and accessory (pads, studs, etc) assembly.

**12**




class A
63730 2.9 lb/ft 1.88 °C/W/3in Per.=37.15

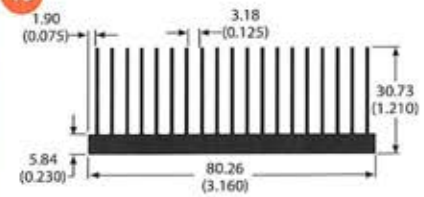
**13**


83230 1.7 lb/ft 1.25 °C/W/3in Per.=55.89

**14**

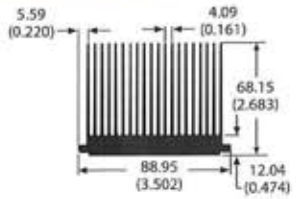

83235 1.7 lb/ft 1.43 °C/W/3in Per.=48.99

**15**



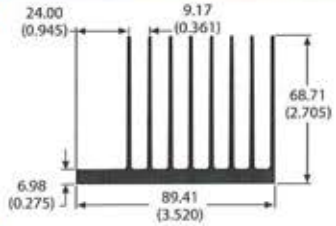

81870 1.7 lb/ft 1.59 °C/W/3in Per.=43.86

**16**



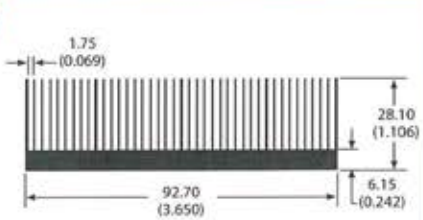

83240 4.5 lb/ft 0.73 °C/W/3in Per.=95.37

**17**




62580 2.9 lb/ft 1.53 °C/W/3in Per.=45.61

**18**




83245 2.0 lb/ft 0.89 °C/W/3in Per.=78.32



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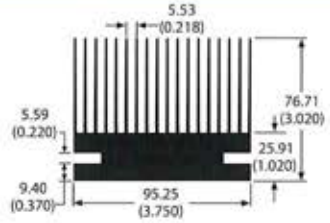
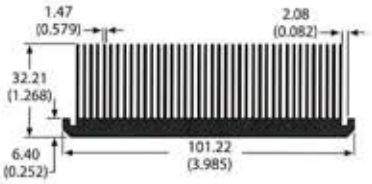
**1**



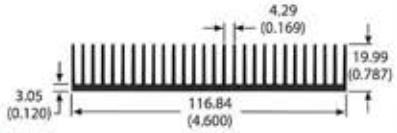

82070 6.7 lb/ft 0.84 °C/W/3in Per.=82.93

**2**



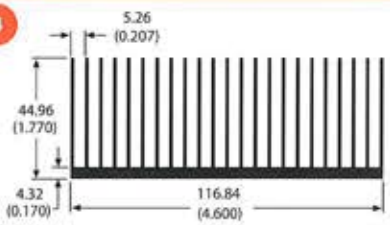

83250 2.9 lb/ft 0.78 °C/W/3in Per.=89.26

**3**




74535 1.8 lb/ft 1.55 °C/W/3in Per.=45.22

**4**

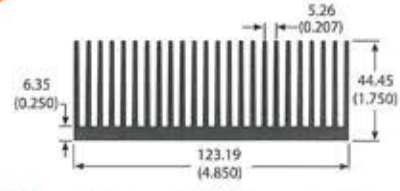



78440 3.1 lb/ft 0.84 °C/W/3in Per.=82.95

**5**

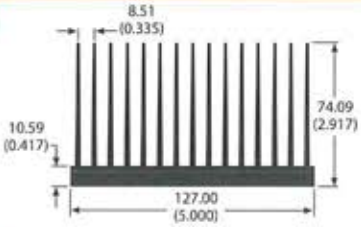

74925 3.4 lb/ft 0.82 °C/W/3in Per.=85.37

**6**



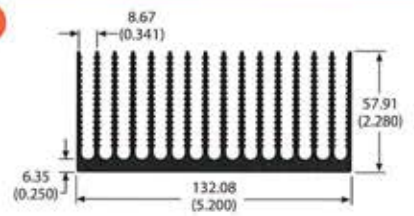

82030 5.2 lb/ft 0.87 °C/W/3in Per.=80.42

**7**



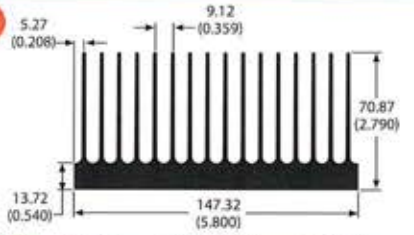

82525 6.3 lb/ft 0.83 °C/W/3in Per.=84.44

**8**



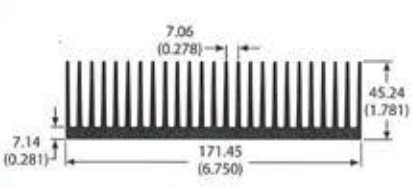

82260 5.8lb/ft 0.78 °C/W/3in Per.=89.84

**9**



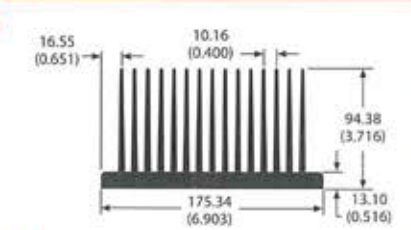

82395 7.5 lb/ft 0.85 °C/W/3in Per.=82.08

**10**




79435 6.7 lb/ft 0.81 °C/W/3in Per.=86.29

**11**



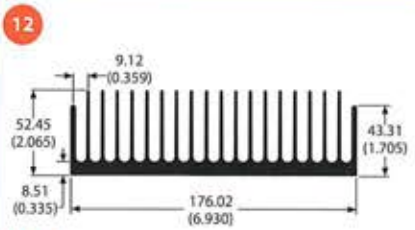

83255 11.1 lb/ft 0.64 °C/W/3in Per.=109.48

## Rapid Prototype Creation

Companies turn to Aavid Thermalloy when they need a quick turnaround on short run thermal components for product design verification and pre-production launch programs.

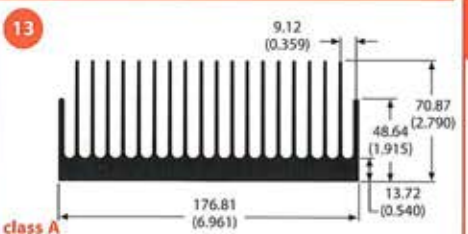
We are ready to help when there is a need for quick turnaround on short run thermal components for product design verification and pre-production launch programs.

**12**



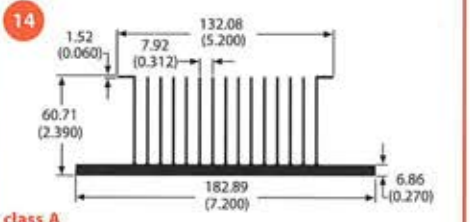

74860 6.4 lb/ft 0.88 °C/W/3in Per.=79.19

**13**



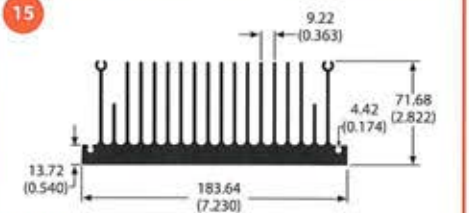

class A
65605 9.0lb/ft 0.71 °C/W/3in Per.=98.35

**14**




class A
62625 4.5 lb/ft 0.89 °C/W/3in Per.=78.20

**15**

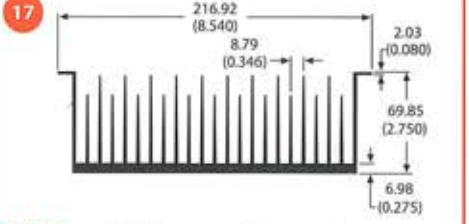



76560 8.7 lb/ft 0.76 °C/W/3in Per.=91.74

**16**

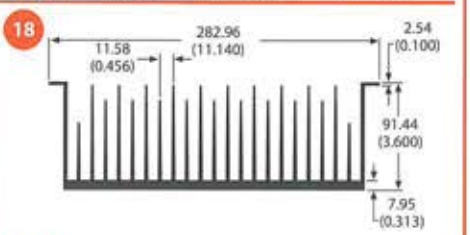

82160 9.0 lb/ft 0.48°C/W/3in Per.=145.02

**17**




76370 7.0 lb/ft 0.61 °C/W/3in Per.=114.04

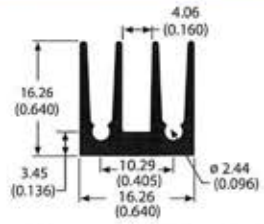
**18**




76375 10.6 lb/ft 0.45 °C/W/3in Per.=153.80

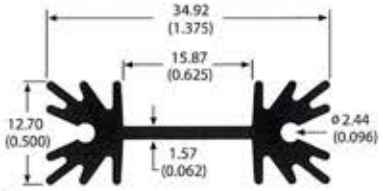
# Board Level – Flatback

**1**



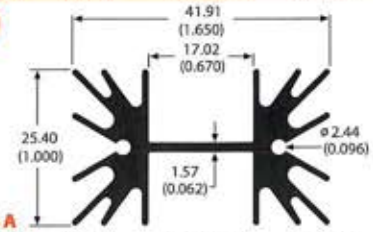

class A
**62470** 0.2 lb/ft 12.64 °C/W/3in Per.=5.53

**2**



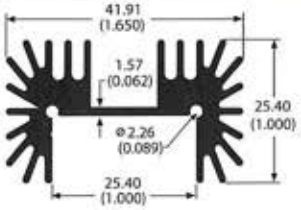

class A
**60130** 0.3 lb/ft 9.85 °C/W/3in Per.=7.10

**3**



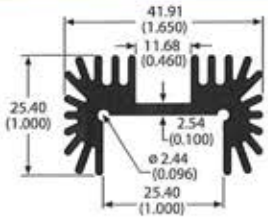

class A
**63130** 0.6 lb/ft 5.54 °C/W/3in Per.=12.62

**4**



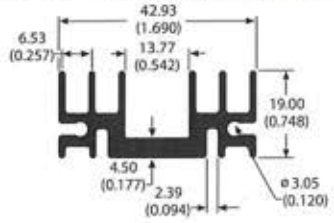

class A
**78915** 0.7 lb/ft 5.09 °C/W/3in Per.=13.75

**5**



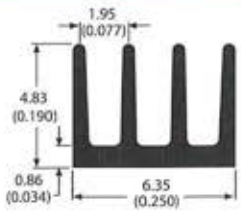

class A
**63485** 0.8 lb/ft 5.56 °C/W/3in Per.=12.57

**6**



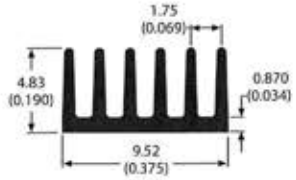

**63075** 0.6 lb/ft 6.55 °C/W/3in Per.=10.68

**7**



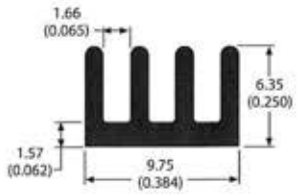

class A
**61565** 0.1 lb/ft 40.42 °C/W/3in Per.=1.73

**8**



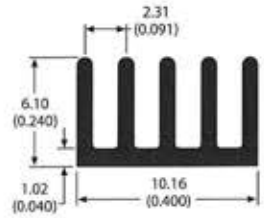

**80455** 0.1 lb/ft 27.50 °C/W/3in Per.=2.54

**9**




**82290** 0.1 lb/ft 30.53 °C/W/3in Per.=2.29

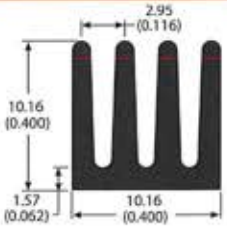
**10**




**69065** 0.1 lb/ft 25.23 °C/W/3in Per.=2.77

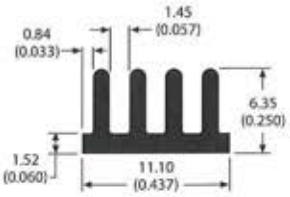


**11**



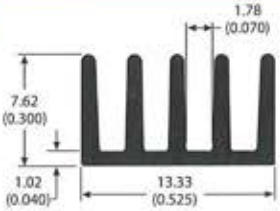

**70920** 0.1 lb/ft 20.43 °C/W/3in Per.=3.42

**12**



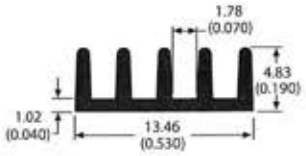

**68265** 0.1 lb/ft 29.13 °C/W/3in Per.=2.40

**13**



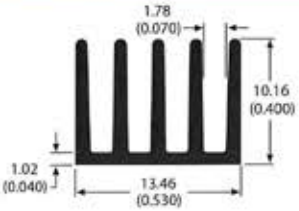

**74910** 0.1 lb/ft 19.69 °C/W/3in Per.=3.55

**14**



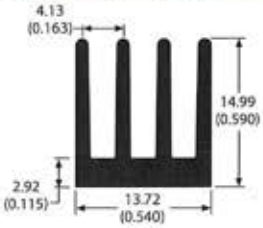

class A
**61945** 0.1 lb/ft 27.86 °C/W/3in Per.=2.51

**15**



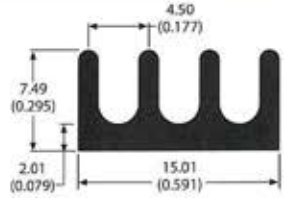

class A
**62000** 0.1 lb/ft 15.30 °C/W/3in Per.=4.57

**16**



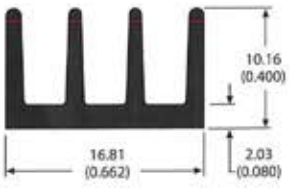

**82520** 0.2 lb/ft 14.11 °C/W/3in Per.=4.96

**17**



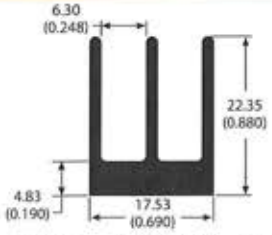

**81395** 0.1 lb/ft 24.85 °C/W/3in Per.=2.81

**18**



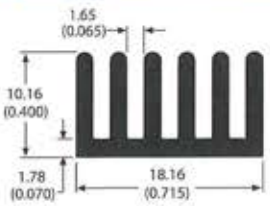

**64640** 0.1 lb/ft 18.07 °C/W/3in Per.=3.87

**19**




**63840** 0.3 lb/ft 12.14 °C/W/3in Per.=5.76

**20**




**79265** 0.2 lb/ft 13.15 °C/W/3in Per.=5.32



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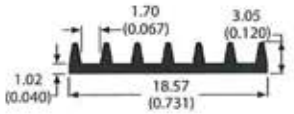
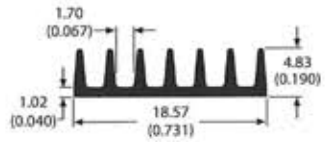
**1**



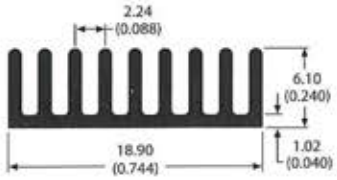

62750 0.1 lb/ft 28.66 °C/W/3in Per.=2.44

**2**



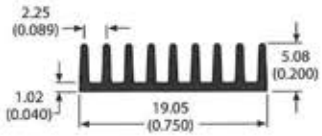

61610 0.1 lb/ft 20.81 °C/W/3in Per.=3.36

**3**



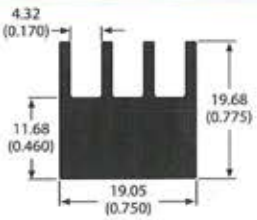

61995 0.1lb/ft 14.24 °C/W/3in Per.=4.91

**4**



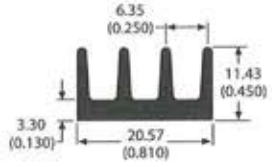

82500 0.1 lb/ft 16.70 °C/W/3in Per.=4.19

**5**



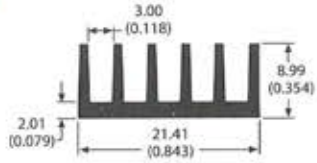

62380 0.5 lb/ft 14.42 °C/W/3in Per.=4.85

**6**



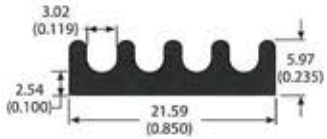

class A
61520 0.2lb/ft 16.77 °C/W/3in Per.=4.17

**7**



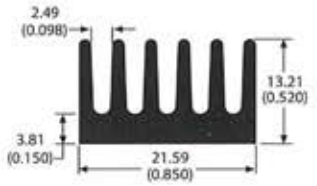

72330 0.2 lb/ft 13.94 °C/W/3in Per.=5.01

**8**



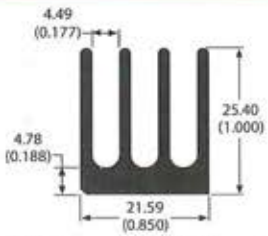

74930 0.2lb/ft 24.19 °C/W/3in Per.=2.89

**9**



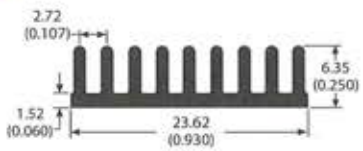

80070 0.3 lb/ft 11.62 °C/W/3in Per.=6.02

**10**




80235 0.5 lb/ft 8.54 °C/W/3in Per.=8.18

**11**




68260 0.2 lb/ft 13.64°C/W/3in Per.=5.1

## Extrusion Class Definitions

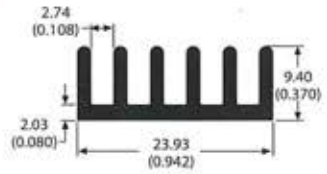
Each of our extrusions is coded with a popularity code / classification. Visit **www.aavidthermalloy.com**, go to the extrusion search tool section to view classification and current stock status.

**Class A** – Popular, >75% chance of some inventory available. (Coded in red lettering.)

**Class B** – Moderately popular material with a good chance of some inventory available.

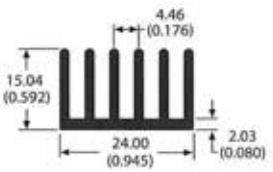
**Class C** – Low demand / low usage material. Set up charge may apply at time of order if none in stock.

**12**



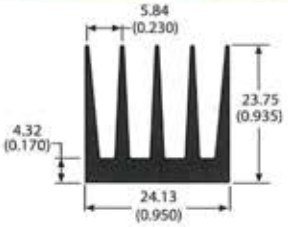

82665 0.2 lb/ft 13.17 °C/W/3in Per.=5.31

**13**



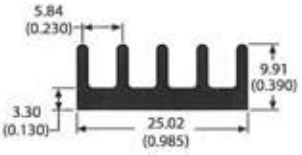

67605 0.3 lb/ft 8.74 °C/W/3in Per.=8.00

**14**



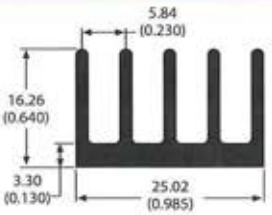

64675 0.5 lb/ft 7.40 °C/W/3in Per.=9.45

**15**



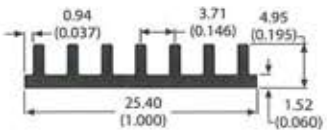

65715 0.3 lb/ft 15.23 °C/W/3in Per.=4.59

**16**



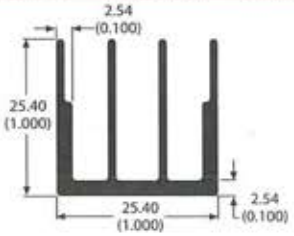

63240 0.3 lb/ft 9.86 °C/W/3in Per.=7.09

**17**




81405 0.1 lb/ft 17.98 °C/W/3in Per.=3.89

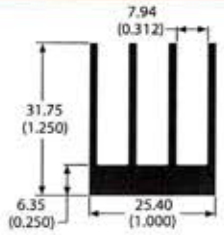
**18**




80765 0.4 lb/ft 7.61 °C/W/3in Per.=9.19

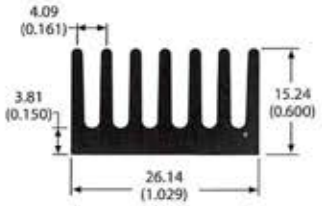
# Flatback

**1**



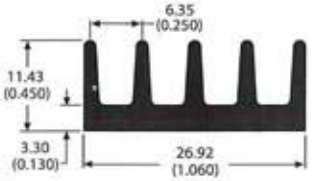

class A
**62560** 0.6 lb/ft 6.70 °C/W/3in Per.=10.43

**2**



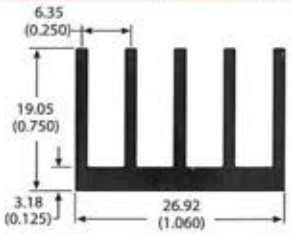

**75790** 0.4 lb/ft 8.56 °C/W/3in Per.=8.17

**3**



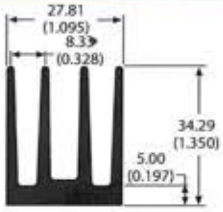

**62925** 0.3 lb/ft 13.37 °C/W/3in Per.=5.23

**4**



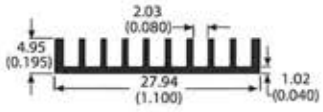

**63400** 0.4 lb/ft 8.19 °C/W/3in Per.=8.54

**5**



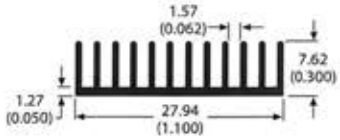

**75100** 0.8 lb/ft 6.21 °C/W/3in Per.=11.26

**6**



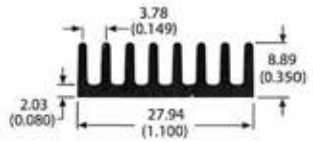

**79300** 0.1 lb/ft 13.19 °C/W/3in Per.=5.30

**7**



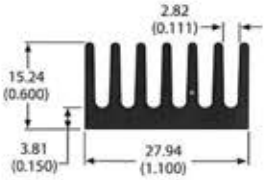

**81300** 0.2 lb/ft 8.61 °C/W/3in Per.=8.12

**8**



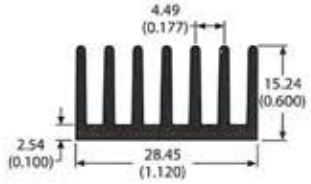

**70035** 0.2 lb/ft 11.19 °C/W/3in Per.=6.25

**9**



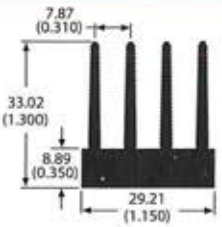

**80245** 0.5 lb/ft 8.46 °C/W/3in Per.=8.26

**10**



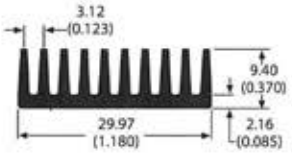

**64350** 0.4 lb/ft 7.69 °C/W/3in Per.=9.09

**11**



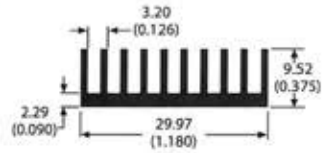

class A
**62230** 0.9 lb/ft 5.26 °C/W/3in Per.=13.30

**12**



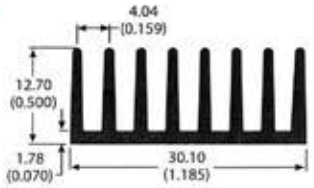

**63045** 0.3 lb/ft 9.00 °C/W/3in Per.=7.77

**13**



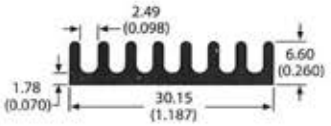

**82450** 0.3 lb/ft 8.57 °C/W/3in Per.=8.16

**14**



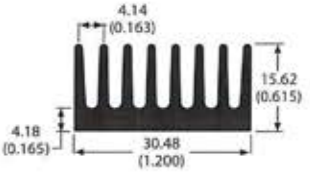

**80600** 0.4 lb/ft 7.73 °C/W/3in Per.=9.05

**15**




class A
**63455** 0.2 lb/ft 13.85 °C/W/3in Per.=5.05

**16**




**80420** 0.5 lb/ft 7.49 °C/W/3in Per.=9.34

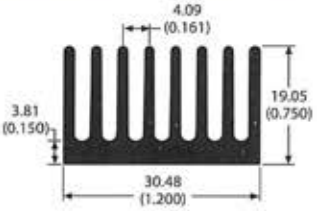
## KEY

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

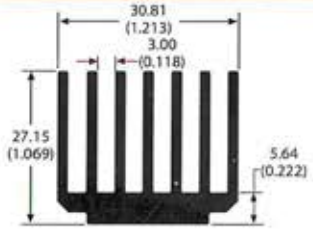
**Per.** = Perimeter in inches

**17**



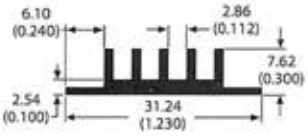

**76750** 0.6 lb/ft 5.95 °C/W/3in Per.=11.75

**18**



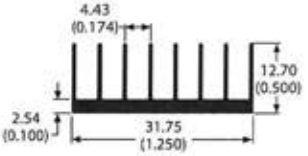

**76135** 0.8 lb/ft 4.85 °C/W/3in Per.=14.43

**19**




**63300** 0.2 lb/ft 15.13 °C/W/3in Per.=4.62

**20**




**82440** 0.3 lb/ft 7.85 °C/W/3in Per.=8.91



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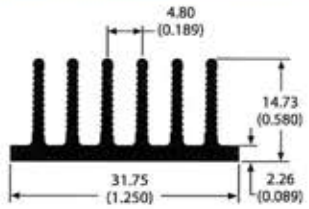
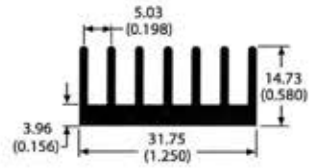
Singapore Tel: +65 6362 8388 email: sales@aavid.com.sg
Taiwan Tel: +886(2) 2698-9888 email: sales@aavid.com.tw

**1**



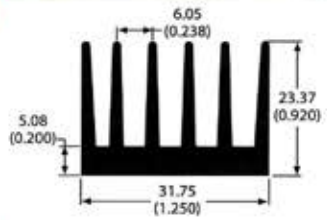

**72505** 0.3 lb/ft 7.63 °C/W/3in Per.=9.16

**2**



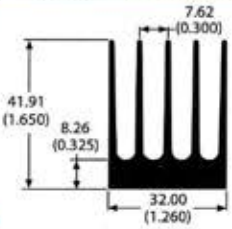

**62035** 0.4 lb/ft 8.22 °C/W/3in Per.=8.51

**3**



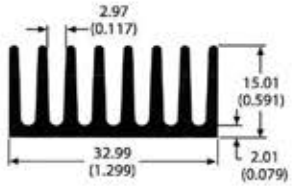

**80700** 0.7 lb/ft 6.31 °C/W/3in Per.=11.09

**4**



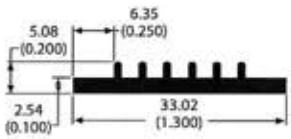

class A
**65245** 1.1 lb/ft 4.43 °C/W/3in Per.=15.79

**5**



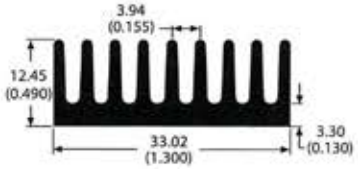

**80720** 0.5 lb/ft 6.81 °C/W/3in Per.=10.27

**6**



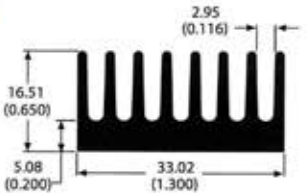

**74200** 0.2 lb/ft 17.95 °C/W/3in Per.=3.90

**7**



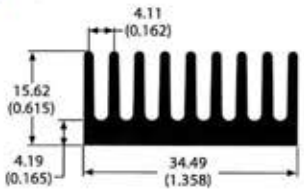

**79200** 0.5 lb/ft 8.05 °C/W/3in Per.=8.69

**8**




**81130** 0.6 lb/ft 7.31 °C/W/3in Per.=9.57

**9**

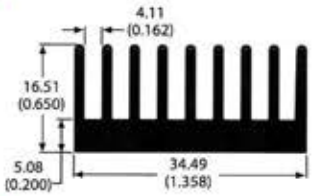



**80445** 0.6 lb/ft 6.61 °C/W/3in Per.=10.57

## Fabrication Capabilities

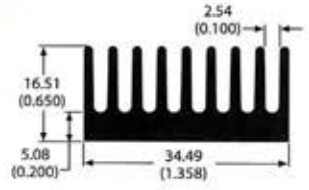
If the thermal solution requires complete fabrication of an extruded profile heat sink, Aavid Thermalloy is equipped for virtually any secondary operation. From a simple routine cut, deburr, and wash to complex milling, punching, finishing and accessory (pads, studs, etc) assembly.

**10**



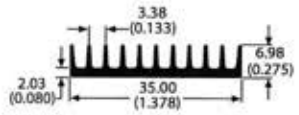

**80595** 0.6 lb/ft 6.38 °C/W/3in Per.=10.96

**11**



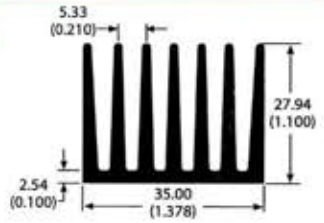

**80250** 0.6 lb/ft 6.61 °C/W/3in Per.=10.57

**12**



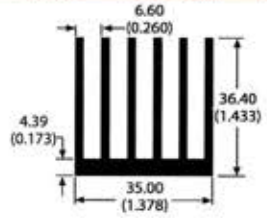

**75440** 0.2 lb/ft 10.52 °C/W/3in Per.=6.65

**13**



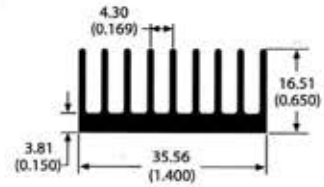

**75450** 0.9 lb/ft 4.31 °C/W/3in Per.=16.23

**14**



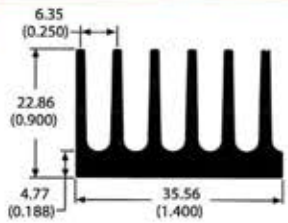

**76830** 0.1 lb/ft 3.85 °C/W/3in Per.=18.18

**15**



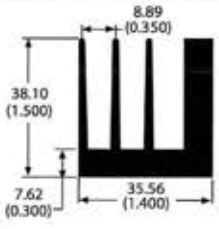

**66450** 0.5 lb/ft 5.98 °C/W/3in Per.=11.70

**16**



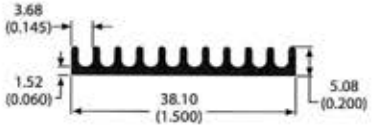

**66460** 0.7 lb/ft 6.30 °C/W/3in Per.=11.10

**17**




class A
**61605** 1.2 lb/ft 5.47 °C/W/3in Per.=12.78

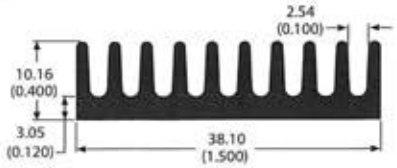
**18**




**81065** 0.2 lb/ft 12.58 °C/W/3in Per.=5.56

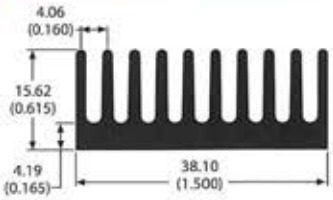
# Flatback

**1**



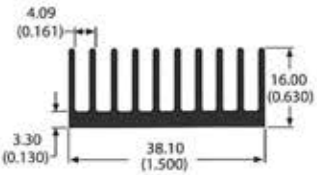

79940 | 0.4 lb/ft | 8.63 °C/W/3in | Per.=8.11

**2**



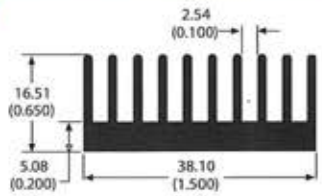

80430 | 0.6 lb/ft | 6.01 °C/W/3in | Per.=11.63

**3**



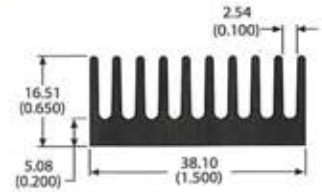

class A
66365 | 0.5 lb/ft | 5.41 °C/W/3in | Per.=12.93

**4**



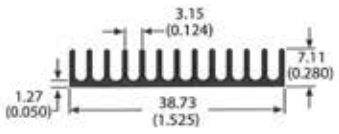

79985 | 0.7 lb/ft | 5.76 °C/W/3in | Per.=12.14

**5**



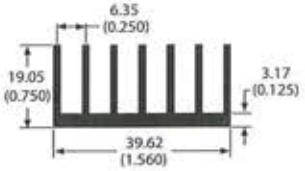

79925 | 0.7 lb/ft | 5.98 °C/W/3in | Per.=11.69

**6**



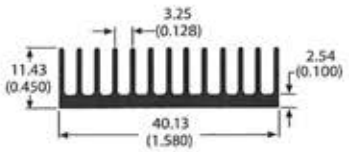

63480 | 0.2 lb/ft | 8.23 °C/W/3in | Per.=8.50

**7**



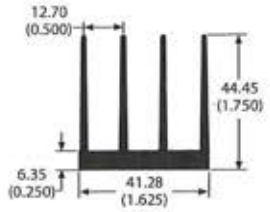

class A
61080 | 0.5 lb/ft | 5.79 °C/W/3in | Per.=12.07

**8**



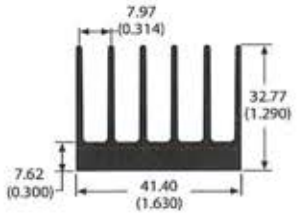

72845 | 0.4 lb/ft | 5.86 °C/W/3in | Per.=11.93

**9**




82420 | 1.0 lb/ft | 4.53 °C/W/3in | Per.=15.45

**10**




class A
61215 | 1.0 lb/ft | 4.54 °C/W/3in | Per.=15.40

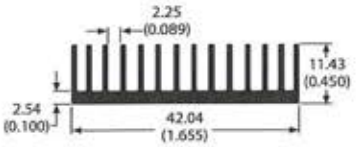
**KEY**

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

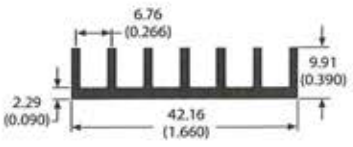
**Per.** = Perimeter in inches

**11**



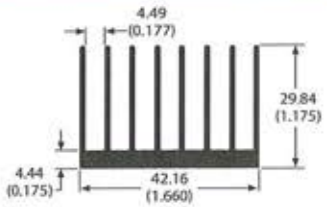

82495 | 0.4 lb/ft | 5.35 °C/W/3in | Per.=13.07

**12**



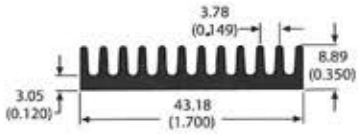

67620 | 0.3 lb/ft | 9.14 °C/W/3in | Per.=7.65

**13**



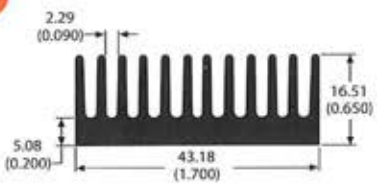

69755 | 0.8 lb/ft | 3.60 °C/W/3in | Per.=19.43

**14**



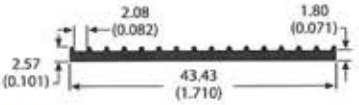

79920 | 0.5 lb/ft | 8.38 °C/W/3in | Per.=8.34

**15**



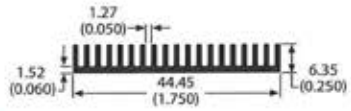

80220 | 0.8 lb/ft | 5.07 °C/W/3in | Per.=13.78

**16**



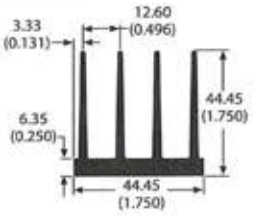

80190 | 0.2 lb/ft | 16.96 °C/W/3in | Per.=4.12

**17**



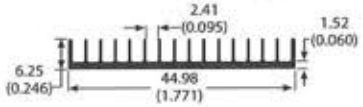

class A
65060 | 0.3 lb/ft | 6.65 °C/W/3in | Per.=10.51

**18**



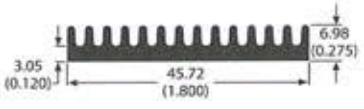

60365 | 1.2 lb/ft | 4.51 °C/W/3in | Per.=15.50

**19**




79955 | 0.2 lb/ft | 7.59 °C/W/3in | Per.=9.21

**20**




79930 | 0.4 lb/ft | 9.51 °C/W/3in | Per.=7.35



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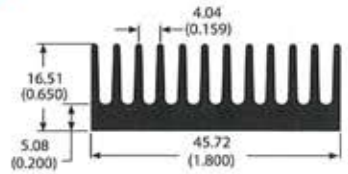
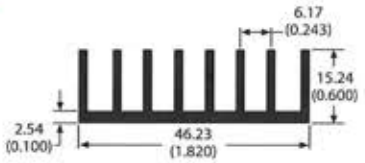
**1**



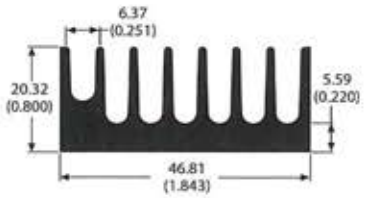

**80225** 0.8 lb/ft 5.03 °C/W/3in Per.=13.91

**2**



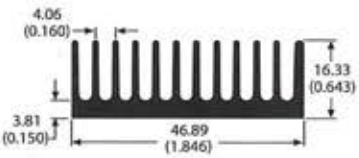

**75925** 0.5 lb/ft 5.97 °C/W/3in Per.=11.70

**3**



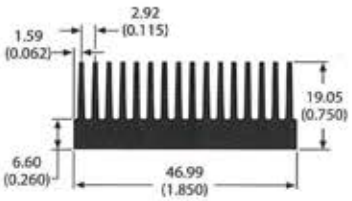

**64660** 0.9 lb/ft 5.73 °C/W/3in Per.=12.21

**4**



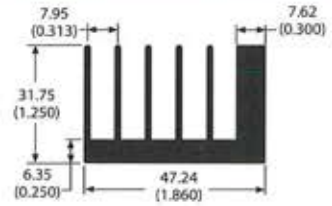

**64635** 0.7 lb/ft 4.67 °C/W/3in Per.=14.96

**5**



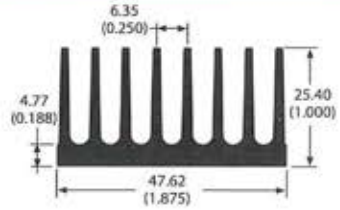

**82360** 1.0 lb/ft 3.62 °C/W/3in Per.=19.31

**6**



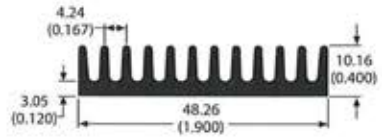

**76550** 1.3 lb/ft 4.36 °C/W/3in Per.=16.03

**7**



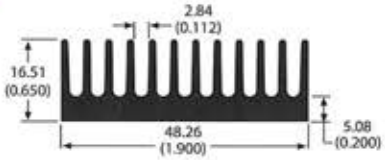

**60595** 1.0 lb/ft 4.30 °C/W/3in Per.=16.27

**8**



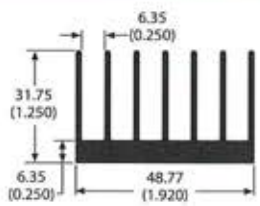

**81295** 0.6 lb/ft 7.12 °C/W/3in Per.=9.82

**9**



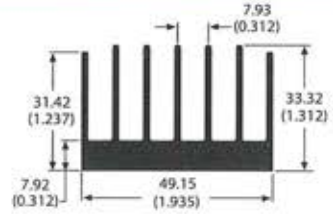

**80060** 0.8 lb/ft 4.96 °C/W/3in Per.=14.10

**10**




**62745** 1.1 lb/ft 3.88 °C/W/3in Per.=18.00

**11**



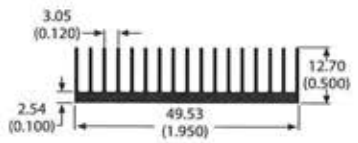

**62815** 1.2 lb/ft 3.91 °C/W/3in Per.=17.88

## Don't see what you are looking for?

We have thousands of shapes that are not listed in this printing. We can assist you with the selection of existing profiles or with the design of new profiles.

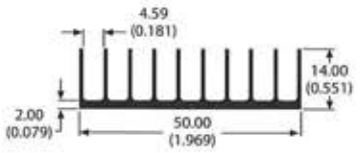
Should you require a new custom design, since there is only a nominal engineering service charge for the design and tooling of new extrusion dies, customers with challenging applications often select a new design rather than choose an existing profile.

**12**



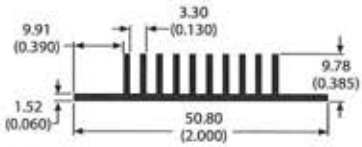

**82435** 0.5 lb/ft 4.06 °C/W/3in Per.=17.21

**13**



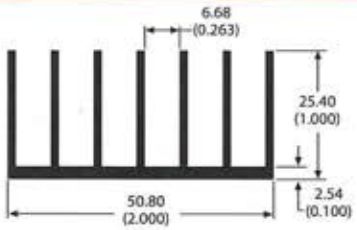

**82715** 0.4 lb/ft 5.28 °C/W/3in Per.=13.24

**14**



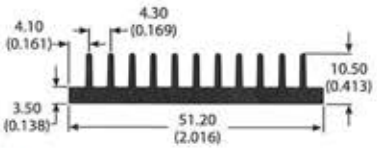

**82460** 0.3 lb/ft 6.64 °C/W/3in Per.=10.53

**15**



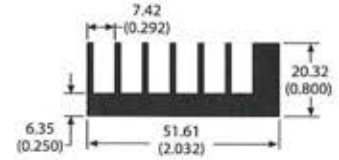

**72930** 0.7 lb/ft 4.16 °C/W/3in Per.=16.80

**16**



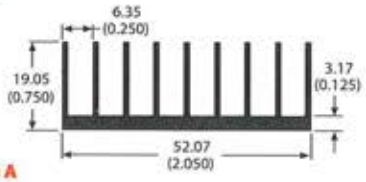

**82635** 0.5 lb/ft 7.03 °C/W/3in Per.=9.94

**17**




**62935** 1.0 lb/ft 5.70 °C/W/3in Per.=12.26

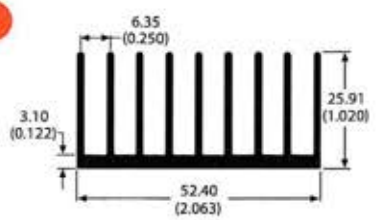
**18**




**class A**
**65250** 0.6 lb/ft 4.53 °C/W/3in Per.=15.45

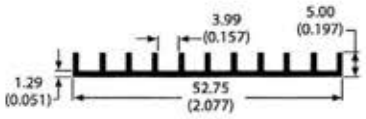
# Flatback

**1**



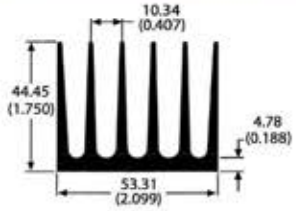

**63120** 0.9 lb/ft 3.46 °C/W/3in Per.=20.22

**2**



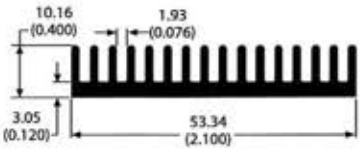

**74815** 0.2 lb/ft 9.61 °C/W/3in Per.=7.27

**3**



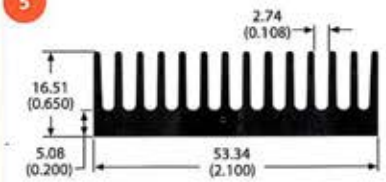

**80825** 1.7 lb/ft 3.16 °C/W/3in Per.=22.13

**4**



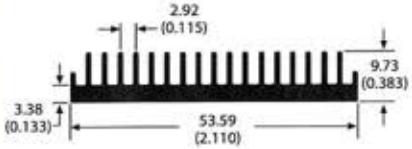

**80670** 0.6 lb/ft 5.44 °C/W/3in Per.=12.86

**5**



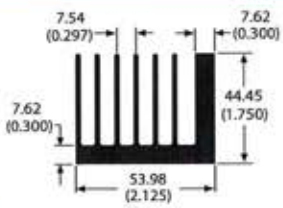

**80120** 0.9 lb/ft 4.31 °C/W/3in Per.=16.21

**6**




**82755** 0.5 lb/ft 5.42 °C/W/3in Per.=12.90

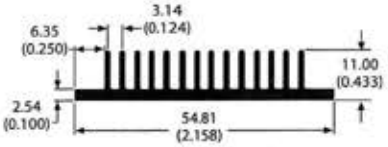
**7**




class A

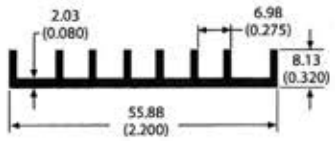
**63135** 2.1 lb/ft 2.82 °C/W/3in Per.=24.78

**8**



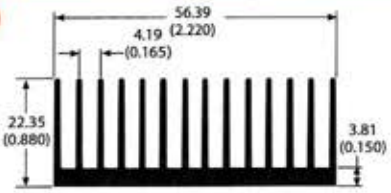

**81085** 0.5 lb/ft 5.21 °C/W/3in Per.=13.42

**9**



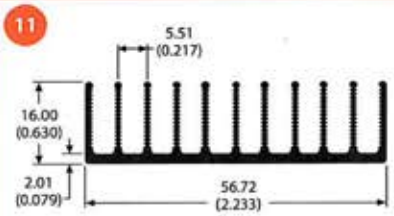

**66730** 0.3 lb/ft 8.38 °C/W/3in Per.=8.34

**10**



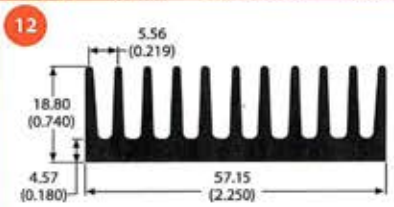

**74455** 1.0 lb/ft 2.84 °C/W/3in Per.=24.66

**11**



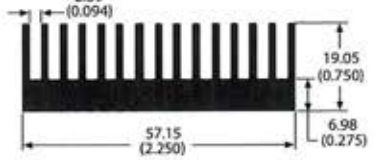

**78830** 0.5 lb/ft 3.17 °C/W/3in Per.=22.06

**12**



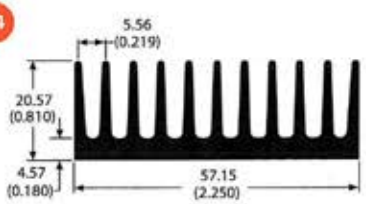

**79820** 1.0 lb/ft 4.35 °C/W/3in Per.=16.06

**13**




**75625** 1.2 lb/ft 3.67 °C/W/3in Per.=19.05

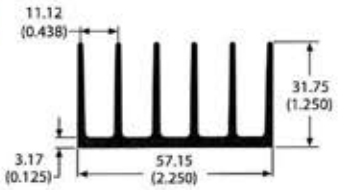
**14**




class A

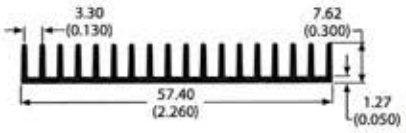
**64690** 1.1 lb/ft 3.97 °C/W/3in Per.=17.60

**15**



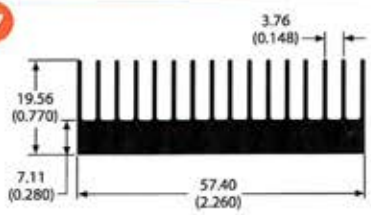

**61460** 0.9 lb/ft 3.96 °C/W/3in Per.=17.67

**16**



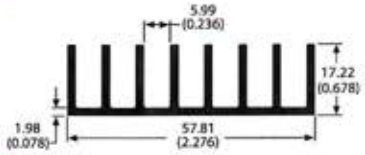

**80615** 0.4 lb/ft 5.34 °C/W/3in Per.=13.11

**17**




**76670** 1.1 lb/ft 3.46 °C/W/3in Per.=20.20

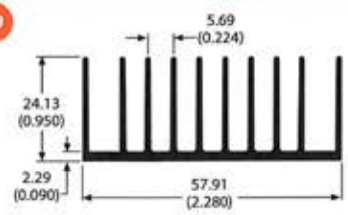
**18**




class A

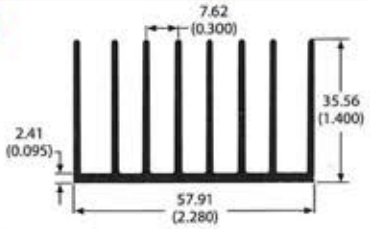
**60975** 0.7 lb/ft 4.95 °C/W/3in Per.=14.12

**19**




**78735** 0.8 lb/ft 3.26 °C/W/3in Per.=21.45

**20**




**81915** 1.0 lb/ft 2.77 °C/W/3in Per.=25.21

## KEY

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

**Per.** = Perimeter in inches



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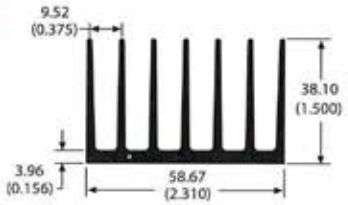
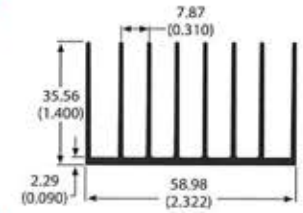
**1**




62500 1.3 lb/ft 3.04 °C/W/3in Per.=22.98

**2**




78670 0.9 lb/ft 2.75 °C/W/3in Per.=25.40

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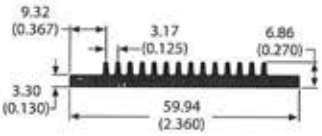
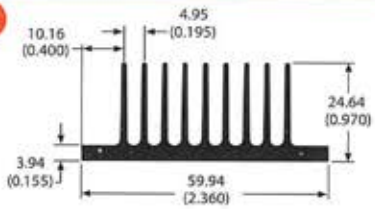


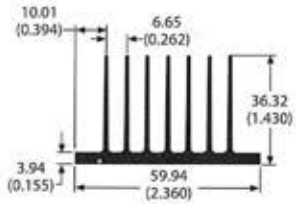

70685 0.5 lb/ft 8.60 °C/W/3in Per.=8.13

**4**



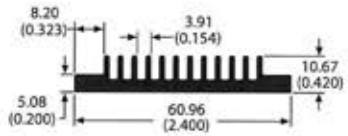

70675 1.0 lb/ft 3.70 °C/W/3in Per.=18.88

**5**



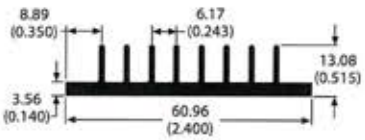

70690 1.1 lb/ft 3.15 °C/W/3in Per.=22.23

**6**



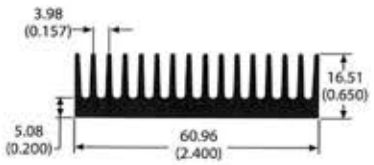

66000 0.7 lb/ft 6.33 °C/W/3in Per.=11.05

**7**



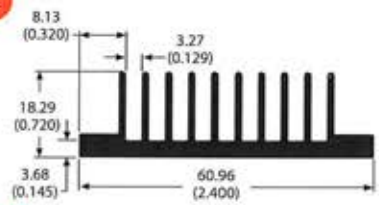

66385 0.6 lb/ft 6.47 °C/W/3in Per.=10.81

**8**




82675 1.1 lb/ft 3.80 °C/W/3in Per.=18.39

**9**




65795 0.8 lb/ft 4.32 °C/W/3in Per.=16.18

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Companies turn to Aavid Thermalloy when they need a quick turnaround on short run thermal components for product design verification and pre-production launch programs.

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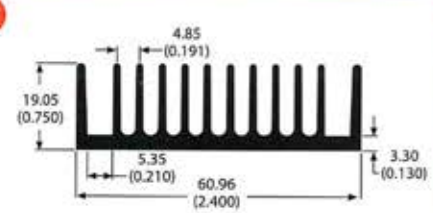
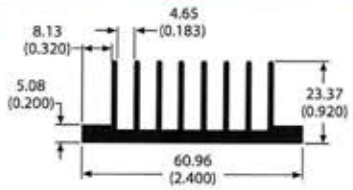
**10**



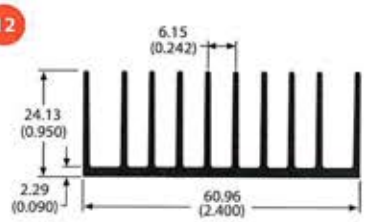

79945 1.0 lb/ft 3.68 °C/W/3in Per.=19.02

**11**



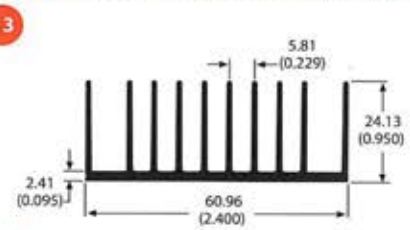

65550 0.9 lb/ft 4.06 °C/W/3in Per.=17.22

**12**



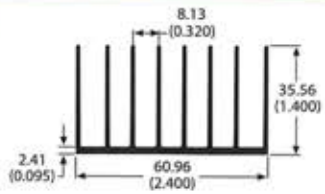

78590 0.8 lb/ft 3.23 °C/W/3in Per.=21.63

**13**



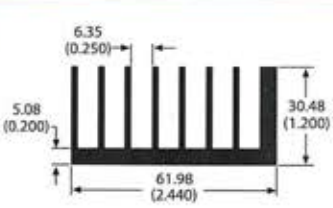

81895 0.8 lb/ft 3.24 °C/W/3in Per.=21.59

**14**



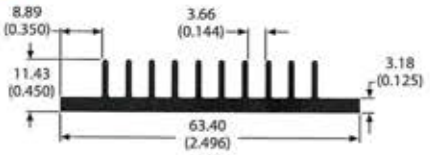

81910 0.9 lb/ft 2.74 °C/W/3in Per.=25.48

**15**



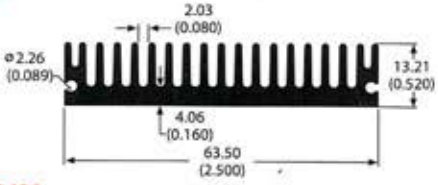

65490 1.4 lb/ft 3.32 °C/W/3in Per.=21.07

**16**



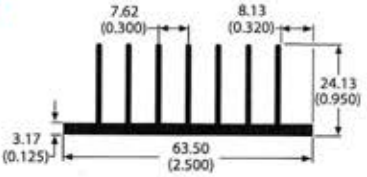

79255 0.6 lb/ft 6.18 °C/W/3in Per.=11.31

**17**




79430 1.0 lb/ft 3.98 °C/W/3in Per.=17.58

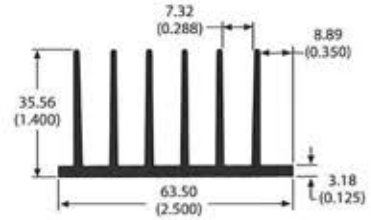
**18**




78550 0.8 lb/ft 4.21 °C/W/3in Per.=16.62

# Flatback

**1**




80325 1.0 lb/ft 3.48 °C/W/3in Per.=20.12

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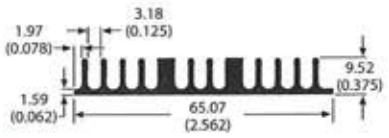


60490 0.5 lb/ft 5.19 °C/W/3in Per.=13.46

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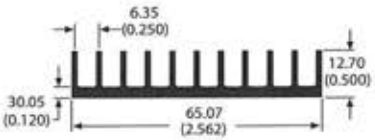
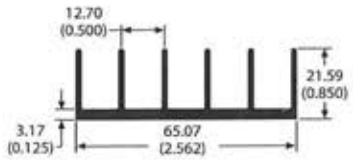



65035 0.7 lb/ft 5.16 °C/W/3in Per.=13.55

**4**




61555 0.7 lb/ft 5.07 °C/W/3in Per.=13.79

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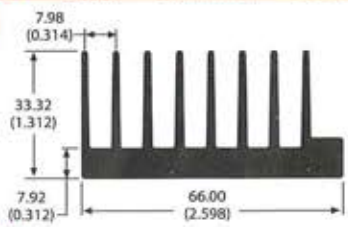
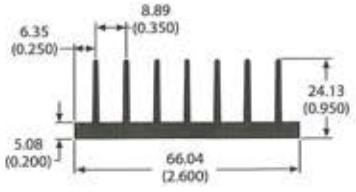



75985 1.7 lb/ft 3.31 °C/W/3in Per.=21.14

**6**




67835 1.0 lb/ft 4.45 °C/W/3in Per.=15.72

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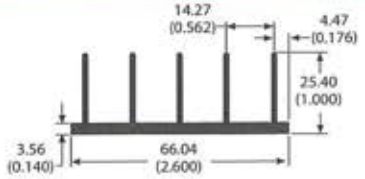
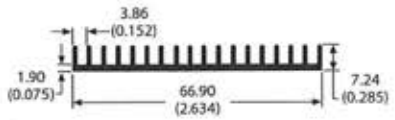


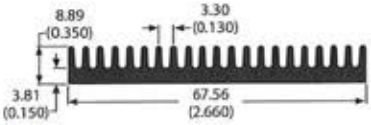

61680 0.7 lb/ft 5.03 °C/W/3in Per.=13.89

**8**



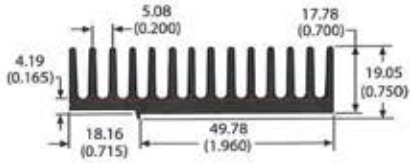

68145 0.4 lb/ft 5.65 °C/W/3in Per.=12.37

**9**




81965 0.8 lb/ft 5.48 °C/W/3in Per.=12.76

**10**




70945 1.2 lb/ft 3.59 °C/W/3in Per.=19.45

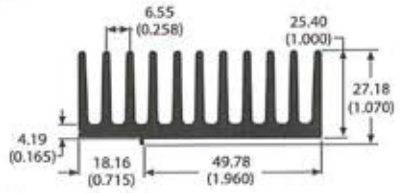
**KEY**

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

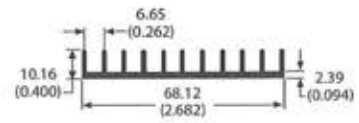
**Per.** = Perimeter in inches

**11**



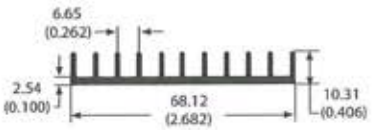

72400 1.5 lb/ft 3.04 °C/W/3in Per.=22.97

**12**



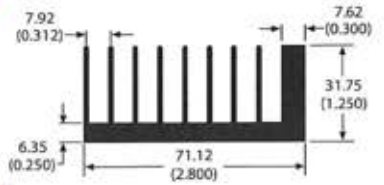

60955 0.5 lb/ft 5.87 °C/W/3in Per.=11.91

**13**



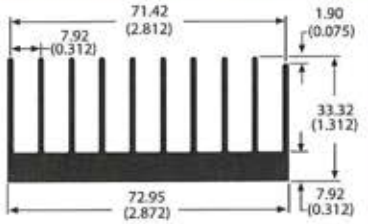

62180 0.6 lb/ft 5.95 °C/W/3in Per.=11.75

**14**



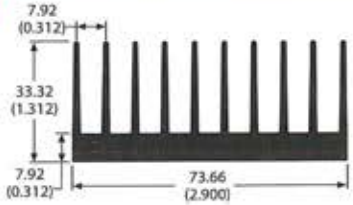

class A
61895 1.7 lb/ft 2.94 °C/W/3in Per.=23.82

**15**



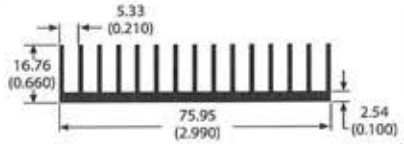

class A
62600 1.7 lb/ft 2.70 °C/W/3in Per.=25.85

**16**



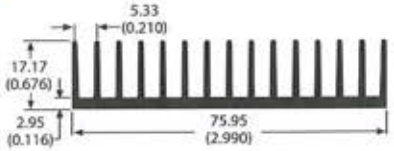

80630 1.9 lb/ft 2.71 °C/W/3in Per.=25.80

**17**



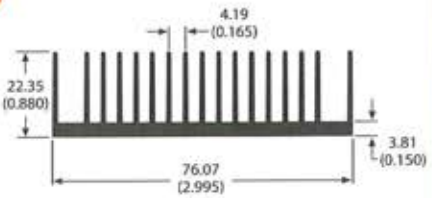

66675 0.8 lb/ft 3.06 °C/W/3in Per.=22.90

**18**



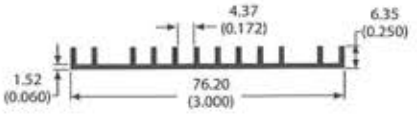

80655 1.0 lb/ft 3.12 °C/W/3in Per.=22.43

**19**




74415 1.2 lb/ft 2.29 °C/W/3in Per.=30.47

**20**




77170 0.4 lb/ft 6.60 °C/W/3in Per.=10.59



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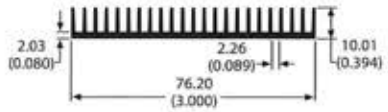
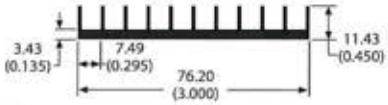
Taiwan Tel: +886(2) 2698-9888 email: sales@aavid.com.tw

**1**



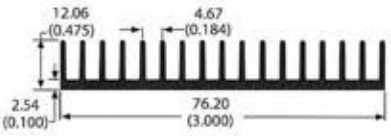

**81275** 0.6 lb/ft 3.49 °C/W/3in Per.=20.03

**2**



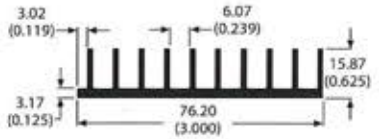

**67260** 0.7 lb/ft 5.33 °C/W/3in Per.=13.11

**3**



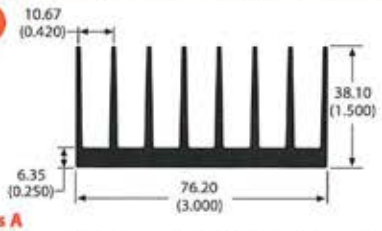

**78875** 0.8 lb/ft 3.82 °C/W/3in Per.=18.31

**4**



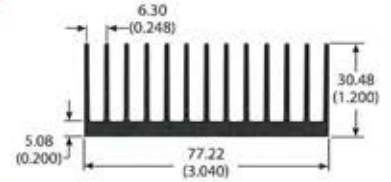

**77870** 0.9 lb/ft 4.35 °C/W/3in Per.=16.07

**5**



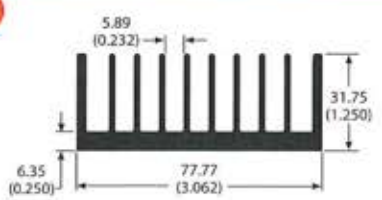

class A
**64800** 1.9 lb/ft 2.72 °C/W/3in Per.=25.74

**6**



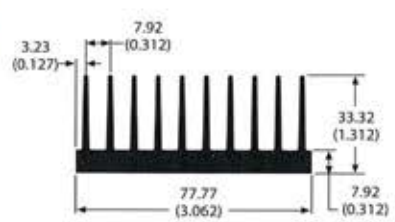

**67655** 1.7 lb/ft 2.21 °C/W/3in Per.=31.70

**7**



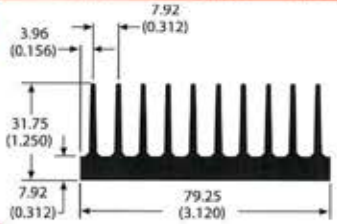

**77015** 1.9 lb/ft 2.67 °C/W/3in Per.=26.15

**8**




**79975** 2.0 lb/ft 2.70 °C/W/3in Per.=25.85

**9**




class A
**61315** 2.0 lb/ft 2.85 °C/W/3in Per.=24.56

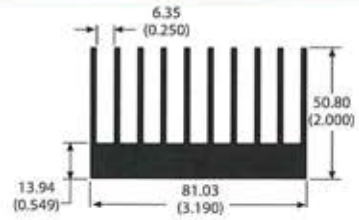
## Extrusion Alloys

We use 6063-T5 aluminum, unless otherwise specified, because:

- Conducts more heat than many other aluminum alloys
- Is more easily extruded into complex shapes
- Is easily machined
- Is more readily available from many international aluminum suppliers

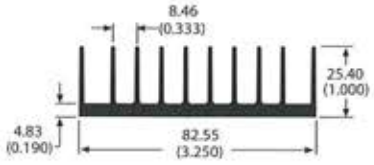
We recommend T5 hardness to minimize warping and loss of tolerance.

**10**



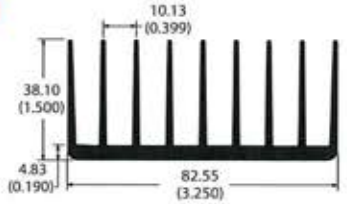

**81940** 3.6 lb/ft 1.92 °C/W/3in Per.=36.33

**11**



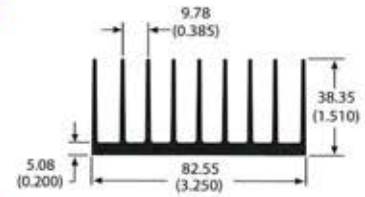

class A
**60760** 1.3 lb/ft 3.11 °C/W/3in Per.=22.50

**12**



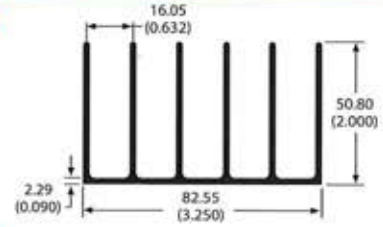

**80695** 1.8 lb/ft 2.35 °C/W/3in Per.=29.71

**13**



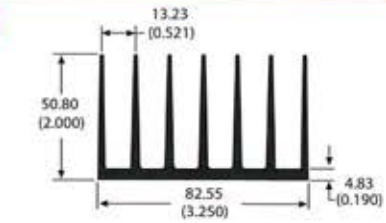

**60765** 1.8 lb/ft 2.35 °C/W/3in Per.=29.79

**14**



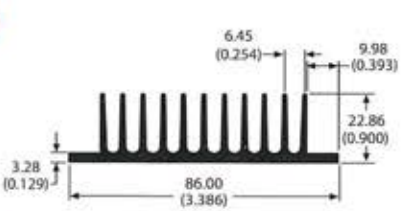

**62875** 1.6 lb/ft 2.41 °C/W/3in Per.=29.03

**15**



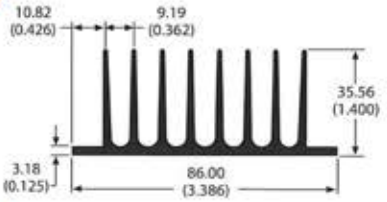

**60770** 2.3 lb/ft 2.23 °C/W/3in Per.=31.36

**16**



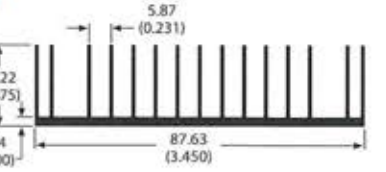

**81850** 1.3 lb/ft 3.08 °C/W/3in Per.=22.71

**17**




**81855** 1.6 lb/ft 2.68 °C/W/3in Per.=26.09

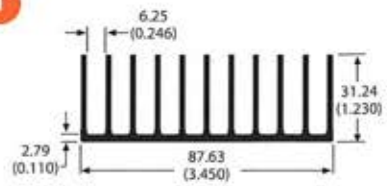
**18**




**81525** 0.9 lb/ft 2.31 °C/W/3in Per.=30.23

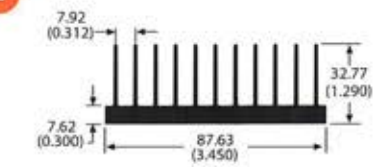
# Flatback

**1**



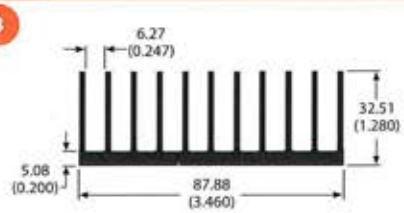

**67590** 1.5 lb/ft 1.58 °C/W/3in Per.=44.36

**2**



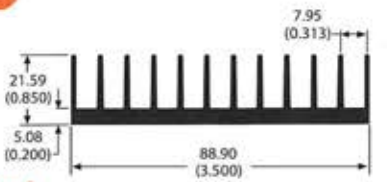

**60250** 2.1 lb/ft 2.43 °C/W/3in Per.=28.75

**3**



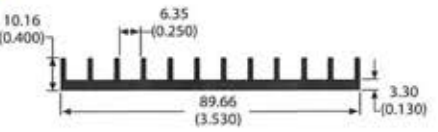

**73980** 1.8 lb/ft 1.59 °C/W/3in Per.=43.96

**4**



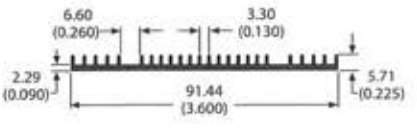

class A
**62200** 1.4 lb/ft 2.80 °C/W/3in Per.=24.97

**5**



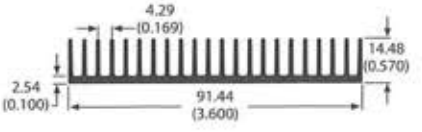

**72785** 0.8 lb/ft 5.18 °C/W/3in Per.=13.50

**6**



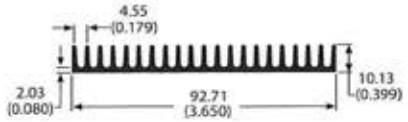

**78580** 0.6 lb/ft 5.36 °C/W/3in Per.=13.05

**7**



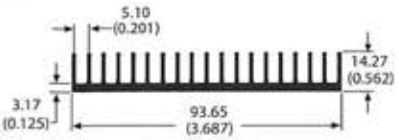

**75720** 1.1 lb/ft 2.60 °C/W/3in Per.=26.86

**8**



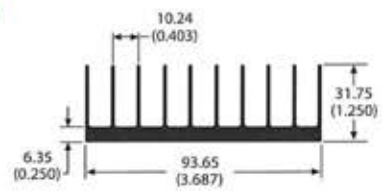

**62650** 0.9 lb/ft 3.66 °C/W/3in Per.=19.08

**9**




class A
**64870** 1.0 lb/ft 2.49 °C/W/3in Per.=28.09

**10**




**60485** 1.8 lb/ft 2.56 °C/W/3in Per.=27.36

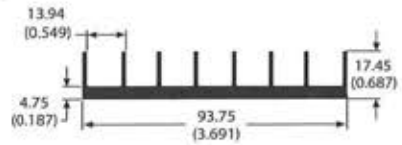
**KEY**

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

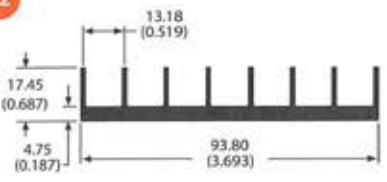
**Per.** = Perimeter in inches

**11**




**82055** 1.1 lb/ft 4.51 °C/W/3in Per.=15.50

**12**

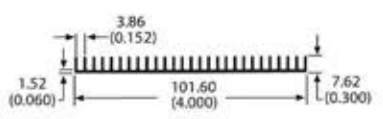



**62350** 1.1 lb/ft 4.49 °C/W/3in Per.=15.57

**13**

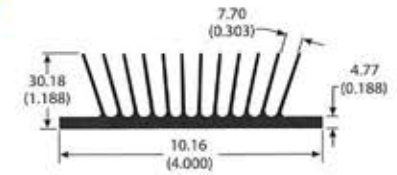

**79980** 1.5 lb/ft 3.18 °C/W/3in Per.=21.99

**14**



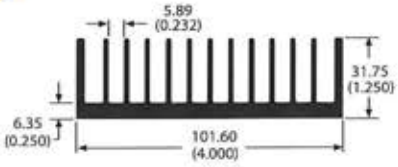

class A
**61585** 0.7 lb/ft 3.47 °C/W/3in Per.=20.17

**15**



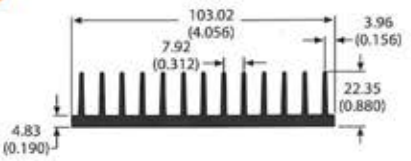

class A
**60660** 1.7 lb/ft 2.22 °C/W/3in Per.=31.49

**16**



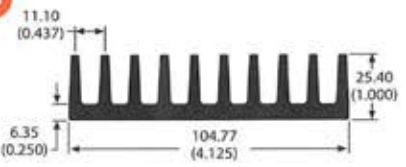

**76620** 2.5 lb/ft 2.06 °C/W/3in Per.=33.87

**17**



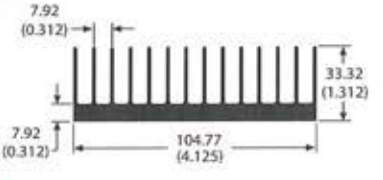

**63115** 1.7 lb/ft 2.76 °C/W/3in Per.=25.37

**18**



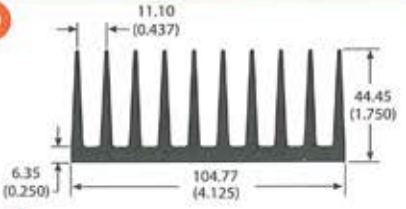

**61290** 2.6 lb/ft 3.11 °C/W/3in Per.=22.50

**19**




class A
**61090** 2.5 lb/ft 1.93 °C/W/3in Per.=36.15

**20**




class A
**60095** 3.4 lb/ft 1.90 °C/W/3in Per.=36.75



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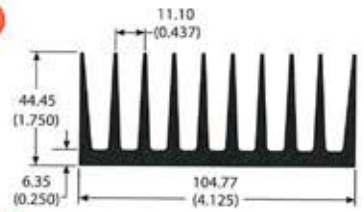
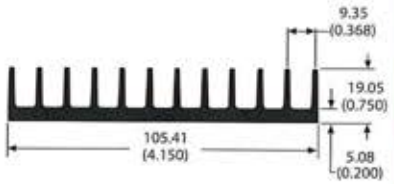
**1**



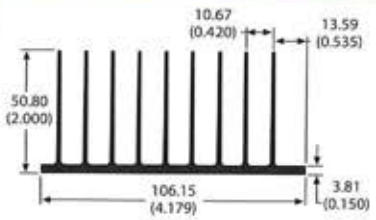

class A
**78780** 3.4 lb/ft 1.90 °C/W/3in Per.=36.78

**2**



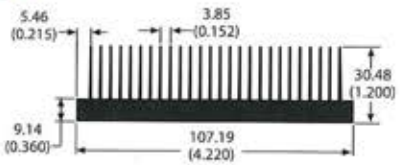

**64855** 1.7 lb/ft 3.35 °C/W/3in Per.=20.87

**3**



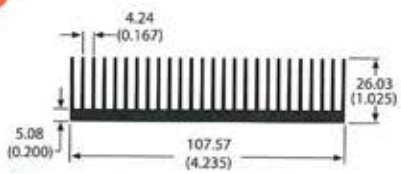

**72145** 2.1 lb/ft 1.70 °C/W/3in Per.=41.05

**4**



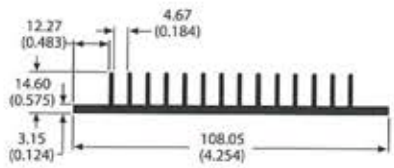

**80350** 2.9 lb/ft 1.35 °C/W/3in Per.=51.91

**5**



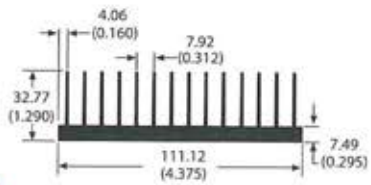

class A
**74765** 2.4 lb/ft 1.38 °C/W/3in Per.=50.53

**6**



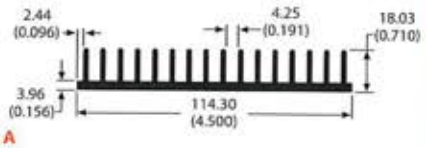

**80675** 1.1 lb/ft 3.35 °C/W/3in Per.=20.85

**7**



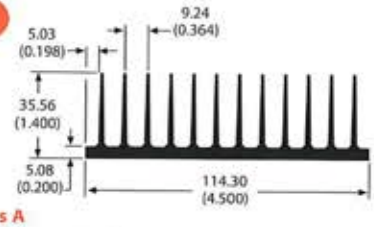

class A
**60560** 2.6 lb/ft 1.91 °C/W/3in Per.=36.52

**8**



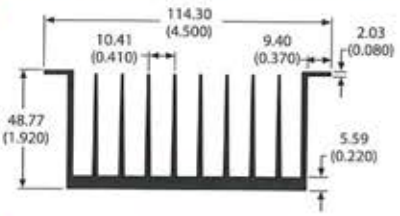

class A
**65330** 1.7 lb/ft 2.66 °C/W/3in Per.=26.29

**9**



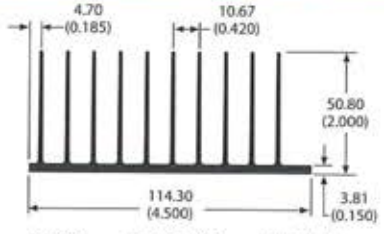

class A
**61075** 2.3 lb/ft 1.90 °C/W/3in Per.=36.83

**10**




**77915** 2.6 lb/ft 1.67 °C/W/3in Per.=41.99

**11**

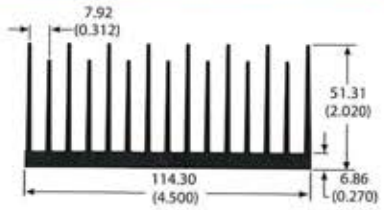



**77290** 2.3 lb/ft 1.54 °C/W/3in Per.=45.33

## Performance vs. Length

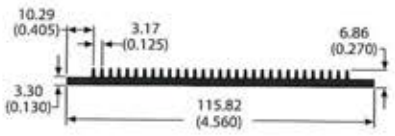
Thermal resistance changes significantly with length. To convert published natural convection thermal resistance at a 3 inch length to a desired length, see page 16 for a length correction table.

**12**



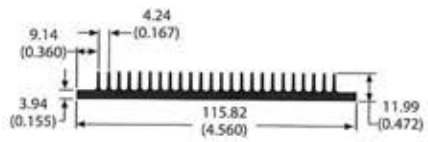

**80645** 3.6 lb/ft 1.23 °C/W/3in Per.=57.01

**13**



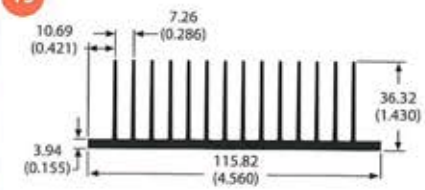

**70665** 1.0 lb/ft 4.27 °C/W/3in Per.=16.36

**14**



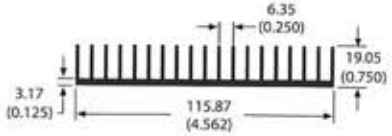

**70680** 1.3 lb/ft 3.07 °C/W/3in Per.=22.76

**15**



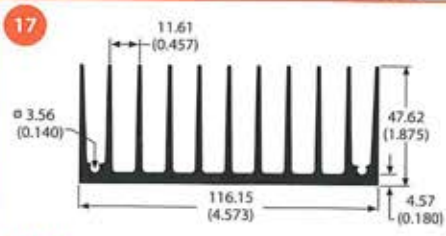

**70195** 2.1 lb/ft 1.58 °C/W/3in Per.=44.19

**16**



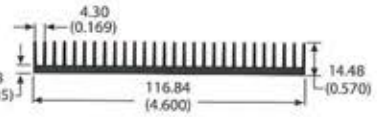

class A
**60585** 1.5 lb/ft 2.15 °C/W/3in Per.=32.46

**17**




**70440** 3.0 lb/ft 1.54 °C/W/3in Per.=45.34

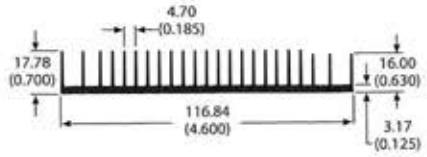
**18**




**72085** 1.5 lb/ft 2.20 °C/W/3in Per.=31.72

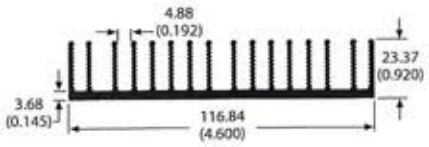
# Flatback

**1**



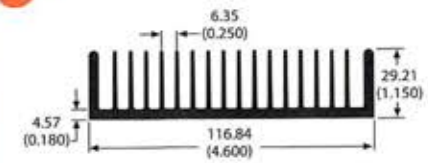

77370 1.3 lb/ft 1.96 °C/W/3in Per.=35.73

**2**



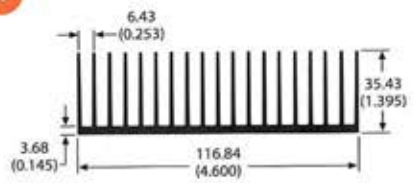

69945 1.8 lb/ft 1.78 °C/W/3in Per.=39.24

**3**



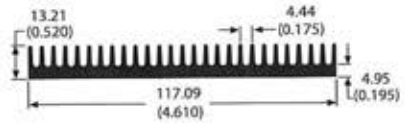

74155 2.6 lb/ft 1.61 °C/W/3in Per.=43.47

**4**



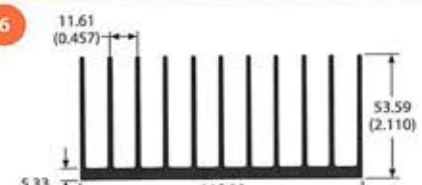

72090 2.4 lb/ft 1.25 °C/W/3in Per.=55.74

**5**



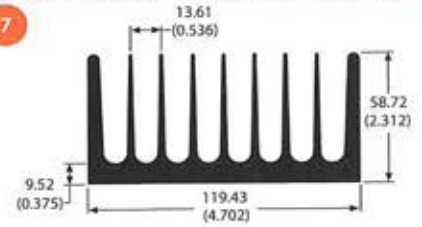

80265 1.8 lb/ft 2.81 °C/W/3in Per.=24.90

**6**



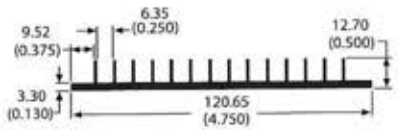

70970 3.2 lb/ft 1.38 °C/W/3in Per.=50.60

**7**



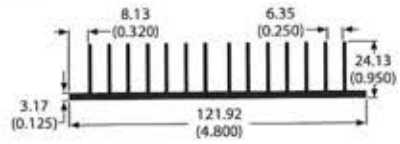

64795 5.1 lb/ft 1.64 °C/W/3in Per.=42.64

**8**



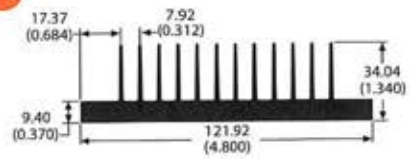

65350 1.0 lb/ft 3.50 °C/W/3in Per.=20.00

**9**




79025 1.5 lb/ft 2.15 °C/W/3in Per.=32.47

**10**




62890 3.0 lb/ft 2.14 °C/W/3in Per.=32.70

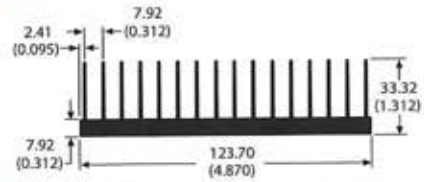
**KEY**

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

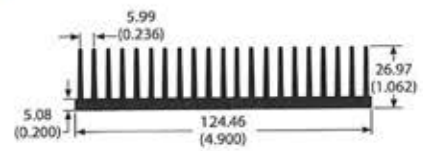
**Per.** = Perimeter in inches

**11**



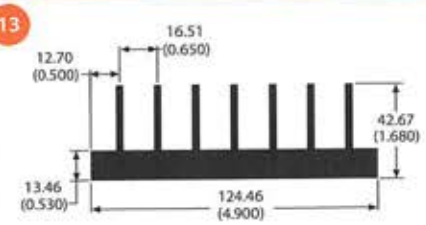

62655 3.0 lb/ft 1.68 °C/W/3in Per.=41.66

**12**




77175 2.7 lb/ft 1.55 °C/W/3in Per.=45.04

**13**

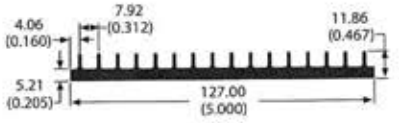



80965 4.2 lb/ft 2.61 °C/W/3in Per.=26.82

**14**

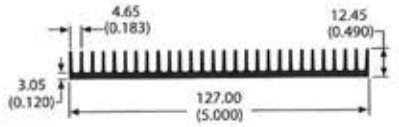

class A
61745 2.4 lb/ft 2.06 °C/W/3in Per.=33.89

**15**



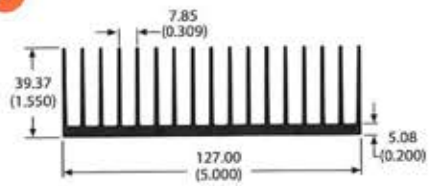

62620 1.5 lb/ft 3.89 °C/W/3in Per.=17.97

**16**



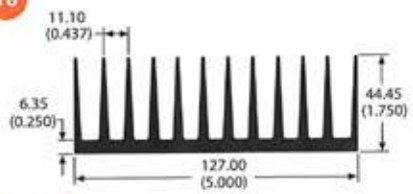

class A
67895 1.4 lb/ft 2.38 °C/W/3in Per.=29.33

**17**



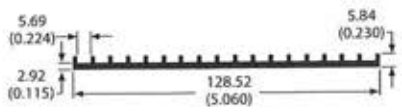

80640 3.0 lb/ft 1.27 °C/W/3in Per.=55.04

**18**



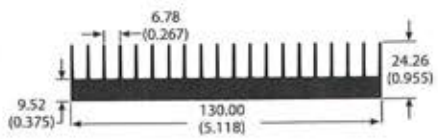

67490 3.9 lb/ft 1.57 °C/W/3in Per.=44.52

**19**




78570 0.8 lb/ft 4.93 °C/W/3in Per.=14.18

**20**




82705 2.9 lb/ft 2.12 °C/W/3in Per.=32.95



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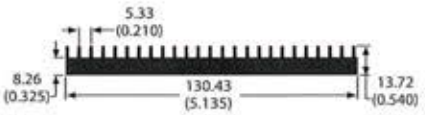
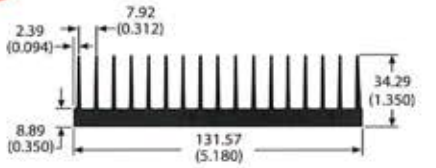
Taiwan Tel: +886(2) 2698-9888 email: sales@aavid.com.tw

**1**



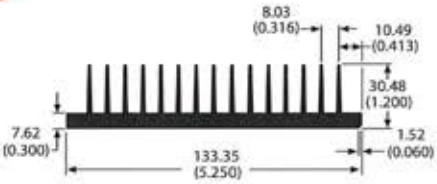

**82610** 2.3 lb/ft 3.28 °C/W/3in Per.=21.34

**2**



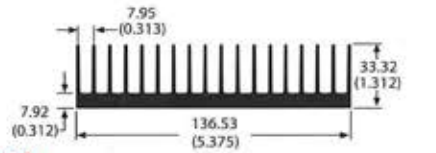

**61980** 3.4 lb/ft 1.60 °C/W/3in Per.=43.72

**3**




**63565** 3.1 lb/ft 1.89 °C/W/3in Per.=36.97

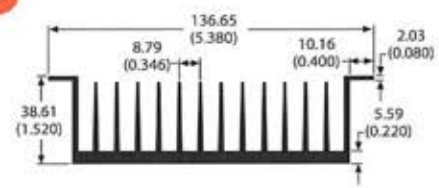
**4**




class A

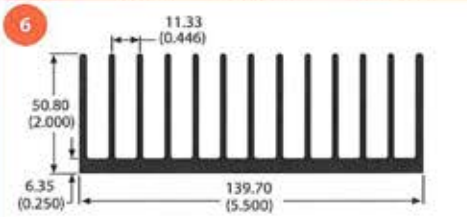
**61085** 3.4 lb/ft 1.52 °C/W/3in Per.=46.12

**5**



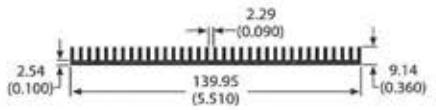

**77920** 2.8 lb/ft 1.58 °C/W/3in Per.=44.23

**6**



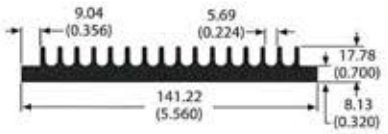

**64315** 4.3 lb/ft 1.25 °C/W/3in Per.=56.10

**7**



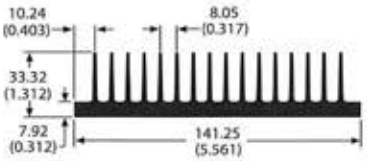

**82595** 1.4 lb/ft 2.43 °C/W/3in Per.=28.82

**8**




**65325** 2.8 lb/ft 3.21 °C/W/3in Per.=21.81

**9**

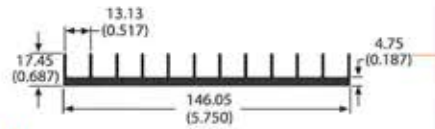



**60215** 3.6 lb/ft 1.68 °C/W/3in Per.=41.74

## Temperature Rise Factor

Since natural convection heat sink efficiency degrades with decreasing sink-to-ambient temperature differential, a correction factor must be applied to the published data if an application requires a sink-to-ambient temperature rise of less than 75°C. See page 16 for a temperature correction table.

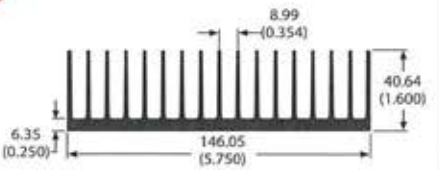
**10**




class A

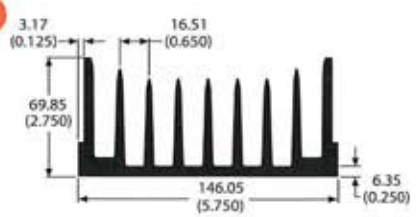
**61790** 1.7 lb/ft 3.00 °C/W/3in Per.=23.28

**11**



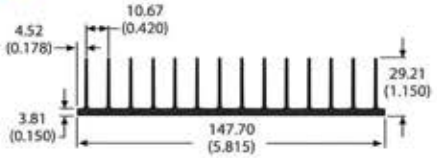

**76755** 3.8 lb/ft 1.09 °C/W/3in Per.=64.20

**12**



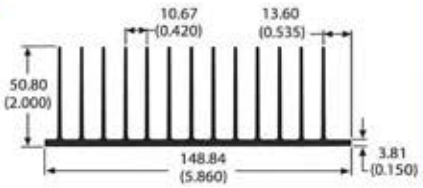

**71170** 6.4 lb/ft 1.44 °C/W/3in Per.=48.48

**13**



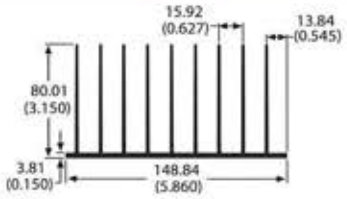

**71150** 2.1 lb/ft 1.81 °C/W/3in Per.=38.67

**14**



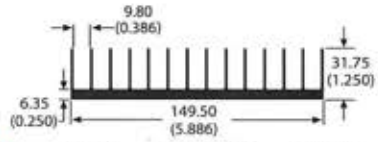

**71350** 3.0 lb/ft 1.19 °C/W/3in Per.=58.82

**15**



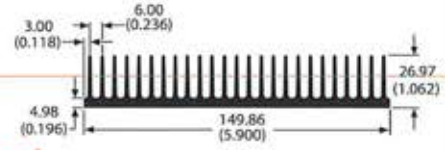

**71845** 3.8 lb/ft 1.07 °C/W/3in Per.=65.25

**16**




**60230** 2.7 lb/ft 1.77 °C/W/3in Per.=39.55

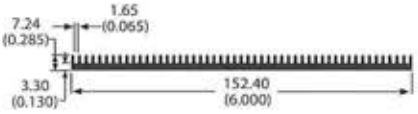
**17**




class A

**64500** 3.3 lb/ft 1.33 °C/W/3in Per.=52.60

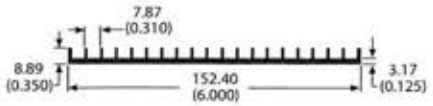
**18**




**80710** 1.4 lb/ft 2.74 °C/W/3in Per.=25.51

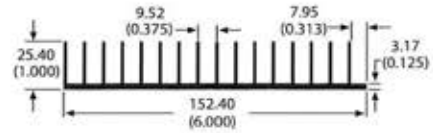
# Flatback

**1**



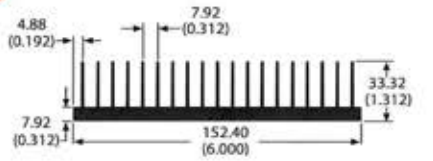

**62995** 1.2 lb/ft 3.34 °C/W/3in Per.=20.92

**2**



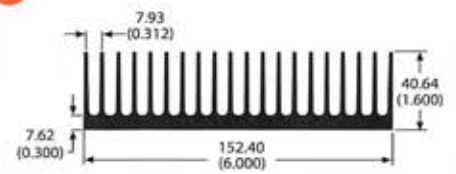

**62440** 1.9 lb/ft 1.76 °C/W/3in Per.=39.69

**3**



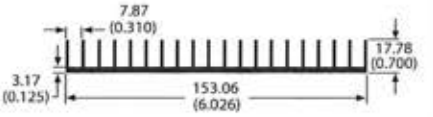

**68995** 3.6 lb/ft 1.41 °C/W/3in Per.=49.68

**4**



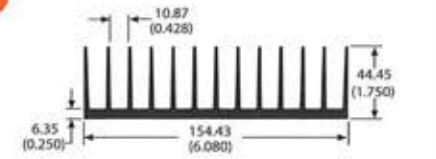

**72385** 4.8 lb/ft 1.13 °C/W/3in Per.=61.82

**5**



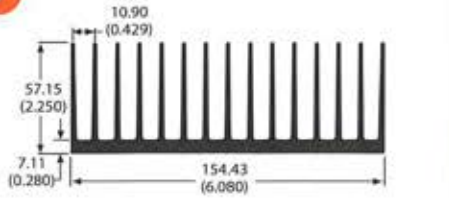

**74645** 1.7 lb/ft 1.98 °C/W/3in Per.=35.30

**6**



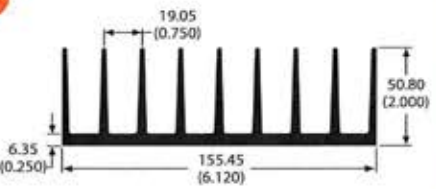

class A
**60140** 4.0 lb/ft 1.39 °C/W/3in Per.=50.26

**7**



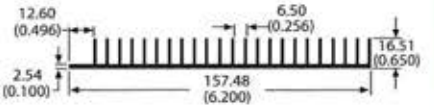

**71145** 5.5 lb/ft 1.00 °C/W/3in Per.=69.93

**8**



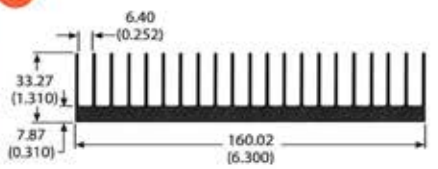

**64225** 4.3 lb/ft 1.64 °C/W/3in Per.=42.71

**9**




**66690** 1.6 lb/ft 1.85 °C/W/3in Per.=37.71

**10**




**81480** 3.7 lb/ft 1.30 °C/W/3in Per.=53.99

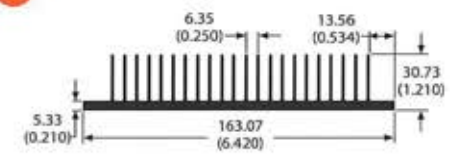
## KEY

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

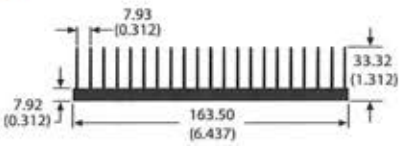
**Per.** = Perimeter in inches

**11**



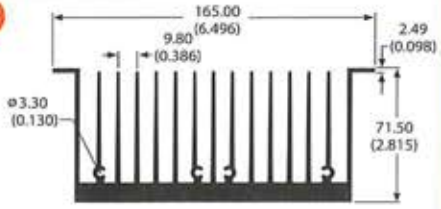

**64360** 3.1 lb/ft 1.24 °C/W/3in Per.=56.22

**12**



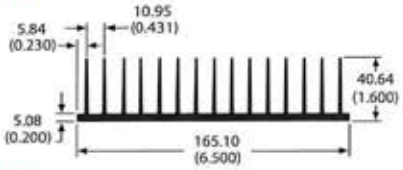

class A
**60340** 3.9 lb/ft 1.28 °C/W/3in Per.=54.48

**13**



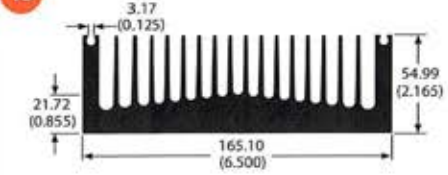

**75560** 6.3 lb/ft 0.83 °C/W/3in Per.=84.51

**14**



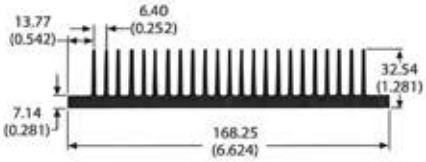

**61070** 3.5 lb/ft 1.30 °C/W/3in Per.=53.91

**15**



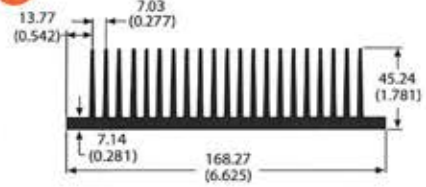

**69180** 9.1 lb/ft 1.07 °C/W/3in Per.=65.60

**16**



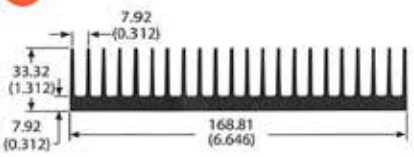

**71395** 4.3 lb/ft 1.21 °C/W/3in Per.=57.72

**17**



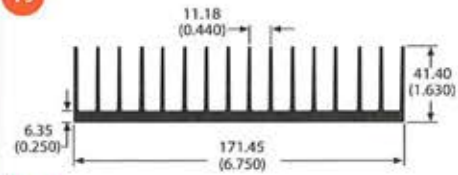

**69800** 5.9 lb/ft 0.94 °C/W/3in Per.=74.58

**18**



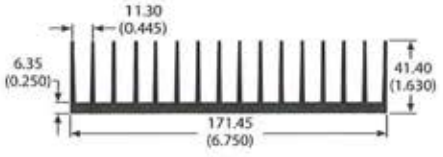

class A
**62155** 4.6 lb/ft 1.26 °C/W/3in Per.=55.49

**19**




class A
**62285** 4.0 lb/ft 1.23 °C/W/3in Per.=56.85

**20**




**62060** 4.3 lb/ft 1.23 °C/W/3in Per.=56.84



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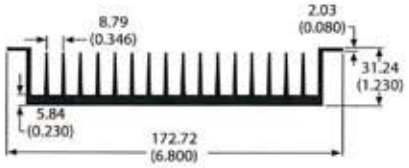
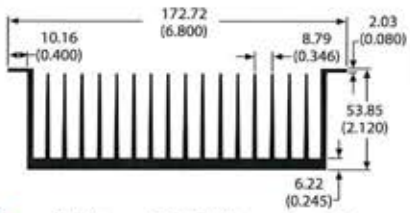
1



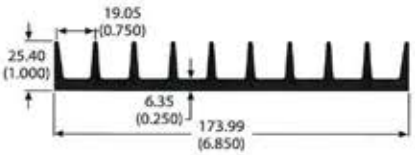

**76535** 3.2 lb/ft 1.53 °C/W/3in Per.=45.58

2



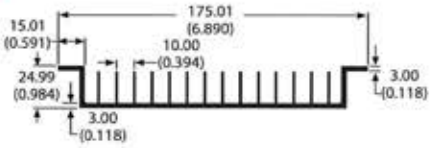

**77555** 4.8 lb/ft 0.91 °C/W/3in Per.=77.08

3



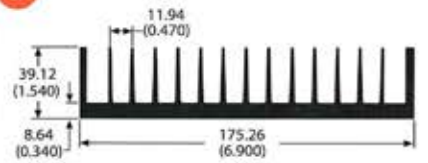

**81520** 3.2 lb/ft 2.55 °C/W/3in Per.=27.47

4



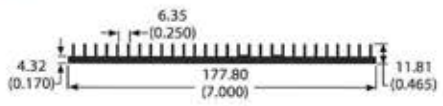

**79190** 1.9 lb/ft 1.85 °C/W/3in Per.=37.89

5



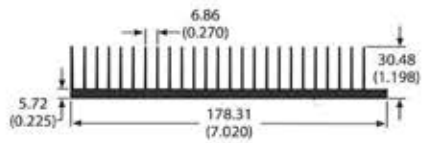

**61830** 4.8 lb/ft 1.42 °C/W/3in Per.=49.07

6



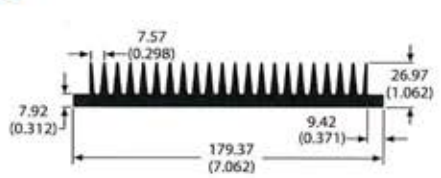

**81055** 2.0 lb/ft 2.18 °C/W/3in Per.=32.10

7



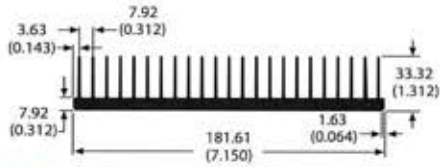

**82555** 3.4 lb/ft 1.12 °C/W/3in Per.=62.68

8




**62510** 5.0 lb/ft 1.60 °C/W/3in Per.=43.71

9




**62660** 4.4 lb/ft 1.18 °C/W/3in Per.=59.32

## Extrusion Class Definitions

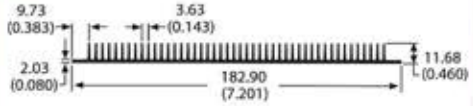
Each of our extrusions is coded with a popularity code / classification. Visit **www.aavidthermalloy.com**, go to the extrusion search tool section to view classification and current stock status.

**Class A** – Popular, >75% chance of some inventory available. (Coded in red lettering.)

**Class B** – Moderately popular material with a good chance of some inventory available.

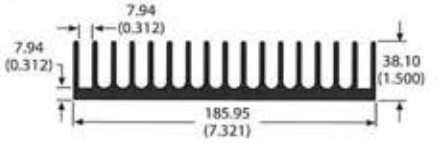
**Class C** – Low demand / low usage material. Set up charge may apply at time of order if none in stock.

10



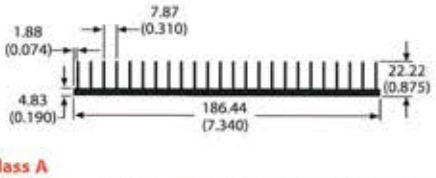

**68855** 1.7 lb/ft 1.51 °C/W/3in Per.=46.30

11



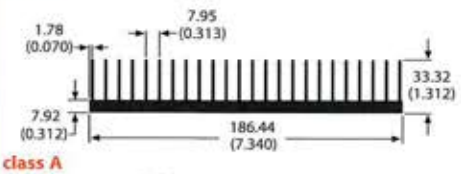

**68780** 6.0 lb/ft 1.33 °C/W/3in Per.=52.70

12



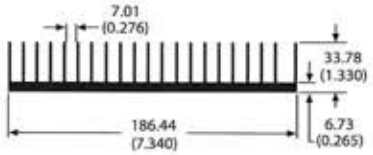

class A
**61915** 2.8 lb/ft 1.48 °C/W/3in Per.=47.10

13



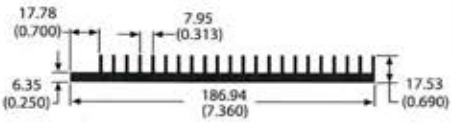

class A
**65445** 4.6 lb/ft 1.12 °C/W/3in Per.=62.27

14



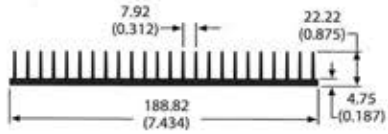

**66880** 4.1 lb/ft 1.18 °C/W/3in Per.=59.05

15



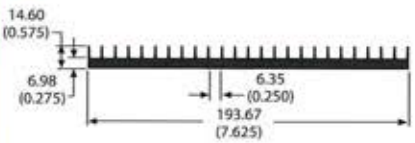

**62280** 3.0 lb/ft 2.06 °C/W/3in Per.=34.00

16



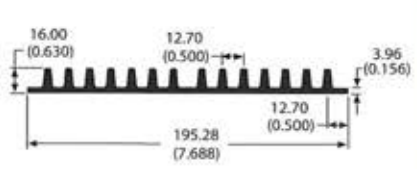

**80815** 3.0 lb/ft 1.50 °C/W/3in Per.=46.56

17




**63350** 3.1 lb/ft 2.38 °C/W/3in Per.=29.32

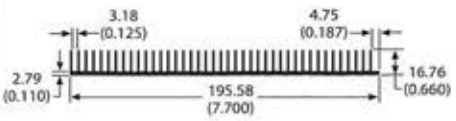
18




**60910** 3.0 lb/ft 2.58 °C/W/3in Per.=27.07

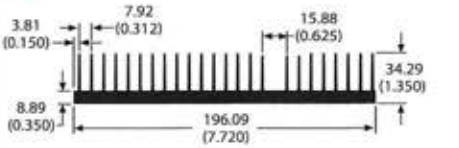
# Flatback

**1**



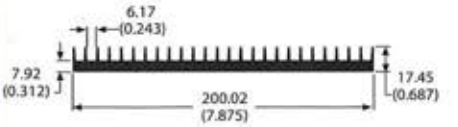

82740 2.6 lb/ft 1.18 °C/W/3in Per.=59.28

**2**



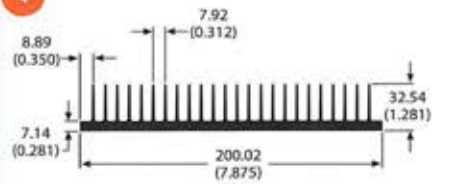

61880 5.1 lb/ft 1.13 °C/W/3in Per.=62.06

**3**



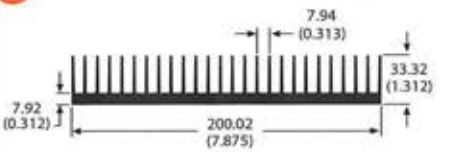

81410 3.7 lb/ft 2.05 °C/W/3in Per.=34.05

**4**



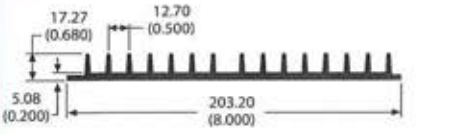

63745 4.6 lb/ft 1.13 °C/W/3in Per.=61.98

**5**



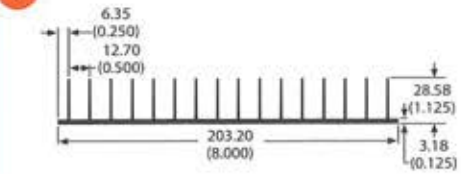

class A
63925 5.1 lb/ft 1.05 °C/W/3in Per.=66.44

**6**



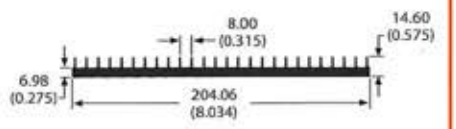

72480 2.9 lb/ft 2.33 °C/W/3in Per.=29.95

**7**



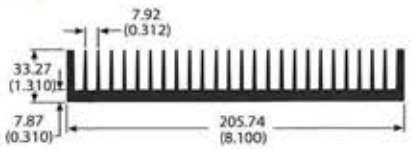

71235 2.2 lb/ft 1.48 °C/W/3in Per.=47.15

**8**



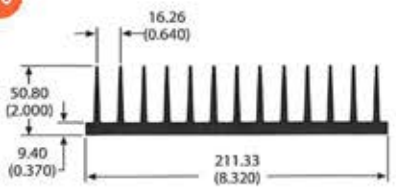

62805 3.1 lb/ft 2.28 °C/W/3in Per.=30.70

**9**




80580 6.5 lb/ft 0.90 °C/W/3in Per.=77.32

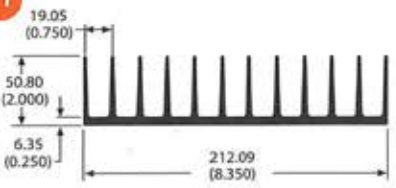
**10**




70400 6.9 lb/ft 1.22 °C/W/3in Per.=57.26

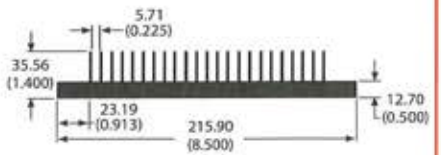


**11**



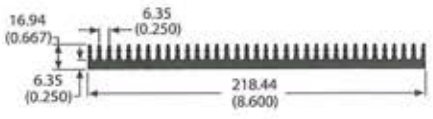

class A
60815 5.7 lb/ft 1.22 °C/W/3in Per.=57.10

**12**



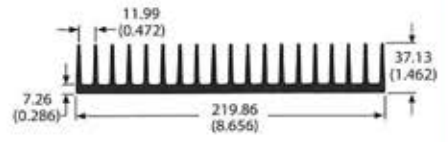

71390 6.8 lb/ft 1.20 °C/W/3in Per.=58.07

**13**



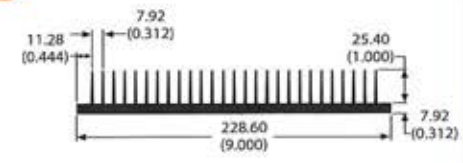

80715 4.3 lb/ft 1.57 °C/W/3in Per.=44.47

**14**



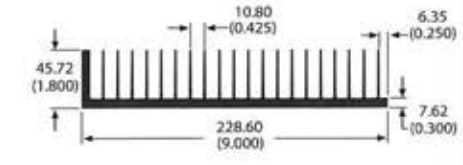

65515 6.2 lb/ft 1.18 °C/W/3in Per.=59.38

**15**



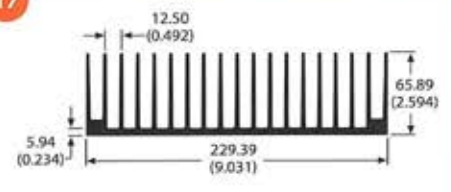

80510 5.6 lb/ft 0.98 °C/W/3in Per.=71.13

**16**



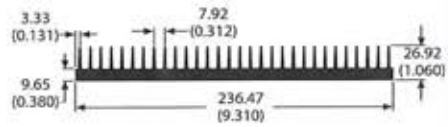

65440 6.0 lb/ft 0.87 °C/W/3in Per.=80.10

**17**



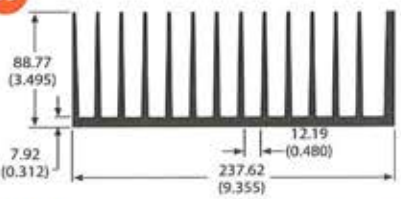

65615 9.0 lb/ft 0.67 °C/W/3in Per.=104.64

**18**



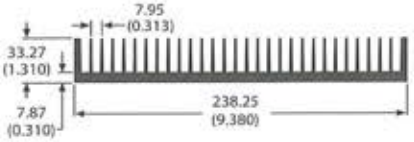

82265 6.0 lb/ft 1.22 °C/W/3in Per.=57.49

**19**




77335 11.9 lb/ft 0.66 °C/W/3in Per.=105.92

**20**




80575 6.5 lb/ft 0.90°C/W/3in Per.=77.32



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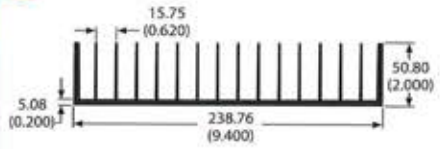
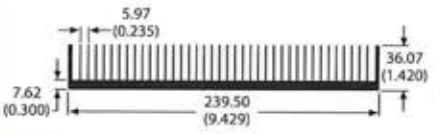
**1**



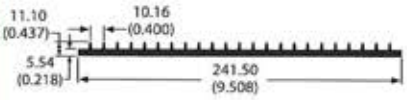

66480 | 5.6 lb/ft | 0.93 °C/W/3in | Per.=75.56

**2**



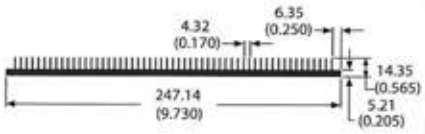

82590 | 6.1 lb/ft | 0.65 °C/W/3in | Per.=108.37

**3**



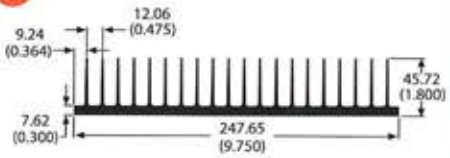

71000 | 2.9 lb/ft | 2.52 °C/W/3in | Per.=27.73

**4**



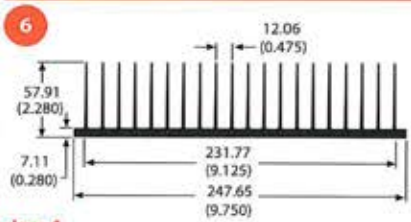

68295 | 3.5 lb/ft | 1.23 °C/W/3in | Per.=56.83

**5**




76525 | 6.3 lb/ft | 0.90 °C/W/3in | Per.=77.72

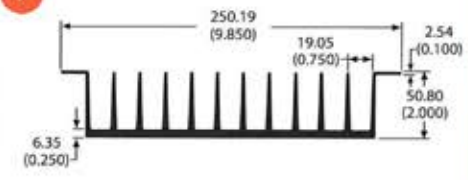
**6**




class A

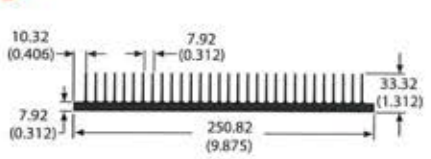
62725 | 7.0 lb/ft | 0.72 °C/W/3in | Per.=97.70

**7**




62185 | 6.1 lb/ft | 1.18 °C/W/3in | Per.=59.42

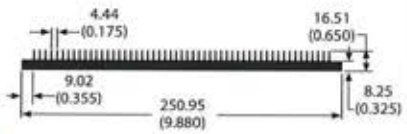
**8**




class A

60520 | 6.1 lb/ft | 0.90 °C/W/3in | Per.=77.66

**9**

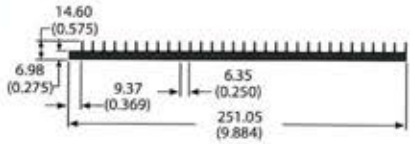



73265 | 5.0 lb/ft | 1.36 °C/W/3in | Per.=51.42

## Fabrication Capabilities

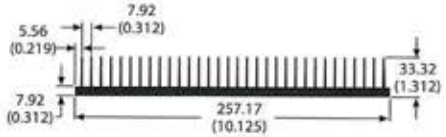
If the thermal solution requires complete fabrication of an extruded profile heat sink, Aavid Thermalloy is equipped for virtually any secondary operation. From a simple routine cut, deburr, and wash to complex milling, punching, finishing and accessory (pads, studs, etc) assembly.

**10**



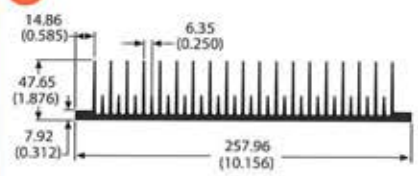

61780 | 3.8 lb/ft | 1.89 °C/W/3in | Per.=37.07

**11**



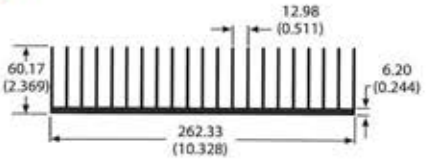

77810 | 6.2 lb/ft | 0.85 °C/W/3in | Per.=82.72

**12**



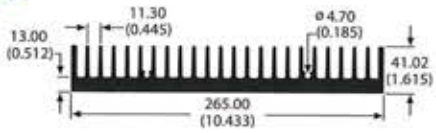

78715 | 6.6 lb/ft | 0.69 °C/W/3in | Per.=101.45

**13**



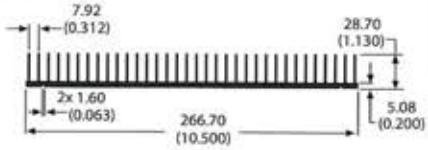

65525 | 8.1 lb/ft | 0.64 °C/W/3in | Per.=108.95

**14**



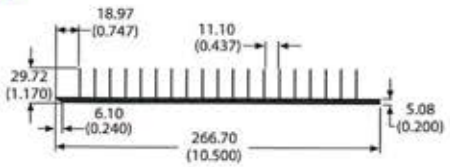

69695 | 10.7 lb/ft | 0.98 °C/W/3in | Per.=71.32

**15**



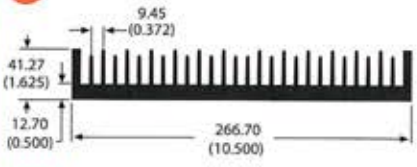

81245 | 5.4 lb/ft | 0.84 °C/W/3in | Per.=83.09

**16**




82375 | 3.7 lb/ft | 1.21 °C/W/3in | Per.=58.00

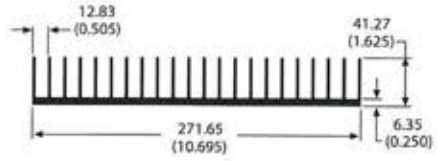
**17**




class A

62325 | 10.8 lb/ft | 0.82 °C/W/3in | Per.=85.27

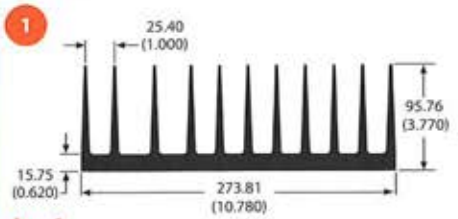
**18**




76125 | 6.6 lb/ft | 0.86 °C/W/3in | Per.=80.91

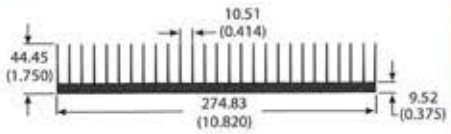
# Flatback–Flatback w/Gaps

**1**



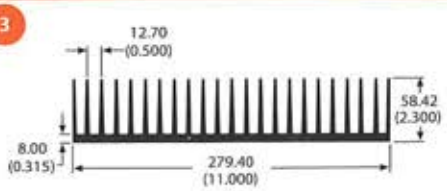

class A
**61785** 16.2 lb/ft 0.79 °C/W/3in Per.=88.30

**2**



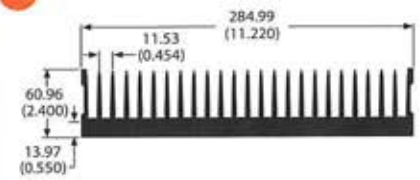

**75890** 7.4 lb/ft 0.74 °C/W/3in Per.=94.73

**3**



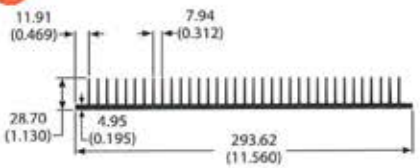

**65340** 11.5 lb/ft 0.63 °C/W/3in Per.=110.29

**4**



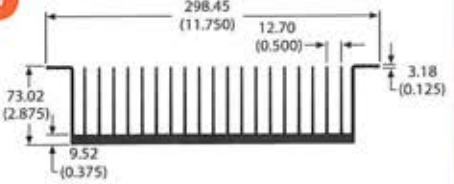

**72355** 14.8 lb/ft 0.54 °C/W/3in Per.=130.47

**5**



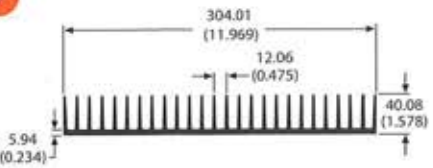

**80605** 5.3 lb/ft 0.81 °C/W/3in Per.=86.47

**6**



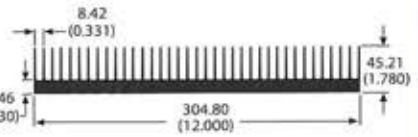

**69200** 10.2 lb/ft 0.56 °C/W/3in Per.=125.57

**7**



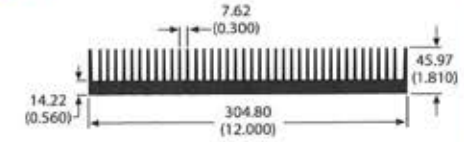

**80345** 8.3 lb/ft 0.78 °C/W/3in Per.=90.07

**8**



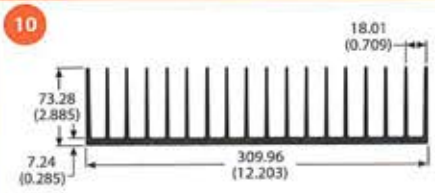

**70165** 11.8 lb/ft 0.61 °C/W/3in Per.=113.86

**9**



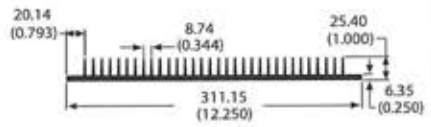

**81640** 14.1 lb/ft 0.58 °C/W/3in Per.=120.35

**10**



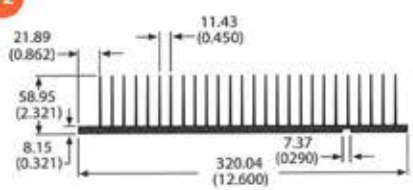

class A
**65535** 11.3 lb/ft 0.60 °C/W/3in Per.=115.65

**11**




class A
**61155** 6.8 lb/ft 0.94 °C/W/3in Per.=74.46

**12**




**69960** 9.8 lb/ft 0.55 °C/W/3in Per.=127.22

**13**


**72225** 8.8 lb/ft 0.69 °C/W/3in Per.=101.82

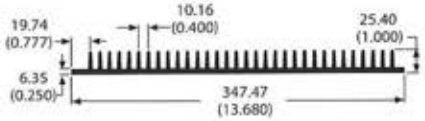
## KEY

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

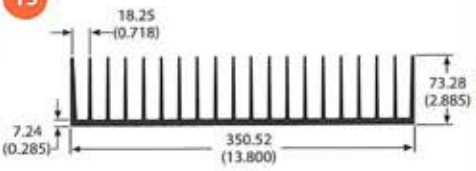
**Per.** = Perimeter in inches

**14**



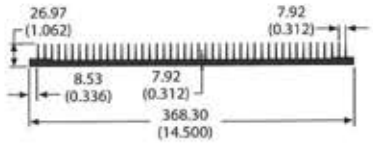

**62645** 8.3 lb/ft 0.97 °C/W/3in Per.=71.76

**15**



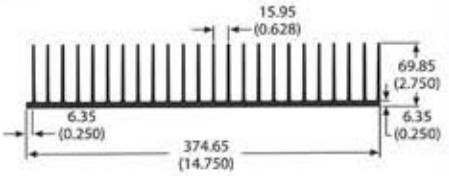

**82445** 12.6 lb/ft 0.54 °C/W/3in Per.=128.89

**16**



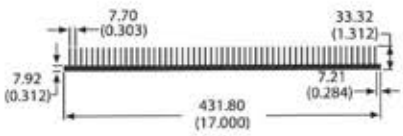

**71770** 8.7 lb/ft 0.75 °C/W/3in Per.=92.67

**17**



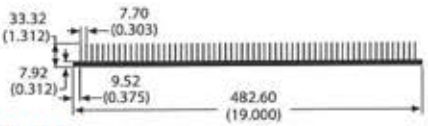

**72545** 11.9 lb/ft 0.48 °C/W/3in Per.=144.77

**18**



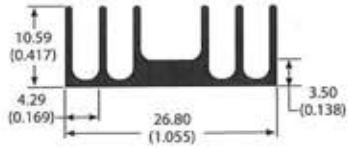

class A
**63340** 11.3 lb/ft 0.49 °C/W/3in Per.=142.00

**19**




class A
**62335** 12.9 lb/ft 0.44 °C/W/3in Per.=157.72

**20**




**72695** 0.2 lb/ft 11.30 °C/W/3in Per.=6.19



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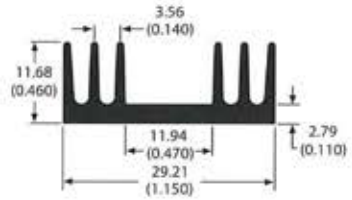
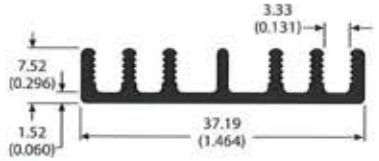
**1**



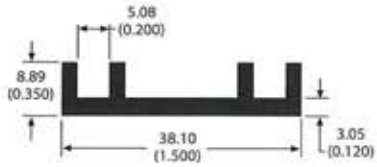

62365 0.3 lb/ft 11.01 °C/W/3in Per.=6.35

**2**



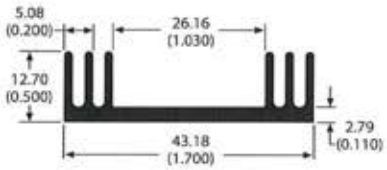

80725 0.2 lb/ft 10.55 °C/W/3in Per.=6.63

**3**



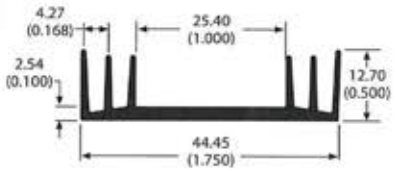

60185 0.3 lb/ft 13.76 °C/W/3in Per.=5.08

**4**



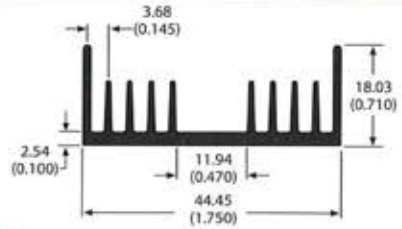

80505 0.4 lb/ft 8.74 °C/W/3in Per.=8.00

**5**



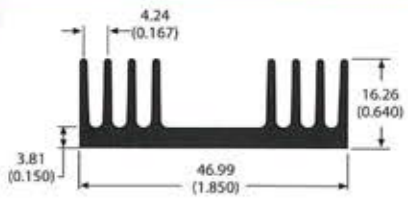

60950 0.3 lb/ft 8.70 °C/W/3in Per.=8.04

**6**



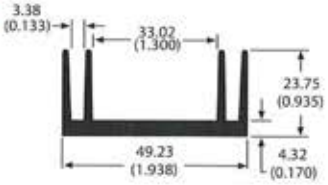

61770 0.5 lb/ft 6.13 °C/W/3in Per.=11.41

**7**



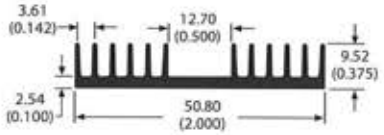

82580 0.6 lb/ft 6.22 °C/W/3in Per.=11.25

**8**



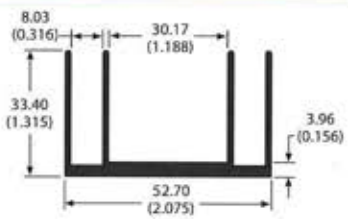

80170 0.7 lb/ft 6.92 °C/W/3in Per.=10.11

**9**



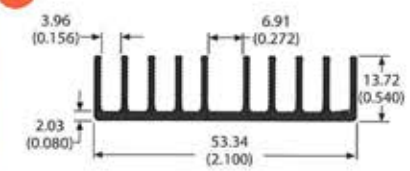

61420 0.4 lb/ft 6.83 °C/W/3in Per.=10.24

**10**




62355 0.7 lb/ft 5.10 °C/W/3in Per.=13.71

**11**



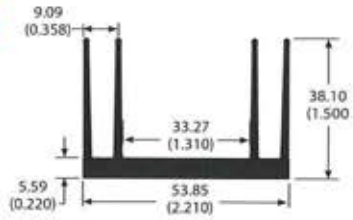

66435 0.5 lb/ft 4.78 °C/W/3in Per.=14.63

## Don't see what you are looking for?

We have thousands of shapes that are not listed in this printing. We can assist you with the selection of existing profiles or with the design of new profiles.

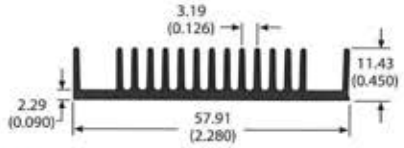
Should you require a new custom design, since there is only a nominal engineering service charge for the design and tooling of new extrusion dies, customers with challenging applications often select a new design rather than choose an existing profile.

**12**



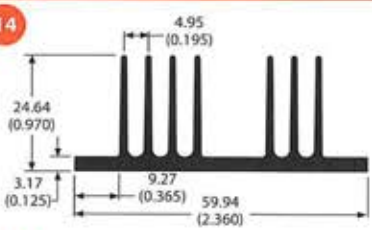

62215 0.9 lb/ft 4.09 °C/W/3in Per.=17.11

**13**



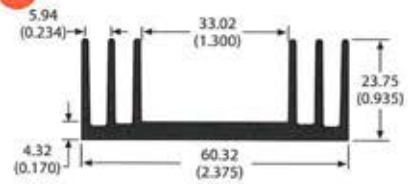

81920 0.6 lb/ft 4.75 °C/W/3in Per.=14.73

**14**



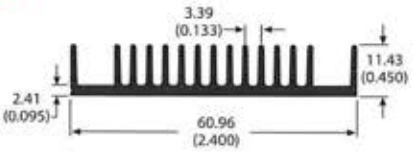

78450 0.8 lb/ft 4.32 °C/W/3in Per.=16.19

**15**



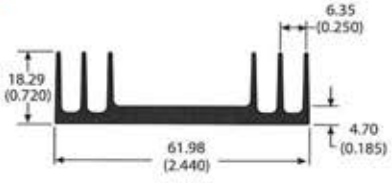

62220 0.8 lb/ft 4.94 °C/W/3in Per.=14.14

**16**



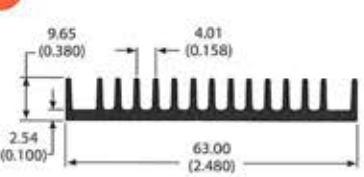

81905 0.6 lb/ft 4.71 °C/W/3in Per.=14.85

**17**




60985 0.7 lb/ft 5.99°C/W/3in Per.=11.67

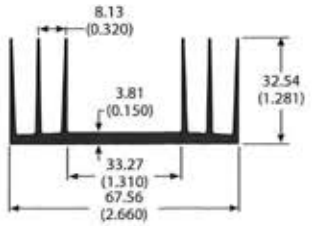
**18**




72425 0.6 lb/ft 5.52°C/W/3in Per.=12.66

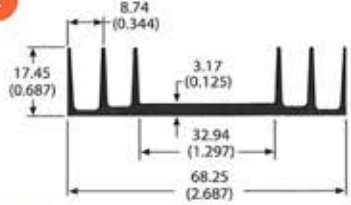
# Flatback w/Gaps

**1**



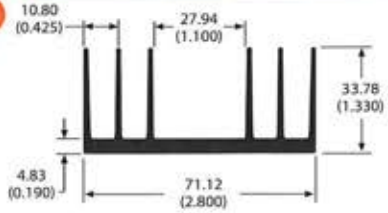

61065 | 1.0 lb/ft | 3.78 °C/W/3in | Per.=18.50

**2**



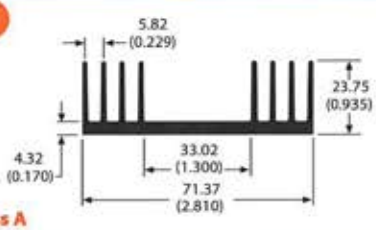

60865 | 0.6 lb/ft | 5.71 °C/W/3in | Per.=12.25

**3**



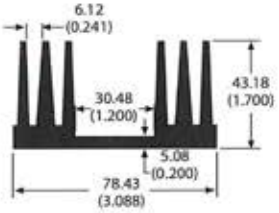

61390 | 1.2 lb/ft | 3.27 °C/W/3in | Per.=21.36

**4**



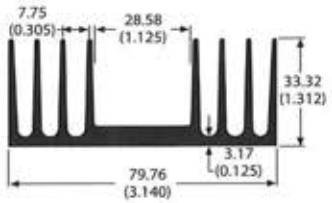

class A
61040 | 1.0 lb/ft | 3.86 °C/W/3in | Per.=18.13

**5**



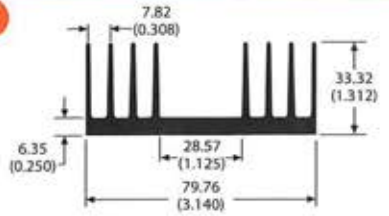

60625 | 2.6 lb/ft | 3.12 °C/W/3in | Per.=22.40

**6**



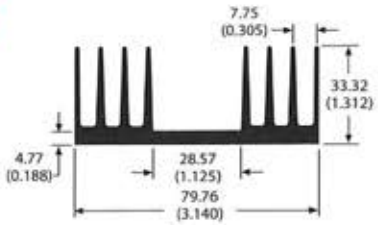

81060 | 1.6 lb/ft | 2.90 °C/W/3in | Per.=24.15

**7**



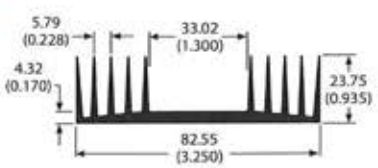

61455 | 1.7 lb/ft | 3.04 °C/W/3in | Per.=23.03

**8**



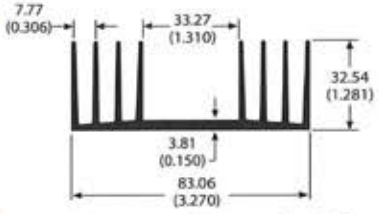

64835 | 1.7 lb/ft | 3.04 °C/W/3in | Per.=23.03

**9**




61035 | 1.2 lb/ft | 3.19 °C/W/3in | Per.=21.92

**10**




61060 | 1.4 lb/ft | 2.84 °C/W/3in | Per.=24.59

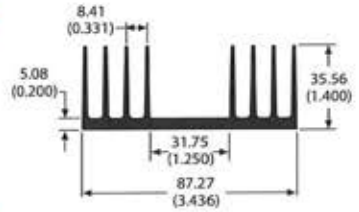
**KEY**

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

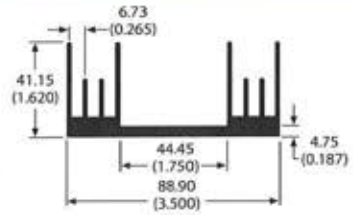
**Per.** = Perimeter in inches

**11**



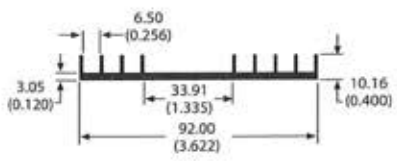

61055 | 1.7 lb/ft | 2.73 °C/W/3in | Per.=25.61

**12**



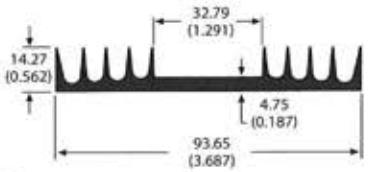

65695 | 1.8 lb/ft | 3.03 °C/W/3in | Per.=23.11

**13**



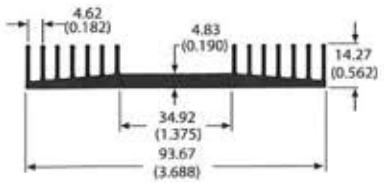

60555 | 0.7 lb/ft | 5.61 °C/W/3in | Per.=12.46

**14**



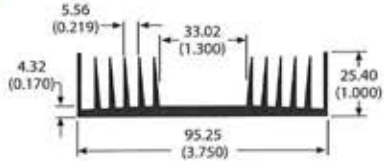

60110 | 1.0 lb/ft | 4.79 °C/W/3in | Per.=14.60

**15**



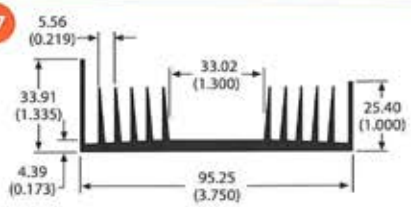

60725 | 1.0 lb/ft | 3.14 °C/W/3in | Per.=22.27

**16**



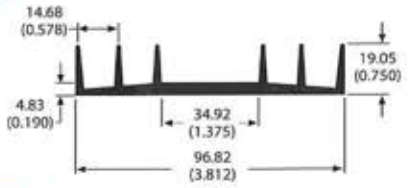

60935 | 1.4 lb/ft | 2.68 °C/W/3in | Per.=26.06

**17**



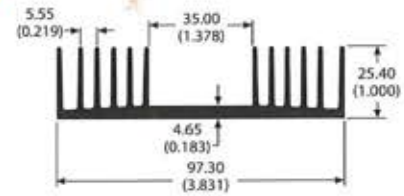

60570 | 1.4 lb/ft | 2.62 °C/W/3in | Per.=26.70

**18**



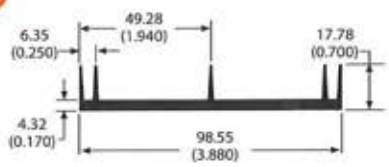

60850 | 1.1 lb/ft | 4.80 °C/W/3in | Per.=14.57

**19**




82200 | 1.6 lb/ft | 2.57 °C/W/3in | Per.=27.16

**20**




63725 | 1.0 lb/ft | 5.31 °C/W/3in | Per.=13.16



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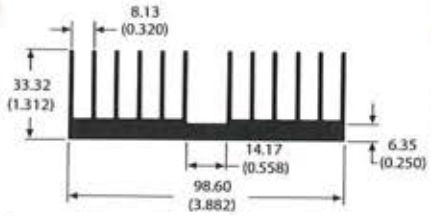
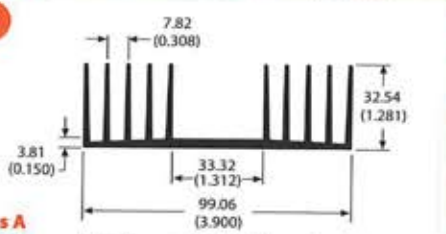
**1**



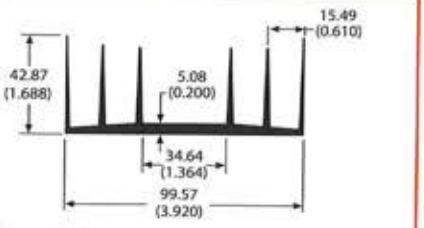

**61850** 2.2 lb/ft 2.19 °C/W/3in Per.=31.90

**2**



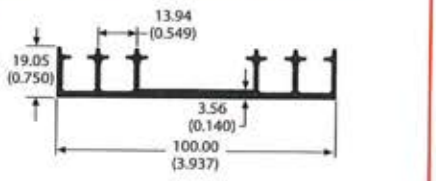

class A
**60630** 1.7 lb/ft 2.29 °C/W/3in Per.=30.49

**3**



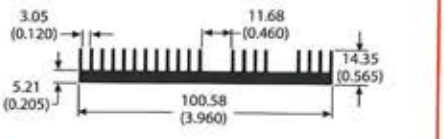

**61050** 1.5 lb/ft 2.87 °C/W/3in Per.=24.37

**4**



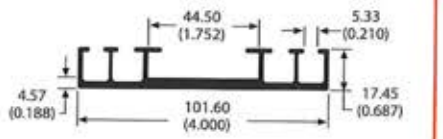

**60395** 1.0 lb/ft 3.54 °C/W/3in Per.=19.73

**5**



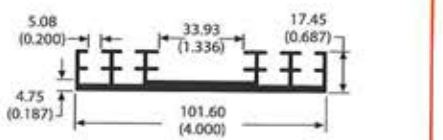

**76625** 1.4 lb/ft 3.21 °C/W/3in Per.=21.79

**6**



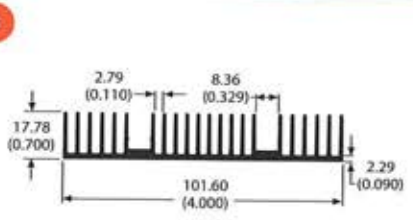

**61445** 1.1 lb/ft 4.13 °C/W/3in Per.=16.94

**7**



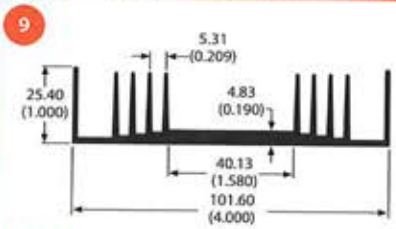

**60665** 1.2 lb/ft 3.48 °C/W/3in Per.=20.11

**8**




**71115** 1.3 lb/ft 2.09 °C/W/3in Per.=33.51

**9**



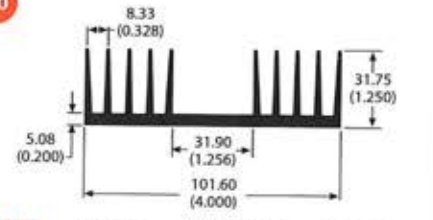

**61030** 1.2 lb/ft 2.90 °C/W/3in Per.=24.10

## Rapid Prototype Creation

Companies turn to Aavid Thermalloy when they need a quick turnaround on short run thermal components for product design verification and pre-production launch programs.

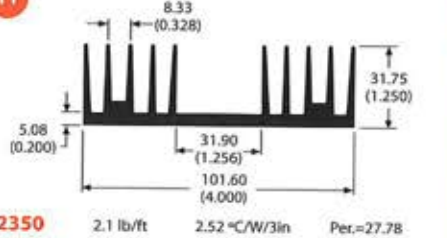
We are ready to help when there is a need for quick turnaround on short run thermal components for product design verification and pre-production launch programs.

**10**



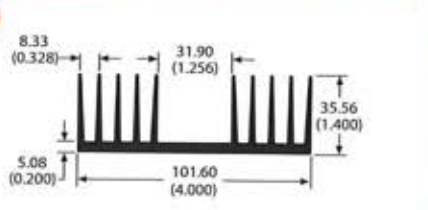

**62475** 2.0 lb/ft 2.46 °C/W/3in Per.=28.48

**11**



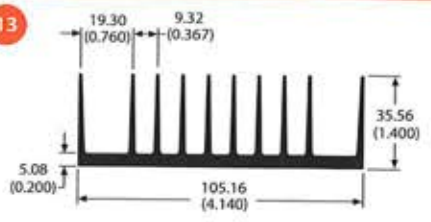

**82350** 2.1 lb/ft 2.52 °C/W/3in Per.=27.78

**12**



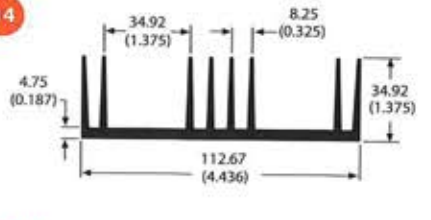

**60905** 2.2 lb/ft 2.22°C/W/3in Per.=31.43

**13**



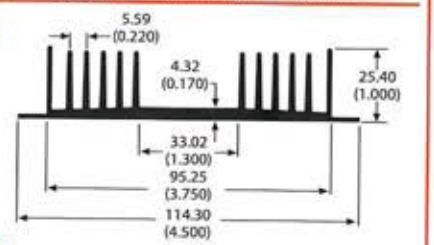

**63275** 2.0 lb/ft 2.21 °C/W/3in Per.=31.61

**14**



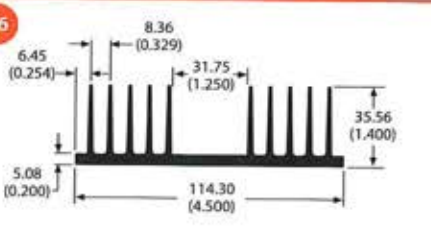

**63060** 2.0 lb/ft 2.54°C/W/3in Per.=27.49

**15**



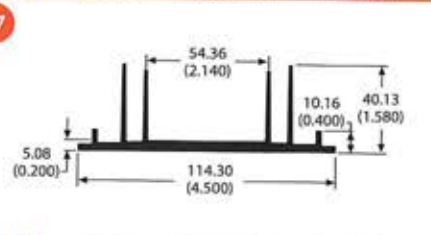

**60805** 1.6 lb/ft 2.53 °C/W/3in Per.=27.69

**16**



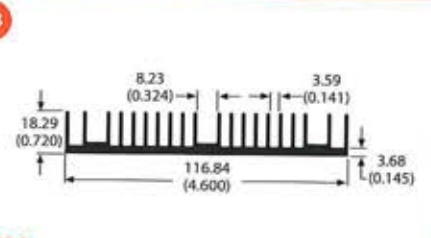

**60350** 2.3 lb/ft 2.17 °C/W/3in Per.=32.19

**17**




**67870** 1.5 lb/ft 3.37 °C/W/3in Per.=20.74

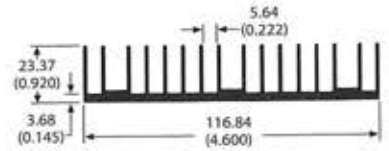
**18**




**65990** 1.6 lb/ft 2.24 °C/W/3in Per.=31.17

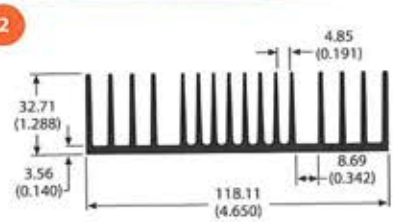
# Flatback w/Gaps

**1**



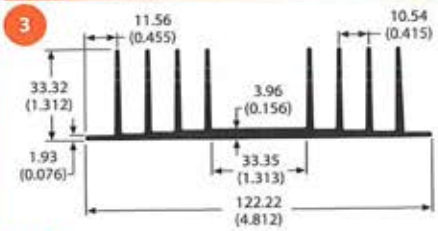

65555 1.7 lb/ft 2.08 °C/W/3in Per.=33.55

**2**



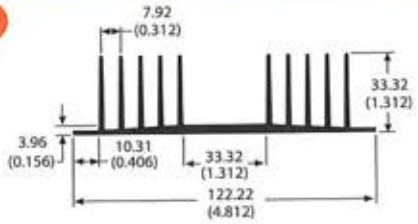

74365 2.5 lb/ft 1.57 °C/W/3in Per.=44.60

**3**



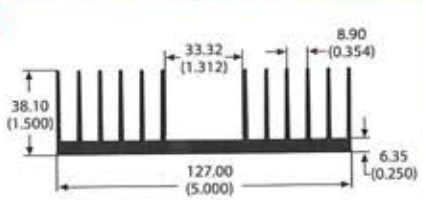

66635 1.6 lb/ft 2.49 °C/W/3in Per.=28.10

**4**



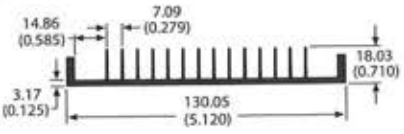

60840 1.8 lb/ft 2.12 °C/W/3in Per.=32.97

**5**



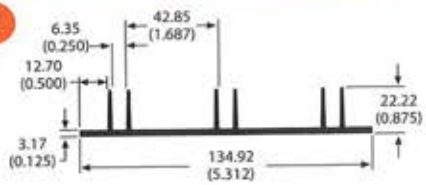

78950 2.7 lb/ft 1.76 °C/W/3in Per.=39.78

**6**



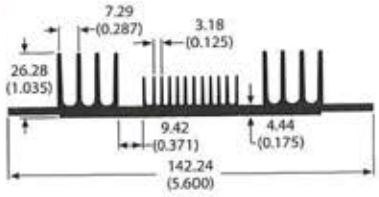

68830 1.4 lb/ft 2.52 °C/W/3in Per.=27.79

**7**



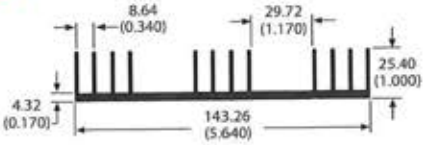

60845 1.2 lb/ft 3.58 °C/W/3in Per.=19.53

**8**



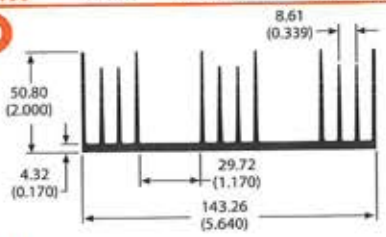

81760 2.0 lb/ft 2.02 °C/W/3in Per.=34.55

**9**




62460 2.0 lb/ft 2.25 °C/W/3in Per.=31.03

**10**




62410 2.8 lb/ft 1.38 °C/W/3in Per.=50.72

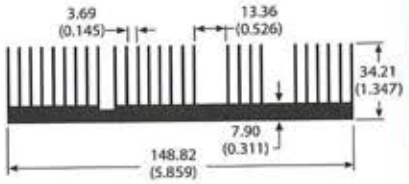
**KEY**

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

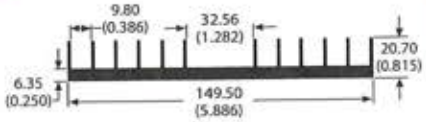
**Per.** = Perimeter in inches

**11**



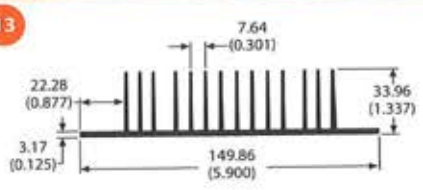

81880 3.6 lb/ft 1.03 °C/W/3in Per.=67.99

**12**



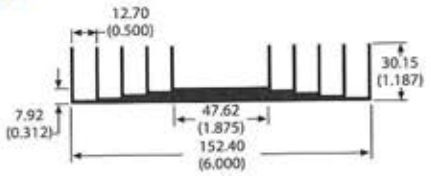

60970 2.2 lb/ft 2.77 °C/W/3in Per.=25.22

**13**



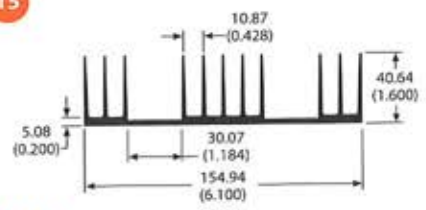

75700 2.3 lb/ft 1.56 °C/W/3in Per.=44.89

**14**



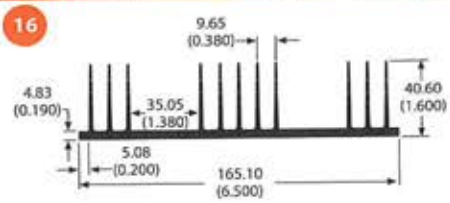

60440 2.2 lb/ft 2.18 °C/W/3in Per.=32.06

**15**



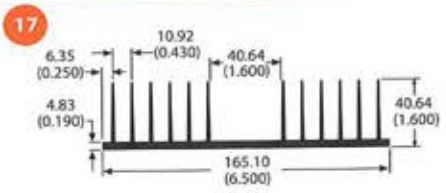

61690 2.6 lb/ft 1.64 °C/W/3in Per.=42.51

**16**



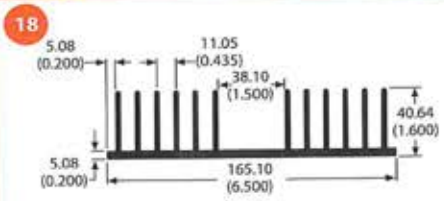

61715 2.8 lb/ft 1.62 °C/W/3in Per.=43.19

**17**



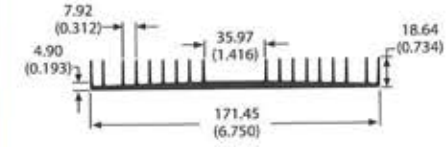

61475 2.9 lb/ft 1.51 °C/W/3in Per.=46.19

**18**



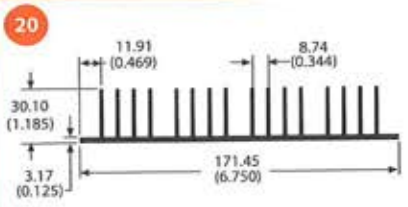

60900 3.9 lb/ft 1.51 °C/W/3in Per.=46.18

**19**




61230 2.0 lb/ft 2.11 °C/W/3in Per.=33.20

**20**




60995 2.6 lb/ft 1.50 °C/W/3in Per.=46.59



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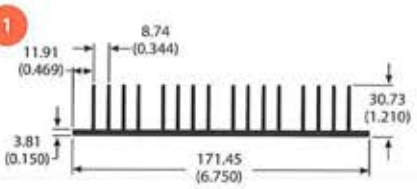
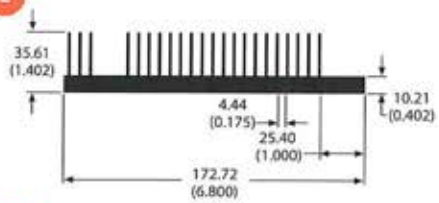
1



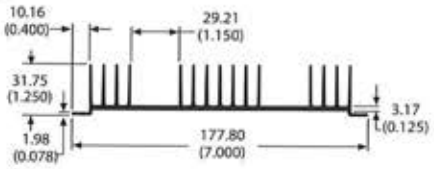

61710 2.8 lb/ft 1.50 °C/W/3in Per.=46.68

2



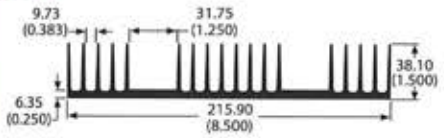

79455 4.8 lb/ft 1.21 °C/W/3in Per.=57.91

3



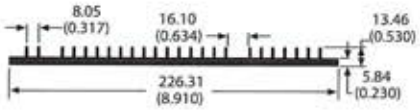

61340 2.3 lb/ft 1.61 °C/W/3in Per.=43.31

4



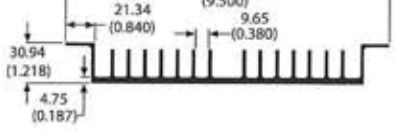

62495 4.6 lb/ft 1.13 °C/W/3in Per.=61.70

5




70455 3.1 lb/ft 2.24 °C/W/3in Per.=31.22

6

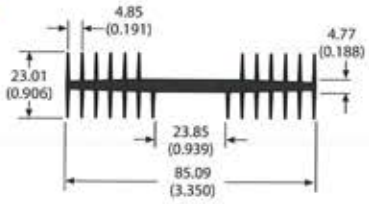



61665 3.6 lb/ft 1.53 °C/W/3in Per.=45.59

7

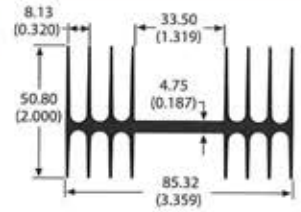

62030 5.4 lb/ft 1.05 °C/W/3in Per.=66.90

8



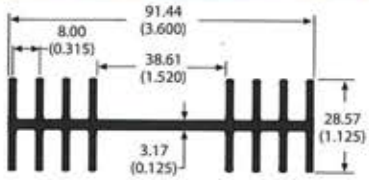

60450 1.2 lb/ft 2.78 °C/W/3in Per.=25.17

9



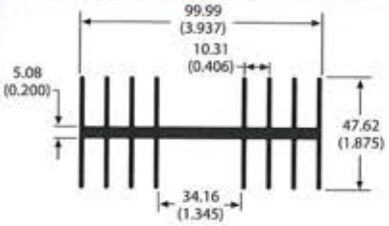

60455 1.7 lb/ft 2.03 °C/W/3in Per.=34.51

10



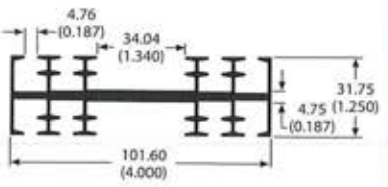

61140 1.3 lb/ft 2.76 °C/W/3in Per.=25.32

11



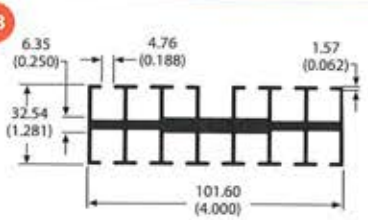

60500 2.1 lb/ft 2.05 °C/W/3in Per.=34.16

12



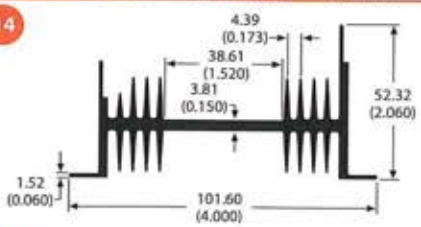

60645 1.6 lb/ft 2.28 °C/W/3in Per.=30.67

13



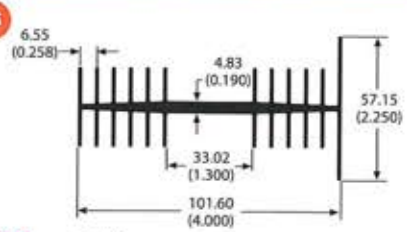

64245 1.8 lb/ft 2.13 °C/W/3in Per.=32.80

14



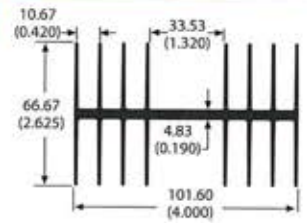

60355 1.6 lb/ft 2.31 °C/W/3in Per.=30.30

15



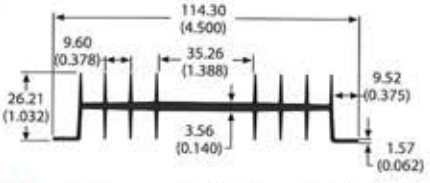

60830 1.7 lb/ft 1.96 °C/W/3in Per.=35.72

16



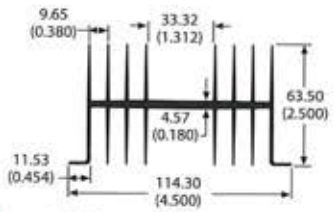

60755 2.5 lb/ft 1.51 °C/W/3in Per.=46.27

17




80400 1.0 lb/ft 3.13 °C/W/3in Per.=22.36

18




60835 2.2 lb/ft 1.54 °C/W/3in Per.=45.37

## Extrusion Alloys

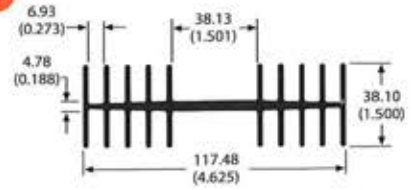
We use 6063-T5 aluminum, unless otherwise specified, because:

- Conducts more heat than many other aluminum alloys
- Is more easily extruded into complex shapes
- Is easily machined
- Is more readily available from many international aluminum suppliers

We recommend T5 hardness to minimize warping and loss of tolerance.

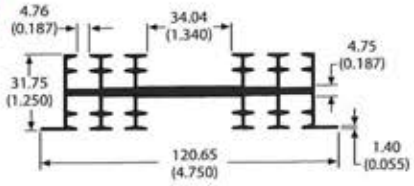
# Double Sided – Max Clip

**1**



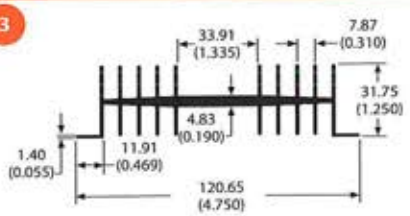

60280 2.3 lb/ft 1.99 °C/W/3in Per.=35.14

**2**



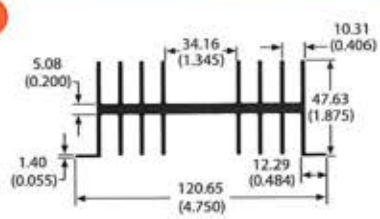

60245 1.7 lb/ft 2.11 °C/W/3in Per.=33.14

**3**



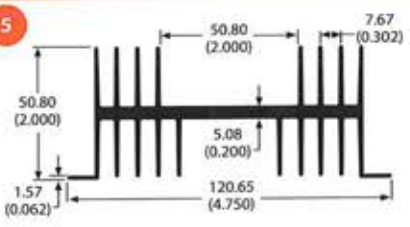

60050 1.6 lb/ft 2.28 °C/W/3in Per.=30.60

**4**



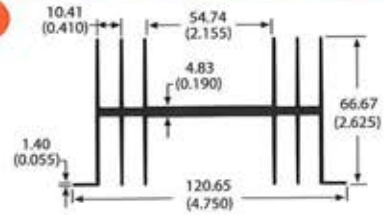

60065 2.2 lb/ft 1.98 °C/W/3in Per.=35.39

**5**



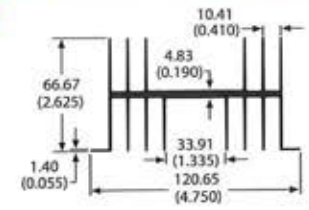

79075 2.3 lb/ft 1.73 °C/W/3in Per.=40.53

**6**



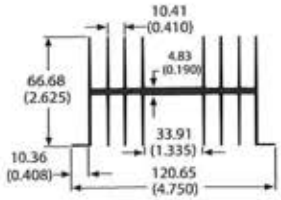

61760 1.9 lb/ft 1.81 °C/W/3in Per.=38.58

**7**



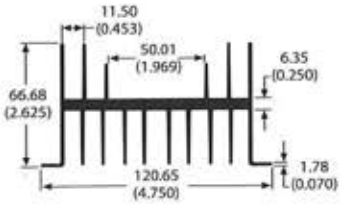

60780 2.1 lb/ft 1.61 °C/W/3in Per.=43.37

**8**



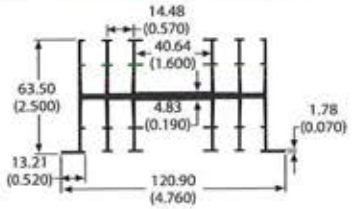

class A
60055 2.2 lb/ft 1.45 °C/W/3in Per.=48.15

**9**




67075 2.8 lb/ft 1.56 °C/W/3in Per.=44.72

**10**




62310 2.1 lb/ft 1.55 °C/W/3in Per.=45.00

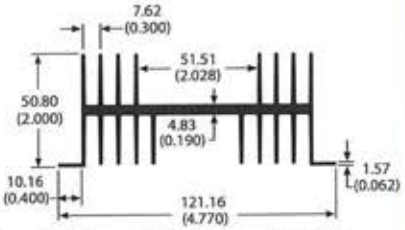
**KEY**

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

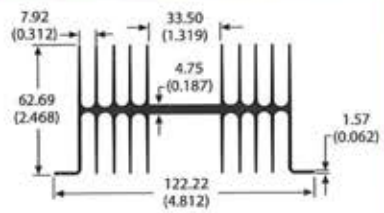
**Per.** = Perimeter in inches

**11**



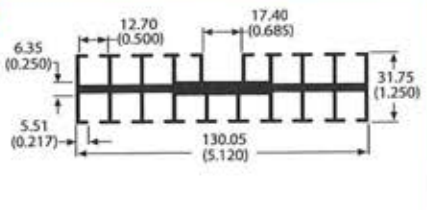

63140 2.4 lb/ft 1.71 °C/W/3in Per.=40.85

**12**



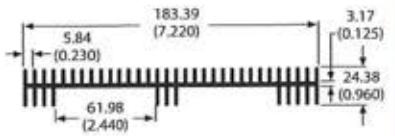

60565 2.3 lb/ft 1.30 °C/W/3in Per.=53.72

**13**



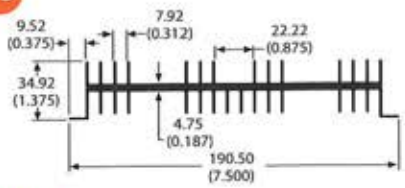

64375 2.2 lb/ft 1.71 °C/W/3in Per.=40.82

**14**



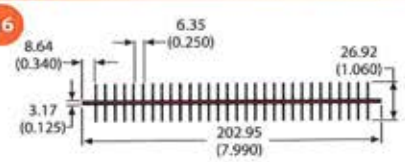

66340 2.8 lb/ft 1.47 °C/W/3in Per.=47.63

**15**



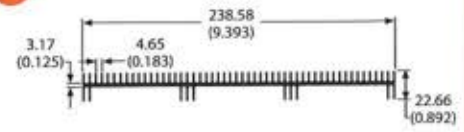

60410 2.7 lb/ft 1.51 °C/W/3in Per.=46.20

**16**



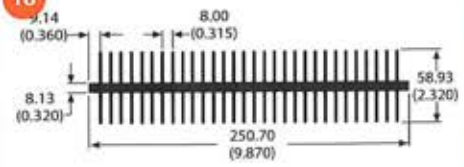

62160 3.1 lb/ft 1.01 °C/W/3in Per.=69.24

**17**



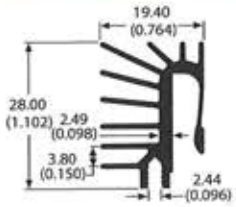

76960 2.9 lb/ft 1.24 °C/W/3in Per.=56.58

**18**



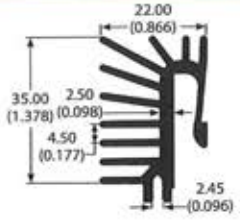

69545 9.9 lb/ft 0.51 °C/W/3in Per.=136.50

**19**




class A
78065 0.3 lb/ft 6.93 °C/W/3in Per.=10.09

**20**




78240 0.4 lb/ft 5.51 °C/W/3in Per.=12.69



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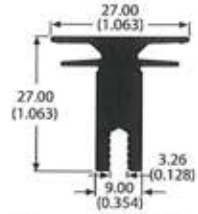
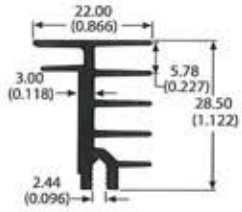
Taiwan Tel: +886(2) 2698-9888 email: sales@aavid.com.tw

**1**



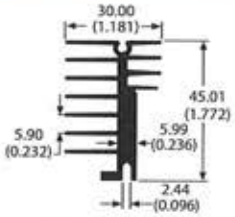

78255 0.5 lb/ft 11.48 °C/W/3in Per.=6.09

**2**



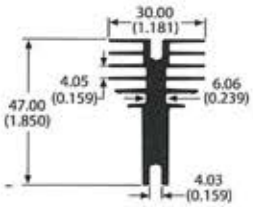

78265 0.3 lb/ft 8.72 °C/W/3in Per.=8.02

**3**



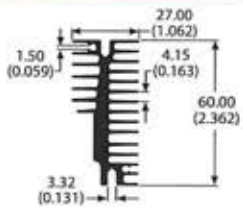

class A
78060 0.8 lb/ft 4.17 °C/W/3in Per.=16.77

**4**



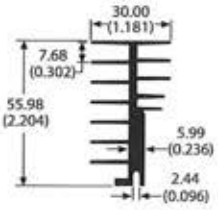

78020 0.8 lb/ft 4.72 °C/W/3in Per.=14.81

**5**



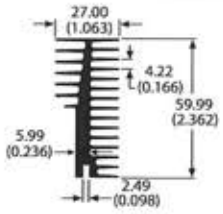

78245 1.1 lb/ft 2.97 °C/W/3in Per.=23.51

**6**



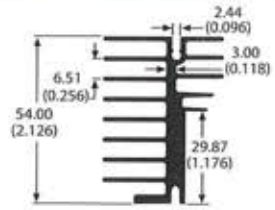

79360 0.8 lb/ft 3.98 °C/W/3in Per.=17.55

**7**



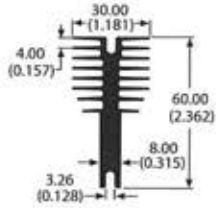

class A
78080 1.1 lb/ft 2.94 °C/W/3in Per.=23.78

**8**



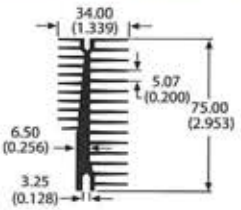

78075 1.1 lb/ft 3.03 °C/W/3in Per.=23.07

**9**



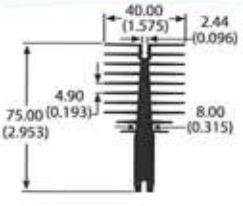

78220 1.1 lb/ft 3.65 °C/W/3in Per.=19.14

**10**




class A
78010 1.7 lb/ft 1.89 °C/W/3in Per.=37.09

**11**

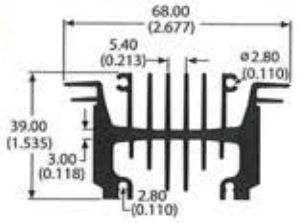



78070 1.7 lb/ft 2.25 °C/W/3in Per.=31.05

## Performance vs. Length

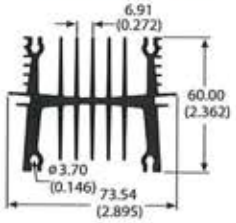
Thermal resistance changes significantly with length. To convert published natural convection thermal resistance at a 3 inch length to a desired length, see page 16 for a length correction table.

**12**



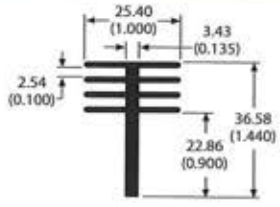

78345 1.5 lb/ft 2.63 °C/W/3in Per.=26.59

**13**



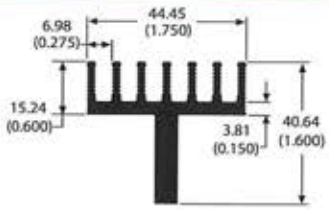

class A
78030 2.3 lb/ft 1.76 °C/W/3in Per.=39.75

**14**



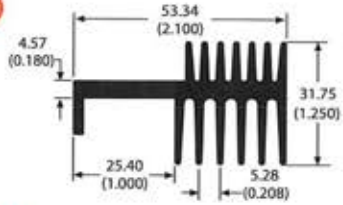

68255 0.5 lb/ft 7.13 °C/W/3in Per.=9.80

**15**



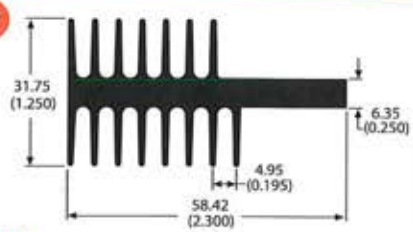

64285 0.9 lb/ft 5.08 °C/W/3in Per.=13.76

**16**



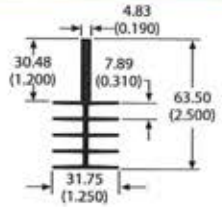

63005 1.1 lb/ft 3.93 °C/W/3in Per.=17.80

**17**




63010 1.2 lb/ft 3.73 °C/W/3in Per.=18.76

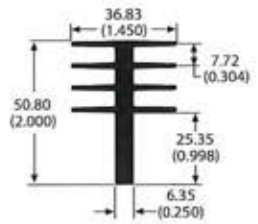
**18**




61150 1.2 lb/ft 4.35 °C/W/3in Per.=16.07

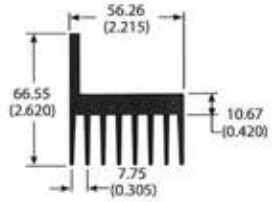
# T's with Fins – Rail – Miscellaneous

**1**



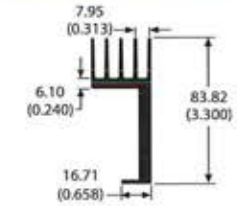

63265 1.0 lb/ft 5.17 °C/W/3in Per.=13.52

**2**



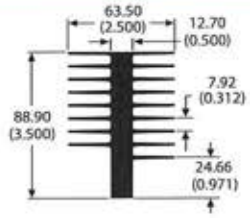

62480 2.3 lb/ft 3.04 °C/W/3in Per.=23.02

**3**



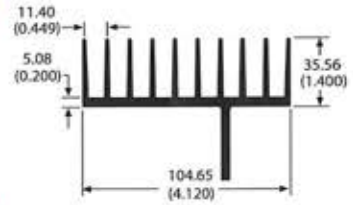

78770 1.5 lb/ft 4.16 °C/W/3in Per.=16.82

**4**



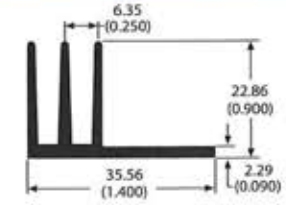

72185 3.6 lb/ft 1.52 °C/W/3in Per.=45.95

**5**



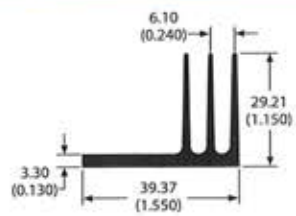

63250 2.7 lb/ft 2.01 °C/W/3in Per.=34.72

**6**



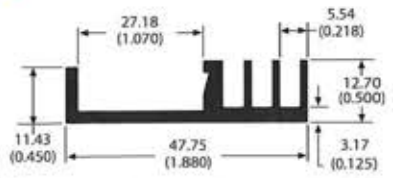

63380 0.4 lb/ft 9.19 °C/W/3in Per.=7.61

**7**



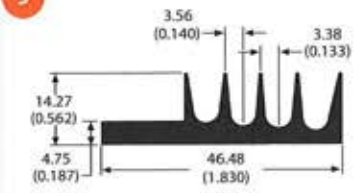

66330 0.5 lb/ft 7.65 °C/W/3in Per.=9.14

**8**



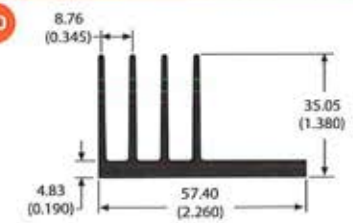

64300 0.4 lb/ft 9.05 °C/W/3in Per.=7.73

**9**




61590 0.5 lb/ft 9.37 °C/W/3in Per.=7.46

**10**




61325 0.9 lb/ft 4.96 °C/W/3in Per.=14.11

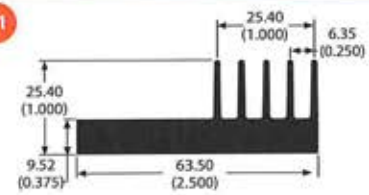
**KEY**

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

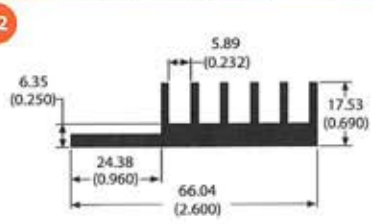
**Per.** = Perimeter in inches

**11**



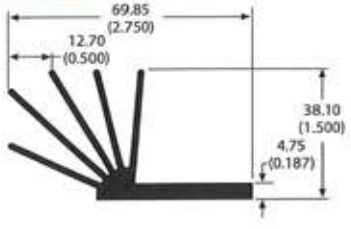

63215 1.3 lb/ft 6.00 °C/W/3in Per.=11.65

**12**



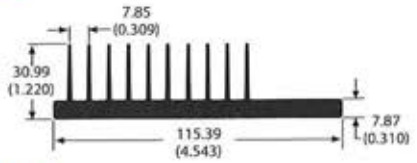

65295 0.9 lb/ft 6.40 °C/W/3in Per.=10.93

**13**



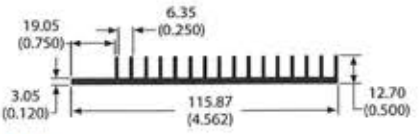

61875 1.0 lb/ft 4.25 °C/W/3in Per.=16.47

**14**



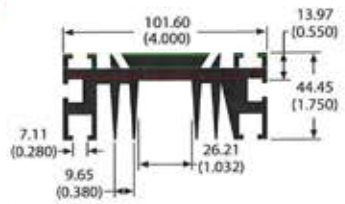

61485 2.3 lb/ft 2.58 °C/W/3in Per.=27.14

**15**



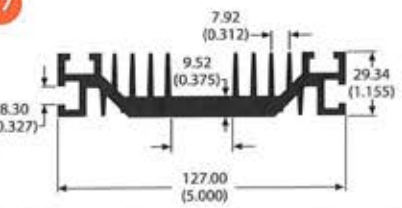

61285 1.1 lb/ft 3.31 °C/W/3in Per.=21.10

**16**



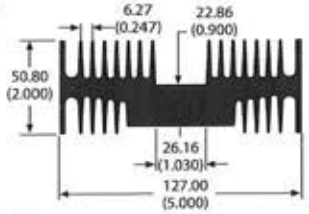

62290 3.6 lb/ft 2.20 °C/W/3in Per.=31.81

**17**



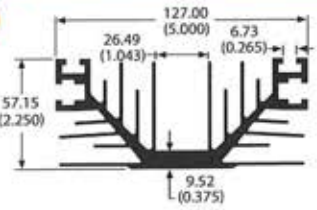

77495 3.0 lb/ft 2.20 °C/W/3in Per.=31.79

**18**



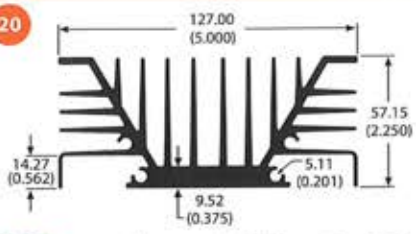

61640 6.4 lb/ft 1.42 °C/W/3in Per.=49.31

**19**




67170 3.6 lb/ft 1.29 °C/W/3in Per.=54.01

**20**




61965 4.1 lb/ft 1.23 °C/W/3in Per.=56.76



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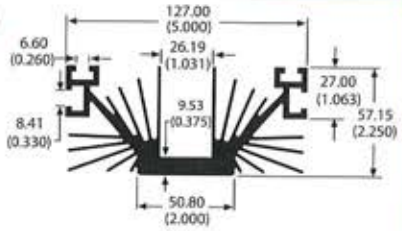
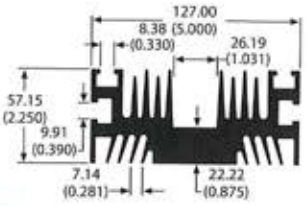
1



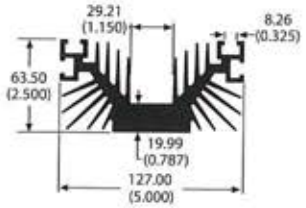

**60540** 4.0 lb/ft 1.24 °C/W/3in Per.=56.55

2



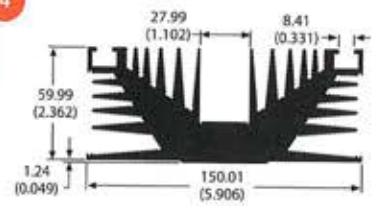

**62190** 6.9 lb/ft 1.42 °C/W/3in Per.=49.17

3



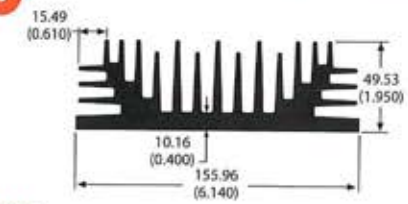

**68360** 6.0 lb/ft 1.28 °C/W/3in Per.=54.53

4



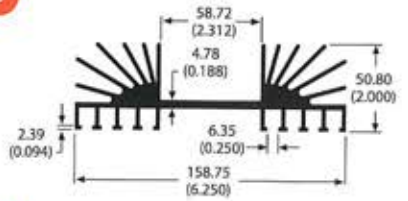

**62780** 8.2 lb/ft 0.96 °C/W/3in Per.=72.78

5



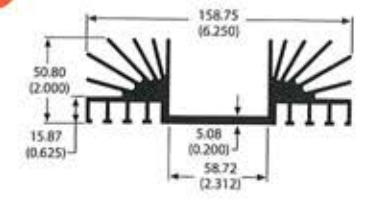

**74970** 6.9 lb/ft 1.24 °C/W/3in Per.=56.44

6



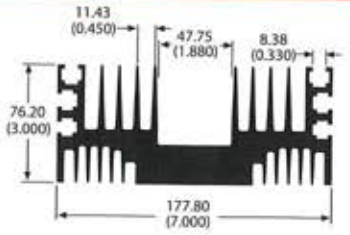

**60730** 4.1 lb/ft 1.37 °C/W/3in Per.=51.14

7



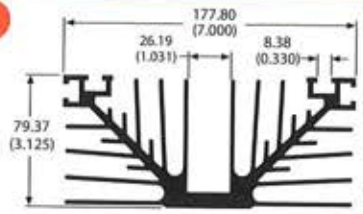

**61310** 4.2 lb/ft 1.37 °C/W/3in Per.=51.15

8




**81955** 10.7 lb/ft 0.94 °C/W/3in Per.=74.42

9

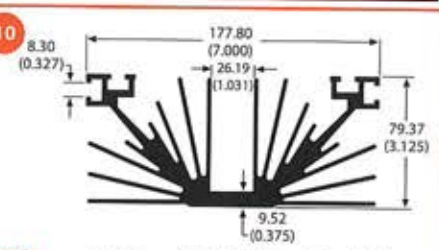



**61570** 7.3 lb/ft 0.81 °C/W/3in Per.=86.60

## Temperature Rise Factor

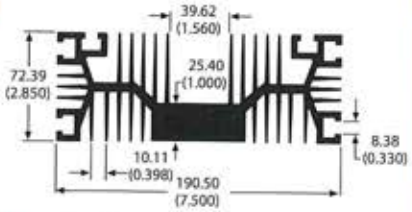
Since natural convection heat sink efficiency degrades with decreasing sink-to-ambient temperature differential, a correction factor must be applied to the published data if an application requires a sink-to-ambient temperature rise of less than 75°C. See page 16 for a temperature correction table.

10



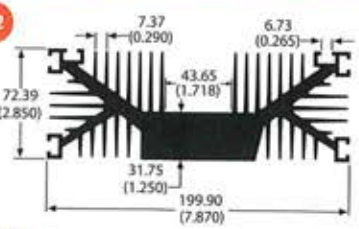

**60655** 7.5 lb/ft 0.85 °C/W/3in Per.=82.40

11



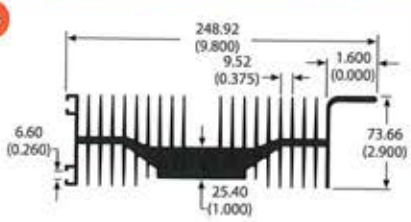

**63885** 10.1 lb/ft 0.70 °C/W/3in Per.=99.59

12



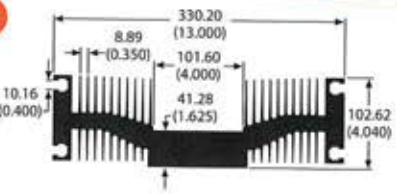

**81655** 11.8 lb/ft 0.70 °C/W/3in Per.=99.38

13



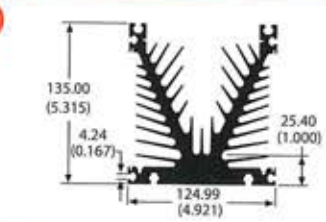

**61540** 11.1 lb/ft 0.65 °C/W/3in Per.=108.40

14



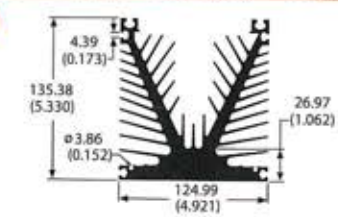

**81985** 27.8 lb/ft 0.46 °C/W/3in Per.=151.59

15



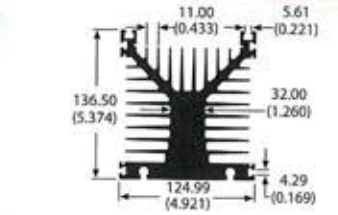

**62905** 10.8 lb/ft 0.77 °C/W/3in Per.=90.75

16



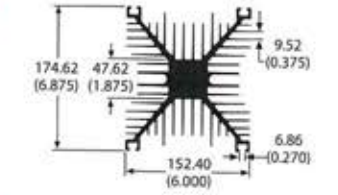

**66975** 11.0 lb/ft 0.69 °C/W/3in Per.=102.05

17




**62375** 12.9 lb/ft 0.76 °C/W/3in Per.=91.69

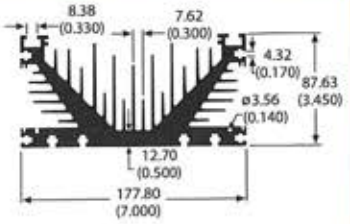
18




**62100** 14.0 lb/ft 0.47 °C/W/3in Per.=148.66

# Miscellaneous

**1**




64730 10.9 lb/ft 0.75 °C/W/3in Per.=93.19

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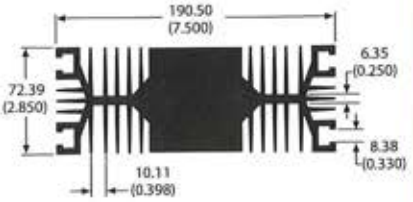


63880 14.9 lb/ft 0.78 °C/W/3in Per.=89.61

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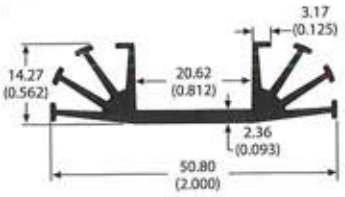


60070 0.4 lb/ft 6.96 °C/W/3in Per.=10.05

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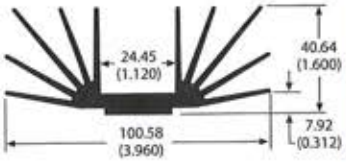
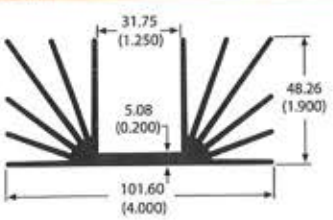


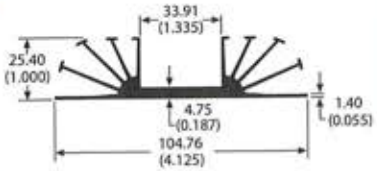

60150 1.7 lb/ft 2.46 °C/W/3in Per.=28.37

**5**



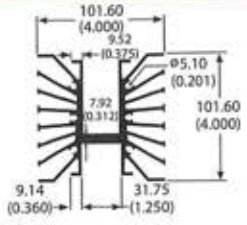

62720 2.2 lb/ft 1.88 °C/W/3in Per.=37.10

**6**




class A
60080 1.2 lb/ft 2.91 °C/W/3in Per.=24.04

**7**




60255 4.6 lb/ft 1.09 °C/W/3in Per.=64.06

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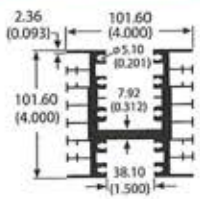


61270 5.1 lb/ft 1.13 °C/W/3in Per.=61.84

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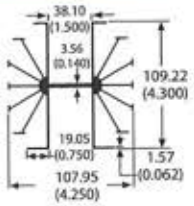
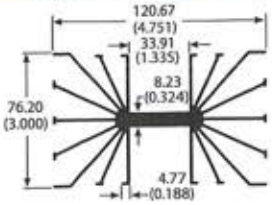



61175 2.3 lb/ft 1.25 °C/W/3in Per.=55.91

**10**




60650 2.9 lb/ft 1.14 °C/W/3in Per.=61.23

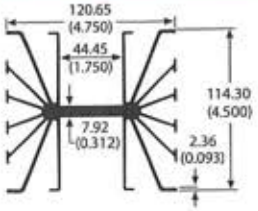
**KEY**

**lb/ft** = Weight per foot in pounds

**°C/W/3in** = Natural convection thermal resistance for a black anodized, 3 inch cut length

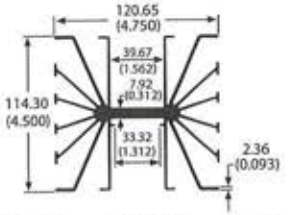
**Per.** = Perimeter in inches

**11**




60105 4.0 lb/ft 1.02 °C/W/3in Per.=68.40

**12**




60060 4.0 lb/ft 0.98°C/W/3in Per.=71.03

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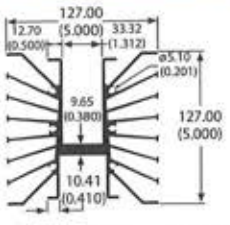


60260 5.4 lb/ft 0.84 °C/W/3in Per.=83.53

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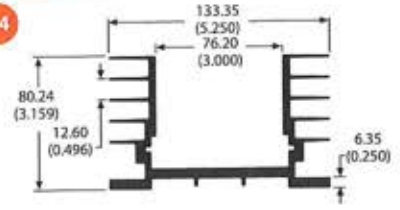
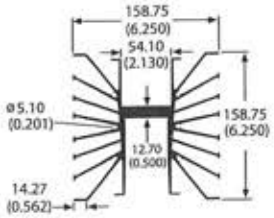


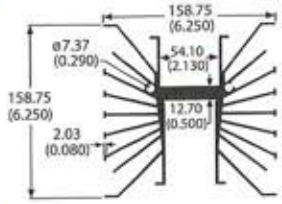

64160 3.8 lb/ft 1.69 °C/W/3in Per.=41.43

**15**



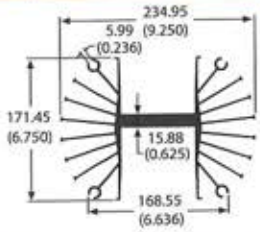

60265 7.7 lb/ft 0.67 °C/W/3in Per.=104.01

**16**



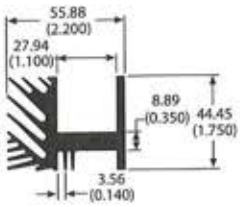

79240 7.6 lb/ft 0.65 °C/W/3in Per.=108.30

**17**



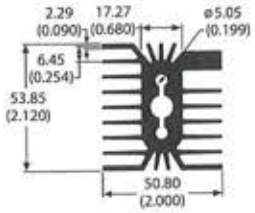

61015 9.6 lb/ft 0.60 °C/W/3in Per.=117.39

**18**



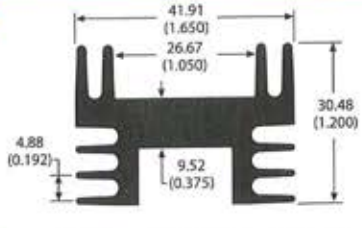

62165 1.9 lb/ft 3.4 °C/W/3in Per.=20.50

**19**




61960 2.2 lb/ft 2.00 °C/W/3in Per.=34.89

**20**




60525 1.1 lb/ft 5.85 °C/W/3in Per.=11.95



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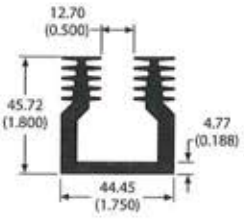
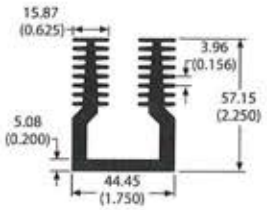
1



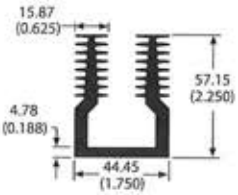

61435 1.6 lb/ft 3.95 °C/W/3in Per.=17.71

2



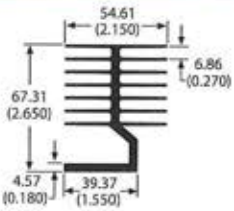

78610 2.0 lb/ft 2.91 °C/W/3in Per.=24.06

3



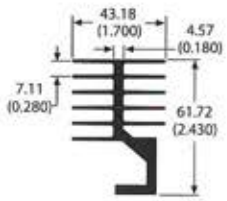

60180 1.9 lb/ft 2.94 °C/W/3in Per.=23.82

4



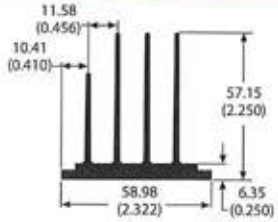

61775 2.0 lb/ft 1.99 °C/W/3in Per.=35.06

5



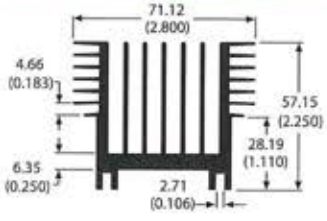

66470 1.4 lb/ft 3.00 °C/W/3in Per.=23.30

6



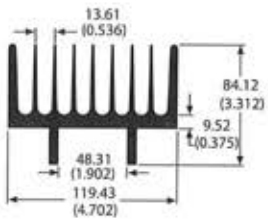

67360 1.4 lb/ft 3.59 °C/W/3in Per.=19.47

7



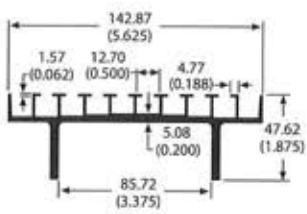

81255 2.4 lb/ft 1.72 °C/W/3in Per.=40.73

8



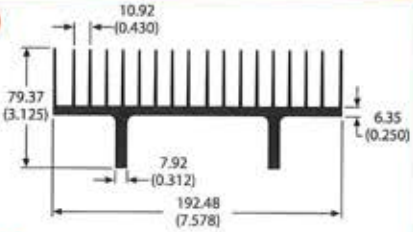

69620 5.7 lb/ft 1.50 °C/W/3in Per.=46.50

9



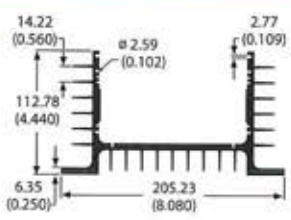

60925 2.1 lb/ft 2.31 °C/W/3in Per.=30.23

10




63155 5.6 lb/ft 0.97 °C/W/3in Per.=72.43

11




65130 6.2 lb/ft 1.06 °C/W/3in Per.=66.19

## Extrusion Class Definitions

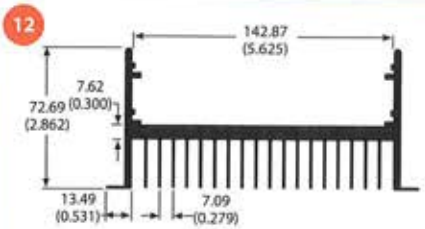
Each of our extrusions is coded with a popularity code / classification. Visit **www.aavidthermalloy.com**, go to the extrusion search tool section to view classification and current stock status.

**Class A** – Popular, >75% chance of some inventory available. (Coded in red lettering.)

**Class B** – Moderately popular material with a good chance of some inventory available.

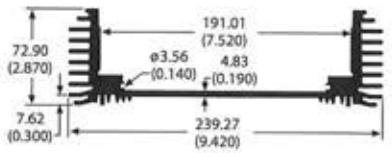
**Class C** – Low demand / low usage material. Set up charge may apply at time of order if none in stock.

12



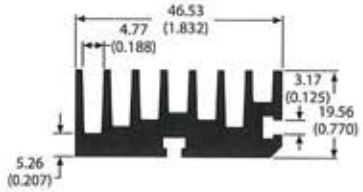

61350 4.4 lb/ft 1.19 °C/W/3in Per.=59.00

13



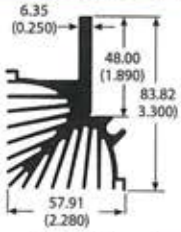

68020 6.1 lb/ft 1.37 °C/W/3in Per.=51.20

14



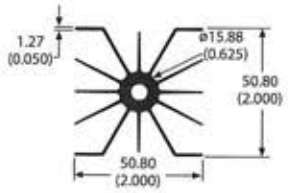

62675 0.9 lb/ft 5.80 °C/W/3in Per.=12.00

15



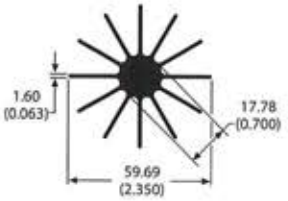

61820 2.6 lb/ft 1.94 °C/W/3in Per.=36.02

16



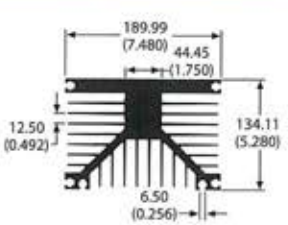

65930 0.9 lb/ft 2.96 °C/W/3in Per.=23.64

17




61925 1.2 lb/ft 3.30 °C/W/3in Per.=21.20

18



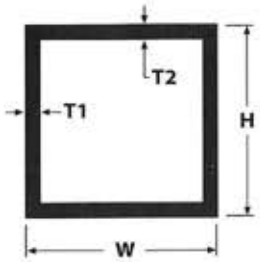

73110 18.99 lb/ft 0.50 °C/W/3in Per.=129.00

## Structural Shapes

Aavid Thermalloy has access to a variety of Structural shapes (bar, L's, Square, rectangle, T's, tubes, etc.. Please provide us with the relevant dimension and quantity details and we will be able to provide you with pricing and lead time.


W = _____

H = _____




W = _____ T1 = _____

H = _____ T2 = _____

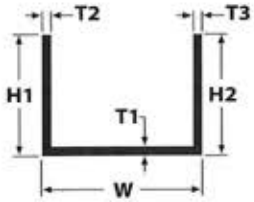

ID = _____

OD = _____

Contact your local representative or distributor with the dimensional details and voume of the shape you seek.

To find your local rep or distributor, please visit our Web Site at:

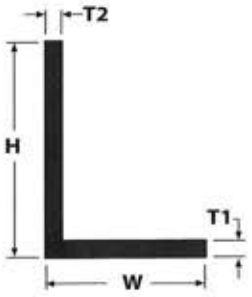
**www.aavidthermalloy.com**




W = _____ T1 = _____

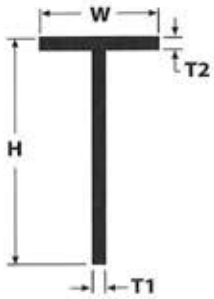
H1 = _____ T2 = _____

H2 = _____ T3 = _____




W = _____ T1 = _____

H = _____ T2 = _____




W = _____ T1 = _____

H = _____ T2 = _____



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