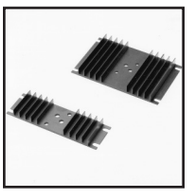
EXTRUDED HEAT SINKS FOR POWER SEMICONDUCTORS



621/623 SERIES

Low-Profile Heat Sinks for All Metal-Case Power Semiconductors

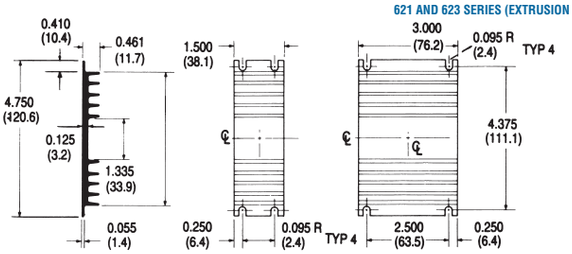
TO-3

Standard P/N	Footprint Dimensions in. (mm)	Height in. (mm)	Mounting Hole Pattern	Thermal Performance at Typical Load Natural Convection	Thermal Performance at Typical Load Forced Convection	Weight lbs. (grams)
621A	4.750 (120.6) x 1.500 (38.1)	0.461 (11.7)	(1) TO-3	75°C @ 15W	2.0°C/W @ 250 LFM	0.1000 (45.36)
621K	4.750 (120.6) x 1.500 (38.1)	0.461 (11.7)	None	75°C @ 15W	2.0°C/W @ 250 LFM	0.1000 (45.36)
623A	4.750 (120.6) x 3.000 (76.2)	0.461 (11.7)	(1) TO-3	52°C @ 15W	1.5°C/W @ 250 LFM	0.2100 (95.26)
623K	4.750 (120.6) x 3.000 (76.2)	0.461 (11.7)	None	52°C @ 15W	1.5°C/W @ 250 LFM	0.2100 (95.26)

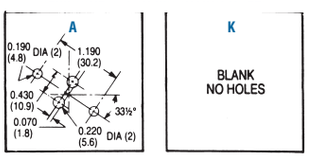
A general purpose yet efficient heat dissipator for TO-3 and virtually all other styles of metal case power semiconductor package types, the 621 and 623 Series low-profile flat back heat sinks find a wide variety of applications. The central channel between fins measures 1.300 in. (33.0) (min.) in width, accommodating many types of packages. Mounting hole pattern "A" is predrilled for the standard TO-3 package. Material: Aluminum Alloy, Black Anodized.

MECHANICAL DIMENSIONS

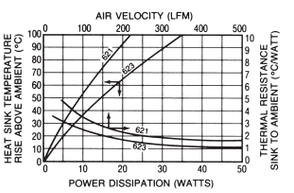
621 AND 623 SERIES (EXTRUSION PROFILE 1327)



SEMICONDUCTOR MOUNTING HOLES



NATURAL AND FORCED CONVECTION CHARACTERISTICS



Dimensions: in. (mm)

301/302/303 SERIES

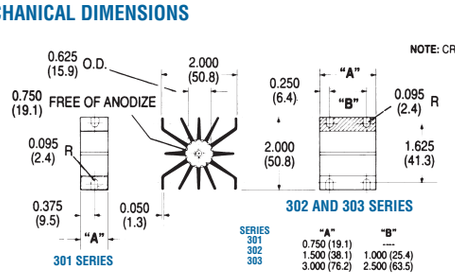
Compact Heat Sinks for Dual Stud-Mounted Semiconductor Cases

STUD-MOUNT

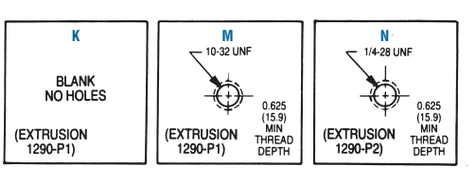
Standard P/N	Outline Dimensions in. (mm)	Length "A" in. (mm)	Mounting Hole (s) Pattern and Number	Thermal Performance at Typical Load Natural Convection	Thermal Performance at Typical Load Forced Convection	Weight lbs. (grams)
301K	2.000 (50.8) x 2.000 (50.8)	0.750 (19.1)	None	70°C @ 15W	2.5°C/W @ 250 LFM	0.0580 (26.31)
301M	2.000 (50.8) x 2.000 (50.8)	0.750 (19.1)	(1) 10-32UNF, 0.625 in. thread depth	70°C @ 15W	2.5°C/W @ 250 LFM	0.0580 (26.31)
301N	2.000 (50.8) x 2.000 (50.8)	0.750 (19.1)	(1) ¼ -28UNF, 0.625 in. thread depth	70°C @ 15W	2.5°C/W @ 250 LFM	0.0580 (26.31)
302M	2.000 (50.8) x 2.000 (50.8)	1.500 (38.1)	(1) 10-32UNF, 0.625 in. thread depth	50°C @ 15W	1.8°C/W @ 250 LFM	0.1330 (60.33)
302MM	2.000 (50.8) x 2.000 (50.8)	1.500 (38.1)	(2) 10-32UNF, 0.625 in. thread depth	50°C @ 15W	1.8°C/W @ 250 LFM	0.1330 (6033)
302N	2.000 (50.8) x 2.000 (50.8)	1.500 (38.1)	(1) ¼ -28UNF, 0.625 in. thread depth	50°C @ 15W	1.8°C/W @ 250 LFM	0.1330 (60.33)
302NN	2.000 (50.8) x 2.000 (50.8)	1.500 (38.1)	(2) ¼ -28UNF, 0.625 in. thread depth	50°C @ 15W	1.8°C/W @ 250 LFM	0.1330 (60.33)
303M	2.000 (50.8) x 2.000 (50.8)	3.000 (76.2)	(1) 10-32UNF, 0.625 in. thread depth	37°C @ 15W	1.3°C/W @ 250 LFM	0.2680 (121.56)
303MM	2.000 (50.8) x 2.000 (50.8)	3.000 (76.2)	(2) 10-32UNF, 0.625 in. thread depth	37°C @ 15W	1.3°C/W @ 250 LFM	0.2680 (121.56)
303N	2.000 (50.8) x 2.000 (50.8)	3.000 (76.2)	(1) ¼ -28UNF, 0.625 in. thread depth	37°C @ 15W	1.3°C/W @ 250 LFM	0.2680 (121.56)
303NN	2.000 (50.8) x 2.000 (50.8)	3.000 (76.2)	(2) ¼ -28UNF, 0.625 in. thread depth	37°C @ 15W	1.3°C/W @ 250 LFM	0.2680 (121.56)

The large fin area in minimum total volume provided by the radial design of the 301/302/303 Series offers maximum heat transfer efficiency in natural convection. All types are available with one tapped mounting hole for rectifiers and other stud-mounting semiconductors; the 302 and 303 Series offer maximum cost savings with dual mounting locations ("MM" and "NN" mounting hole patterns) for two stud-mount devices. Material: Aluminum Alloy, Black Anodized.

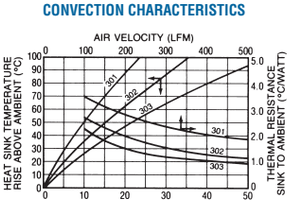
MECHANICAL DIMENSIONS



SEMICONDUCTOR MOUNTING HOLES

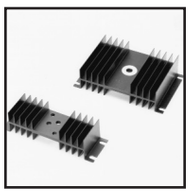


NATURAL AND FORCED CONVECTION CHARACTERISTICS



Dimensions: in. (mm)

EXTRUDED HEAT SINKS FOR POWER SEMICONDUCTORS



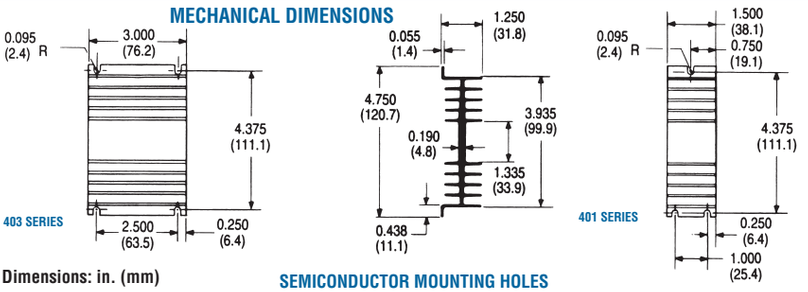
401 & 403 SERIES — *Double-Surface Heat Sinks for TO-3 Case Styles*

TO-3; Stud-Mount

Standard P/N	Width in. (mm)	Overall Dimensions in. (mm)	Height in. (mm)	Semiconductor Mounting Hole Pattern	Thermal Performance at Typical Load Natural Convection	Forced Convection	Weight lbs. (grams)
401A	4.750 (120.7)	1.500 (38.1)	1.250 (31.8)	(1) TO-3	80°C @ 30W	1.5°C/W @ 250 LFM	0.1500 (68.04)
401F	4.750 (120.7)	1.500 (38.1)	1.250 (31.8)	0.270 in. (6.9)-Dia Hole	80°C @ 30W	1.5°C/W @ 250 LFM	0.1500 (68.04)
401K	4.750 (120.7)	1.500 (38.1)	1.250 (31.8)	None	80°C @ 30W	1.5°C/W @ 250 LFM	0.1500 (68.04)
403A	4.750 (120.7)	3.000 (76.2)	1.250 (31.8)	(1) TO-3	55°C @ 30W	0.9°C/W @ 250 LFM	0.3500 (158.76)
403F	4.750 (120.7)	3.000 (76.2)	1.250 (31.8)	0.270 in. (6.9)-Dia Hole	55°C @ 30W	0.9°C/W @ 250 LFM	0.3500 (158.76
403K	4.750 (120.7)	3.000 (76.2)	1.250 (31.8)	None	55°C @ 30W	0.9°C/W @ 250 LFM	0.3500 (158.76)

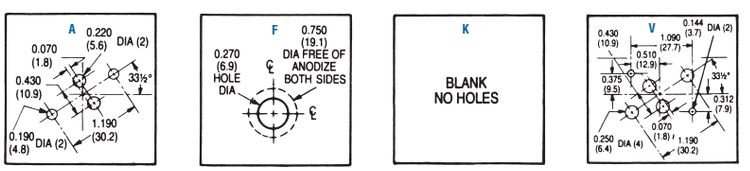
With fins oriented vertically in cabinet sidewall applications, 401 and 403 Series heat sinks are recommended for critical space applications where maximum heat dissipation is required for high-power TO-3 case styles. Forced convection performance is also exemplary with these double surface fin types. Semiconductor mounting hole style "F" offers a single centered 0.270 in. (6.9)-diameter mounting hole (with a 0.750 in. (19.1)-diameter area free of anodize) for mounting stud-type diodes and rectifiers. Hole pattern "V" available upon request. Material: Aluminum Alloy, Black Anodized.

MECHANICAL DIMENSIONS



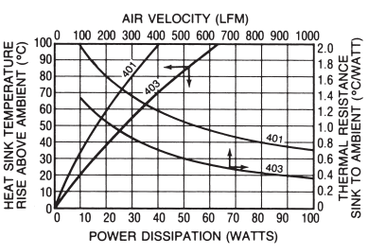
Dimensions: in. (mm)

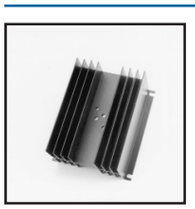
SEMICONDUCTOR MOUNTING HOLES

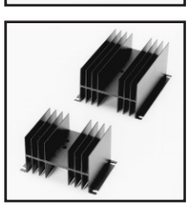


401 AND 403 SERIES (EXTRUSION PROFILE 1024)

NATURAL AND FORCED CONVECTION CHARACTERISTICS







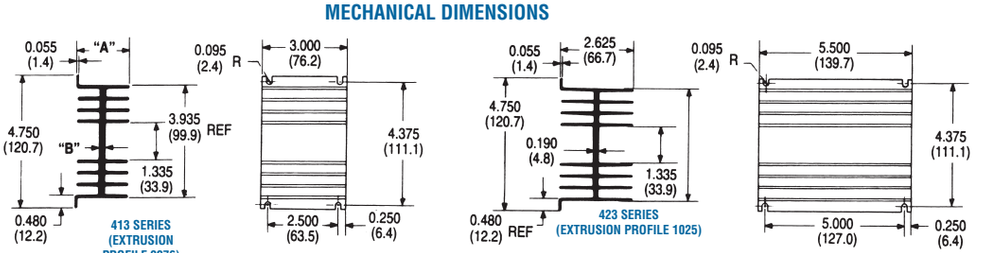
413/421/423 SERIES — *Low-Height Double-Surface Heat Sinks for TO-3 Case Styles and Diodes*

TO-3; DO-5; Stud-Mount

Standard P/N	Width in. (mm)	Nominal Dimensions Length in. (mm)	Height "A" in. (mm)	Semiconductor Mounting Hole Pattern	Thermal Performance at Typical Load Natural Convection	Forced Convection	Weight lbs. (grams)
413A	4.750 (120.7)	3.000 (76.2)	1.875 (47.6)	(1) TO-3	72°C @ 50W	0.85°C/W @ 250 LFM	0.6300 (285.77)
413F	4.750 (120.7)	3.000 (76.2)	1.875 (47.6)	0.270 in. (6.9)-Dia Hole	72°C @ 50W	0.85°C/W @ 250 LFM	0.6300 (285.77)
413K	4.750 (120.7)	3.000 (76.2)	1.875 (47.6)	None	72°C @ 50W	0.85°C/W @ 250 LFM	0.6300 (285.77)
421A	4.750 (120.7)	3.000 (76.2)	2.625 (66.7)	(1) TO-3	58°C @ 50W	0.7°C/W @ 250 LFM	0.6300 (285.77)
421F	4.750 (120.7)	3.000 (76.2)	2.625 (66.7)	0.270 in. (6.9)-Dia Hole	58°C @ 50W	0.7°C/W @ 250 LFM	0.6300 (285.77)
421K	4.750 (120.7)	3.000 (76.2)	2.625 (66.7)	None	58°C @ 50W	0.7°C/W @ 250 LFM	0.6300 (285.77)
423A	4.750 (120.7)	5.500 (140.2)	2.625 (66.7)	(1) TO-3	47°C @ 50W	0.5°C/W @ 250 LFM	1.1700 (530.71)
423K	4.750 (120.7)	5.500 (140.2)	2.625 (66.7)	None	47°C @ 50W	0.5°C/W @ 250 LFM	1.1700 (530.71)

Space-saving double surface 413, 421, and 423 Series utilize finned surface area on both sides of the power semiconductor mounting surface to provide maximum heat dissipation in a compact profile. Ready to install on popular power components in natural and forced convection applications. Apply Wakefield Type 126 silicone-free thermal compound or Wakefield DeltaPad™ interface materials for maximum performance. Material: Aluminum Alloy, Black Anodized.

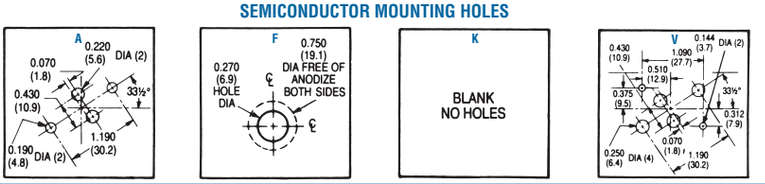
MECHANICAL DIMENSIONS



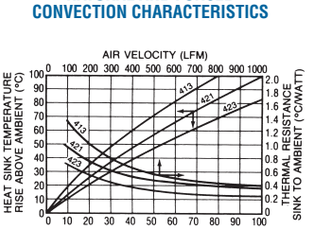
SERIES	"A"	"B"
413	1.875 (47.6)	0.200 (5.1)
421	2.625 (66.7)	0.190 (4.8)

Dimensions: in. (mm)

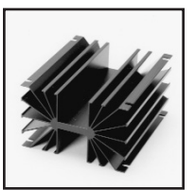
SEMICONDUCTOR MOUNTING HOLES



NATURAL AND FORCED CONVECTION CHARACTERISTICS



EXTRUDED HEAT SINKS FOR POWER SEMICONDUCTORS



431 & 433 SERIES

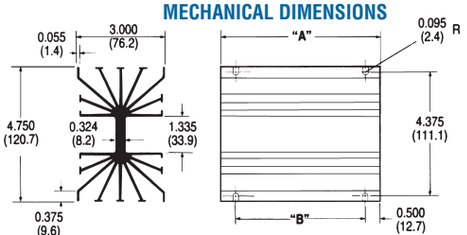
High-Performance Heat Sinks for 30-100W Metal Power Semiconductors

TO-3; Stud-Mount

Standard P/N	Nominal Dimensions Width in. (mm)	Length "A" in. (mm)	Height in. (mm)	Semiconductor Mounting Hole Pattern	Thermal Performance at Typical Load Natural Convection	Forced Convection	Weight lbs. (grams)
431K	4.750 (120.7)	3.000 (76.2)	3.000 (76.2)	None	55°C @ 50W	0.40°C/W @ 250 LFM	0.7800 (353.81)
433K	4.750 (120.7)	5.500 (139.7)	3.000 (76.2)	None	42°C @ 50W	0.28°C/W @ 250 LFM	1.4900 (675.86)

Need maximum heat dissipation from a TO-3 rectifier heat sink in minimum space? The Wakefield 431 and 433 Series center channel double-surface heat sinks offer the highest performance-to-weight ratio for minimum volume occupied for TO-3, diode, and stud-mount metal power semiconductors in the 30- to 100-watt operating range. Additional interface resistance reduction for maximized overall performance can be achieved with proper application of Wakefield Type 126 silicone-free thermal compound. Material: Aluminum Alloy, Black Anodized.

MECHANICAL DIMENSIONS



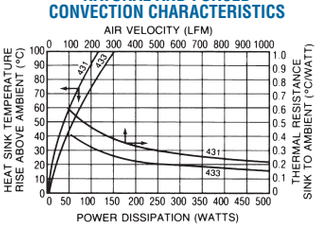
Dimensions: in. (mm)

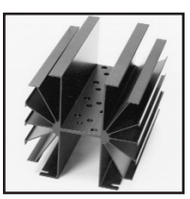
SERIES	"A"	"B"
431	3.000 (76.2)	2.000 (50.8)
433	5.500 (139.7)	4.500 (114.3)

431 AND 433 SERIES (EXTRUSION PROFILE 2726)

SEMICONDUCTOR MOUNTING HOLE

NATURAL AND FORCED CONVECTION CHARACTERISTICS





435 SERIES

Lightweight Quadruple Mount Heat Sink for TO-3 Case Styles

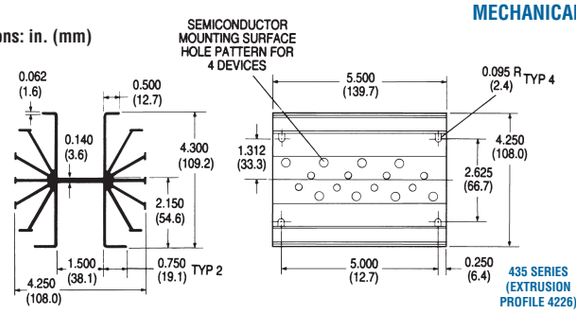
TO-3

Standard P/N	Nominal Dimensions Width in. (mm)	Length in. (mm)	Height in. (mm)	Semiconductor Mounting Hole Pattern	Thermal Performance at Typical Load Natural Convection	Forced Convection	Weight lbs. (grams)
435AAAA	4.250 (108.0)	5.500 (139.7)	4.300 (109.2)	(4) TO-3	37°C @ 50W 54°C @ 80W	0.38°C/W @ 250 LFM 0.24°C/W @ 600 LFM	1.1500 (521.64)

This lightweight high-performance heat sink is designed to mount and cool efficiently one to four TO-3 style metal case power semiconductors. The Type 435AAAA is the standard configuration available from stock, predrilled for mounting four TO-3 style devices. Increased performance can be achieved with the proper selection and installation of a Wakefield Type 175 DeltaPad Kapton™ interface material for each power semiconductor or, for maximum reduction of case-to-sink interface loss, the application of Wakefield Type 126 silicone-free thermal compound. Material: Aluminum Alloy, Black Anodized.

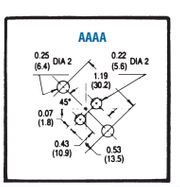
MECHANICAL DIMENSIONS

Dimensions: in. (mm)

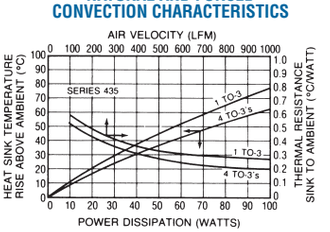


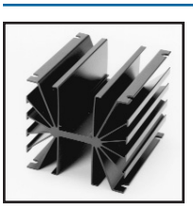
435 SERIES (EXTRUSION PROFILE 4226)

SEMICONDUCTOR MOUNTING HOLES



NATURAL AND FORCED CONVECTION CHARACTERISTICS





441 SERIES

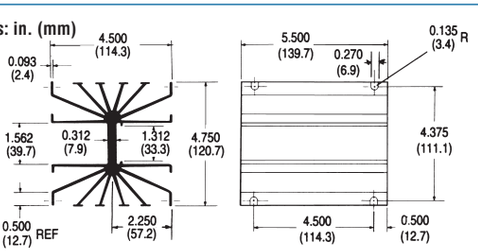
High-Performance Natural Convection Heat Sinks for Rectifiers and Diodes

Stud-Mount

Standard P/N	Nominal Dimensions Width in. (mm)	Length in. (mm)	Height in. (mm)	Semiconductor Mounting Hole Pattern	Thermal Performance at Typical Load Natural Convection	Forced Convection	Weight lbs. (grams)
441K	4.750 (120.7)	5.500 (139.7)	4.500 (114.3)	None	34°C @ SOW 47°C @ 80W	0.30°C/W @ 250 LFM 0.19°C/W @ 600 LFM	1.9700 (893.59)

Designed for vertical mounting within a power supply enclosure or equipment cabinet without forced airflow available. This Wakefield 441 Series heat sink will dissipate up to 100 watts efficiently in natural convection with a maximum 55°C heat sink temperature rise above ambient. When applied in a forced convection environment, the 441K Type will achieve thermal resistance of 0.18°C/W (sink to ambient) at 1000 LFM. Supplied with no predrilled device mounting hole pattern. Material: Aluminum Alloy, Black Anodized.

Dimensions: in. (mm)

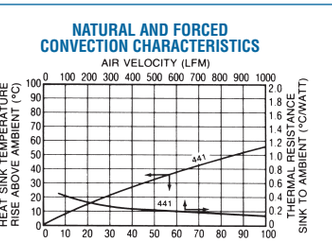


MECHANICAL DIMENSIONS

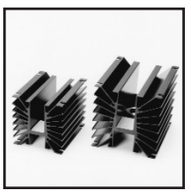
SEMICONDUCTOR MOUNTING HOLE

441 SERIES (EXTRUSION PROFILE 1273)

NATURAL AND FORCED CONVECTION CHARACTERISTICS



EXTRUDED HEAT SINKS FOR POWER SEMICONDUCTORS



465 & 476 SERIES

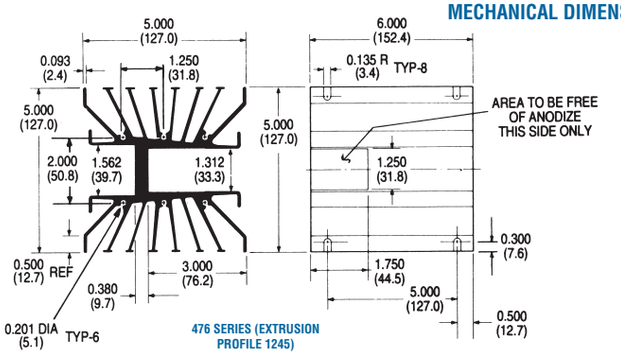
High-Power Heat Sinks for Medium Hex-Type Rectifiers and Diodes

Stud-Mount

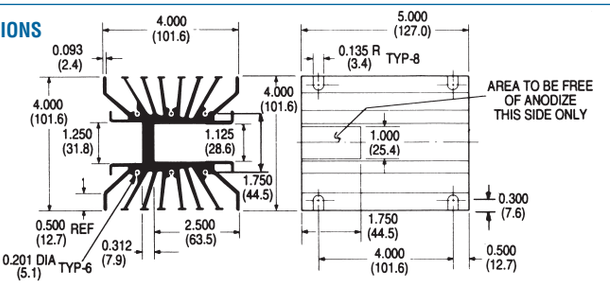
Standard P/N	Nominal Dimensions Width in. (mm)	Length in. (mm)	Height in. (mm)	Hex Style Type	Mounting Hole Pattern	Thermal Performance at Typical Load Natural Convection	Forced Convection	Weight lbs. (grams)
465K	4.000 (101.6)	5.000 (127.0)	4.000 (101.6)	1.060 in. Hex	None	38°C @ 50W	0.27°C/W @ 500 LFM	1.9300 (875.45)
476K	5.000 (127.0)	6.000 (152.4)	5.000 (127.0)	1.250 in. Hex	None	25°C @ 50W	0.19°C/W @ 500 LFM	2.8200 (1279.15)
476W	5.000 (127.0)	6.000 (152.4)	5.000 (127.0)	1.250 in. Hex	0.765 in. (19.4) Dia. Center Mount	25°C @ 50W	0.19°C/W @ 500 LFM	2.8000 (1270.08)

Wakefield Engineering has designed four standard heat sink types for ease of installation and efficient heat dissipation for industry standard hex-type rectifiers and similar stud-mount power devices: 465, 476, 486, and 489 Series. The 465 and 476 Series shown here are designed for 1.060 in. Hex (465 Type) and 1.250 in. Hex (476 Type). The 476W Type is available predrilled for an 0.765 in. (19.4) dia. mounting hole, Material: Aluminum Alloy, Black anodized.

MECHANICAL DIMENSIONS

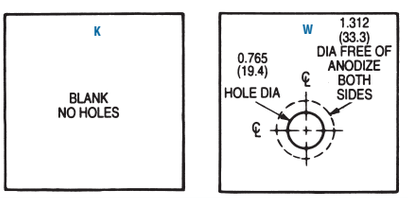


476 SERIES (EXTRUSION PROFILE 1245)

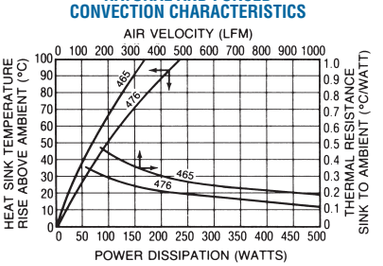


465 SERIES (EXTRUSION PROFILE 1244)

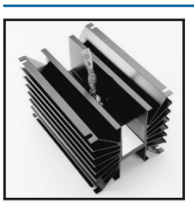
SEMICONDUCTOR MOUNTING HOLES



NATURAL AND FORCED CONVECTION CHARACTERISTICS



Dimensions: in. (mm)



486 & 489 SERIES

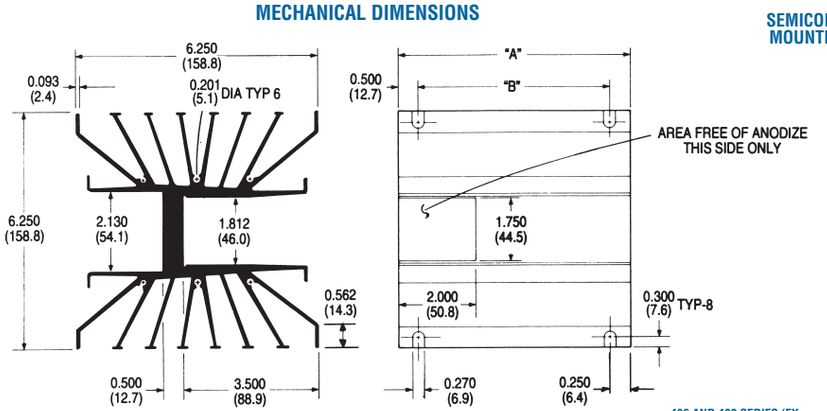
Heat Sinks for High-Power Hex-Type Rectifiers and Diodes

Stud-Mount

Standard P/N	Nominal Dimensions Width in. (mm)	Length in. (mm)	Height in. (mm)	Hex Style Type	Mounting Hole Pattern	Thermal Performance at Typical Load Natural Convection	Forced Convection	Weight lbs. (grams)
486K	6.250 (158.8)	6.000 (152.4)	6.250 (158.8)	1.750 in. Hex	None	24°C @ 50W 86°C @ 250W	0.20°C/W @ 250 LFM 0.13°C/W @ 500 LFM	4.2100 (1909.66)
489K	6.250 (158.8)	9.000 (228.6)	6.250 (158.8)	1.750 in. Hex	None	19°C @ 50W 75°C @ 250W	0.15°C/W @ 250 LFM 0.10°C/W @ 500 LFM	6.1400 (2785.10)

These two heat sink types accept industry standard 1.750 in. (44.5) hex-type devices for mounting and efficient heat dissipation. Each type is provided with a 1.750 in. (44.5) x 2.000 in. (50.8) area on the semiconductor base mounting surface which is free of anodize. Material: Aluminum Alloy, Black Anodized.

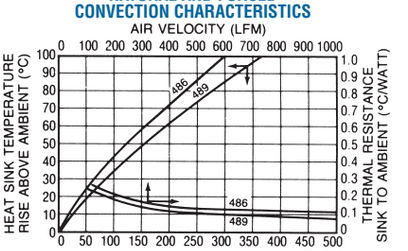
MECHANICAL DIMENSIONS



486 AND 489 SERIES (EXTRUSION PROFILE 1541)

SEMICONDUCTOR MOUNTING HOLE

NATURAL AND FORCED CONVECTION CHARACTERISTICS



Dimensions: in. (mm)

SERIES	"A"	"B"
486	6.000 (152.4)	5.000 (127.0)
489	9.000 (228.6)	8.000 (203.2)

EXTRUDED HEAT SINKS FOR POWER SEMICONDUCTORS

490 SERIES

King Size Heat Sinks for High-Power Rectifiers

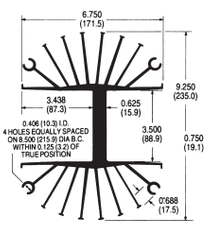
GENERAL PURPOSE

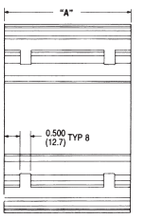
Standard P/N	Width in. (mm)	Nominal Dimensions Length "A" in. (mm)	Height in. (mm)	Semiconductor Mounting Hole Pattern	Thermal Performance at Typical Load Natural Convection	Forced Convection	Weight lbs. (grams)
490-35K	9.250 (235.0)	3.500 (88.9)	6.750 (171.5)	None	84°C @ 200W	0.18°C/W @ 600 LFM	3.2400 (1469.66)
490-6K	9.250 (235.0)	6.000 (152.4)	6.750 (171.5)	None	60°C @ 200W	0.13°C/W @ 600 LFM	5.4700 (2481.19)
490-12K	9.250 (235.0)	12.000 (304.8)	6.750 (171.5)	None	45°C @ 200W	0.09°C/W @ 600 LFM	10.6200 (4817.23)

The 490 Series can be used to mount a single high-power rectifier or a grouping of smaller power devices. The semiconductor device mounting surface is free of anodize on the entire surface on one side only; finish overall is black anodize. Use Type 109 mounting brackets (see accessories section) for mounting to enclosure wall and for electrical isolation. The anodize-free mounting surface is milled for maximum contact area. The 490 Series Can also be drilled for mounting and cooling IGBTs and other isolated power modules. Material: Aluminum Alloy, Black Anodized.

MECHANICAL DIMENSIONS

490 SERIES (EXTRUSION PROFILE 2131)

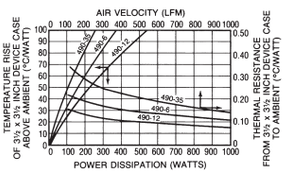




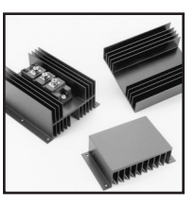
Dimensions: in. (mm)

SEMICONDUCTOR MOUNTING HOLE

NATURAL AND FORCED CONVECTION CHARACTERISTICS



PERFORMANCE, LOW PROFILE HEAT SINKS FOR POWER MODULES & IGBT'S



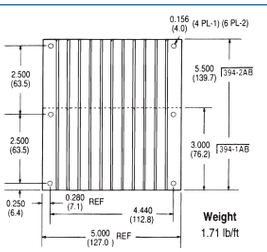
394, 395, 396 SERIES

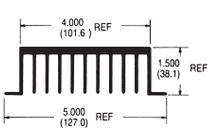
Standard P/N	Overall Dimensions: in. (mm) Length in. (mm)	Height in. (mm)	Width in. (mm)	Device Base Mounting Area (mm)	Base Mounting Holes	Thermal Resistance at Typical Load Natural Convection (Øsa)(1) (°C/W)	Forced Convection (Øsa) (°C/W @ 500 LFM)
394-1AB	3.000 (76.2)	1.500 (38.1)	5.000 (127.0)	101 x 76	4	1.85	0.90
394-2AB	5.500 (139.7)	1.500 (38.1)	5.000 (127.0)	101 x 139	6	1.51	0.60
395-1AB	3.000 (76.2)	2.500 (63.5)	5.000 (127.0)	50 x 76	4	1.10	0.50
395-2AB	5.500 (139.7)	2.500 (63.5)	5.000 (127.0)	50 x 139	6	0.90	0.32
396-1AB	3.000 (76.2)	1.380 (35.1)	5.000 (127.0)	50 x 76	4	1.85	1.07
396-2AB	5.500 (139.7)	1.380 (35.1)	5.000 (127.0)	50 x 139	6	1.51	0.64

Note: *1.Thermal resistance values shown are for black anodized finish at 50°C rise above ambient.*

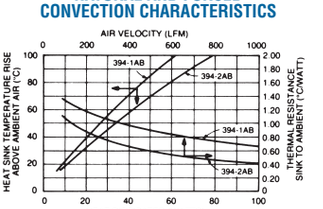
MECHANICAL DIMENSIONS

394 SERIES (EXTRUSION PROFILE 7332)

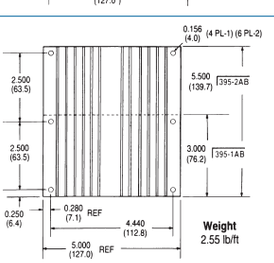


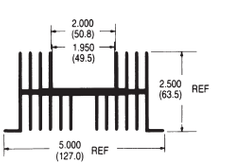


NATURAL AND FORCED CONVECTION CHARACTERISTICS

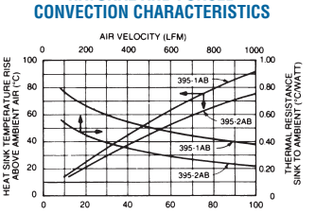


395 SERIES (EXTRUSION PROFILE 7330)

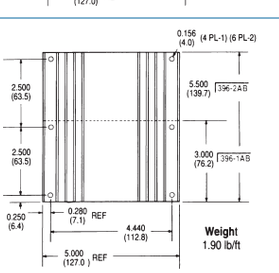


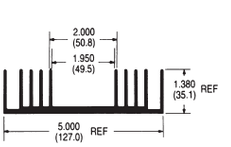


NATURAL AND FORCED CONVECTION CHARACTERISTICS

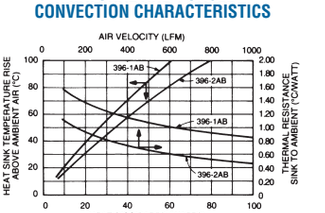


396 SERIES (EXTRUSION PROFILE 7331)



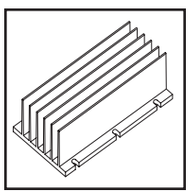


NATURAL AND FORCED CONVECTION CHARACTERISTICS



Dimensions: in. (mm)

EXTRUDED HEAT SINKS FOR DC/DC CONVERTERS



SERIES 557, 558 & 559

Heat Sinks for "Full-Brick" DC/DC Converters

Standard P/N	Footprint Dimensions in. (mm)	Height in. (mm)	Fin Orientation	Number of Fins	Forced Convection Thermal Resistance at 300 ft/min (C/W)	Natural Convection Power Dissipation (Watts) 40°C Rise Heat Sink to Ambient
557-140AB	4.60 (116.8) x 2.40 (61.0)	1.40 (35.6)	Horizontal	6	1.3	14
558-75AB	2.40 (61.0) x 4.60 (116.8)	0.75 (19.1)	Vertical	16	1.8	12
559-50AB	2.40 (61.0) x 4.60 (116.8)	0.50 (12.7)	Vertical	27	2.2	10

Material: Aluminum, Black Anodized

• Standard mounting hole pattern mates with Vicor DC/DC converters. • Aluminum extruded fin construction keeps DC/DC converter modules cool in both forced and natural convection applications. • Three fin heights, two flow direction options. • Black anodized finish standard.

• Integral thermal interface pad option eliminates need to order and install pad separately.
• Ordering a single part number with the hardware kit option provides everything necessary to keep your converter cool.

MECHANICAL DIMENSIONS

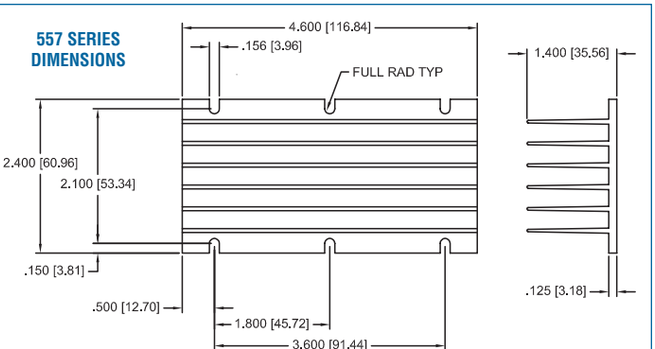
PRODUCT DESIGNATION

SERIES 557 -140 - AB - MS4

SERIES NUMBER	
HEIGHT	140 = 1.40"
MATERIAL	A = ALUMINUM
THERMAL INTERFACE TYPE	S4 = DELTALINK IV BLANK = NO THERMAL PAD
HARDWARE KIT	QTY
	M = M3 X 8mm PHILLIPS HD SEM SCREW, WITH CAPTIVE WASHER — 6
	H = 4-40 X 5/16" PHILLIPS HD SEM SCREW, WITH CAPTIVE WASHER — 6
	BLANK = NO FASTENER OPTION — 0
FINISH	B = BLACK ANODIZE

Dimensions: in. (mm)

557 SERIES DIMENSIONS



MECHANICAL DIMENSIONS

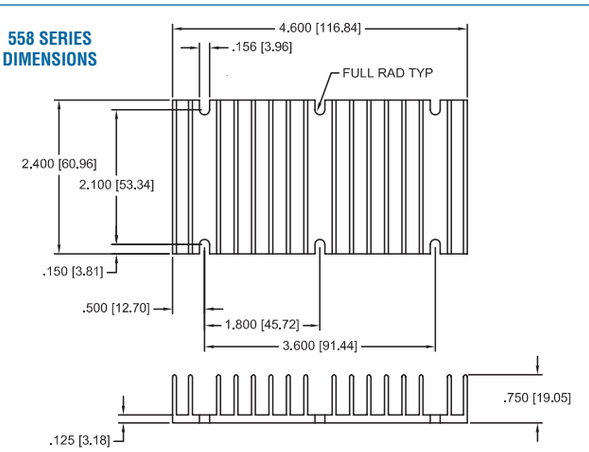
PRODUCT DESIGNATION

SERIES 558 - 75 - AB - MS4

SERIES NUMBER	
HEIGHT	75 = .75"
MATERIAL	A = ALUMINUM
THERMAL INTERFACE TYPE	S4 = DELTALINK IV BLANK = NO THERMAL PAD
HARDWARE KIT	QTY
	M = M3 X 8mm PHILLIPS HD SEM SCREW, WITH CAPTIVE WASHER — 6
	H = 4-40 X 5/16" PHILLIPS HD SEM SCREW, WITH CAPTIVE WASHER — 6
	BLANK = NO FASTENER OPTION — 0
FINISH	B = BLACK ANODIZE

Dimensions: in. (mm)

558 SERIES DIMENSIONS



MECHANICAL DIMENSIONS

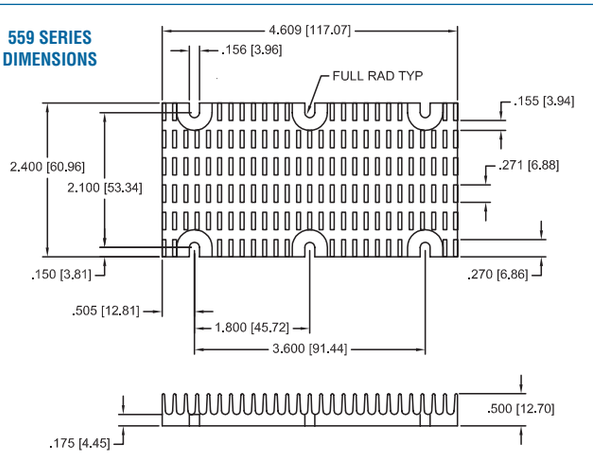
PRODUCT DESIGNATION

SERIES 559 - 50 - AB - MS4

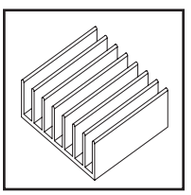
SERIES NUMBER	
HEIGHT	50 = .50"
MATERIAL	A = ALUMINUM
THERMAL INTERFACE TYPE	S4 = DELTALINK IV BLANK = NO THERMAL PAD
HARDWARE KIT	QTY
	M = M3 X 8mm PHILLIPS HD SEM SCREW, WITH CAPTIVE WASHER — 6
	H = 4-40 X 5/16" PHILLIPS HD SEM SCREW, WITH CAPTIVE WASHER — 6
	BLANK = NO FASTENER OPTION — 0
FINISH	B = BLACK ANODIZE

Dimensions: in. (mm)

559 SERIES DIMENSIONS



EXTRUDED HEAT SINKS FOR DC/DC CONVERTERS



SERIES 517, 527, 518 & 528

Heat Sinks for "Half-Brick" DC/DC Converters

Standard P/N	Footprint Dimensions in. (mm)	Height in. (mm)	Fin Orientation	Number of Fins	THERMAL PERFORMANCE Natural Convection Power Dissipation (Watts) 60°C Rise Heat Sink to Ambient	THERMAL PERFORMANCE Forced Convection Thermal Resistance at 300 ft/min (C/W)
517-95AB	2.28 (57.9) x 2.40 (61.0)	0.95 (24.1)	Horizontal	8	11W	2.1
527-45AB	2.28 (57.9) x 2.40 (61.0)	0.45 (11.4)	Horizontal	11	7W	2.3
527-24AB	2.28 (57.9) x 2.40 (61.0)	0.24 (6.1)	Horizontal	11	5W	4.2
518-95AB	2.40 (61.0) x 2.28 (57.9)	0.95 (24.1)	Vertical	8	11W	2.2
528-45AB	2.40 (61.0) x 2.28 (57.9)	0.45 (11.4)	Vertical	11	7W	2.1
528-24AB	2.40 (61.0) x 2.28 (57.9)	0.24 (6.1)	Vertical	11	5W	3.5

Material: Aluminum, Black Anodized

• Standard mounting hole patterns mate with the majority of "half-brick" DC/DC converters on the market. • Aluminum extruded fin construction keeps DC/DC converter modules cool in both forced and natural convection applications. • Vertical and horizontal fin configurations available in a variety of heights. • Black anodized finish standard. • Integral thermal interface pad option eliminates need to order and install pad separately. • Ordering a single part number with the hardware kit option provides everything necessary to keep your converter cool.

MECHANICAL DIMENSIONS

517, 527, 518 AND 528 SERIES

PRODUCT DESIGNATION

SERIES 517 - 95 - AB - MS4

SERIES NUMBER
517
527
518
528

HEIGHT
95 = 0.95"
45 = 0.45"
24 = 0.24"

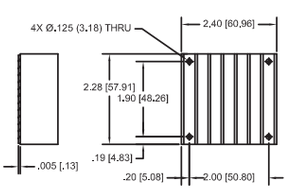
MATERIAL
A = ALUMINUM

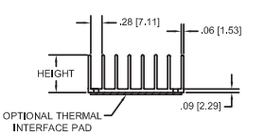
THERMAL INTERFACE OPTION
S4 = DELTALINK IV
BLANK = NO THERMAL PAD

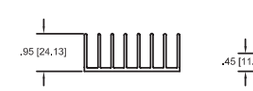
HARDWARE KIT	QTY
H = 4-40 X 5/16" PHILLIPS SEM FASTENER	4
M = M3 X 8mm PHILLIPS SEM FASTENER	4
BLANK = NO FASTENER OPTION	0

FINISH
B = BLACK ANODIZE

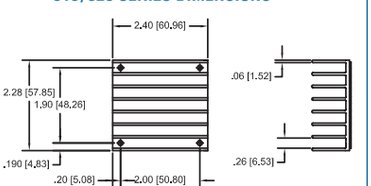
517/527 SERIES DIMENSIONS

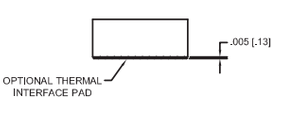


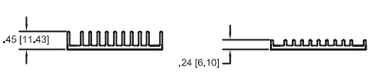




518/528 SERIES DIMENSIONS







Dimensions: in. (mm)

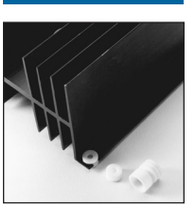
MOUNTING HARDWARE FOR EXTRUDED HEAT SINKS

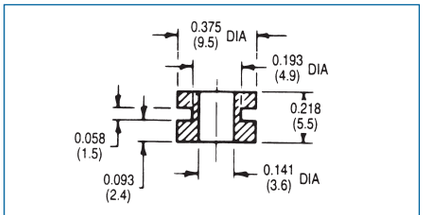
100 SERIES

Teflon Mounting Insulators

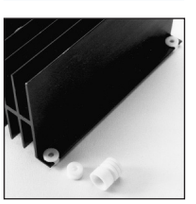
Standard P/N	Description	For Use with Series	Mounting Hardware	Material	Hipot Rating (VAC)	Weight lbs. (grams)
103	Spool-shaped insulator	300, 400, 600, 111, 113	#6-32 screw	Teflon	1500	0.00012 (0.05)
107	Spool-shaped insulator	300, 400, 600, 111, 113	#6-32 screw, nut	Teflon	5000	0.0034 (1.54)

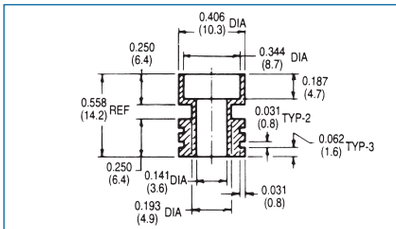
103 SERIES





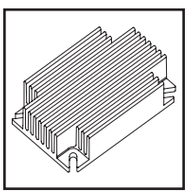
107 SERIES





wakefield-vette

EXTRUDED HEAT SINKS FOR DC/DC CONVERTERS



537 & 547 SERIES

Heat Sinks for "Quarter-Brick" DC/DC Converters

Standard P/N	Footprint Dimensions in. (mm)	Height in. (mm)	Fin Orientation	Number of Fins	Forced Convection Thermal Resistance at 300 ft/min (C/W)
537-95AB	2.28 (57.9) x 1.45 (36.8)	0.95 (24.1)	Horizontal	8	2.1
537-45AB	2.28 (57.9) x 1.45 (36.8)	0.45 (11.4)	Horizontal	13	2.3
537-24AB	2.28 (57.9) x 1.45 (36.8)	0.24 (6.1)	Horizontal	14	4.2
547-95AB	1.45 (36.8) x 2.28 (57.9)	0.95 (24.1)	Vertical	11	2.2
547-45AB	1.45 (36.8) x 2.28 (57.9)	0.45 (11.4)	Vertical	20	2.1
547-24AB	1.45 (36.8) x 2.28 (57.9)	0.24 (6.1)	Vertical	22	3.5

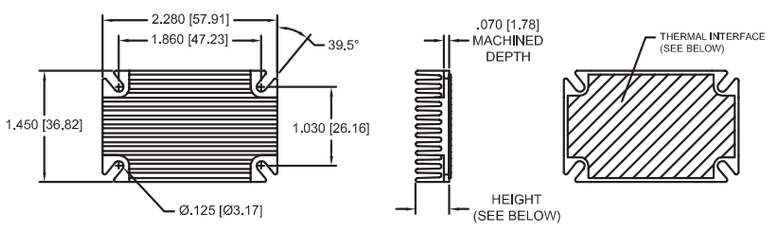
Material: Aluminum, Black Anodized

• Mounting slots accomodate two hole patterns: 1.86" x 1.03" and 2.00" x 1.20", fitting the vast majority of quarter-brick converters on the market. • Designed for optimum use in forced convection applications. • Vertical and horizontal fin configurations available in a variety of heights. • Black anodized finish standard. • Integral thermal interface pad option eliminates need to order and install pad separately. • Ordering a single part number with the hardware kit option provides everything necessary to keep your converter cool.

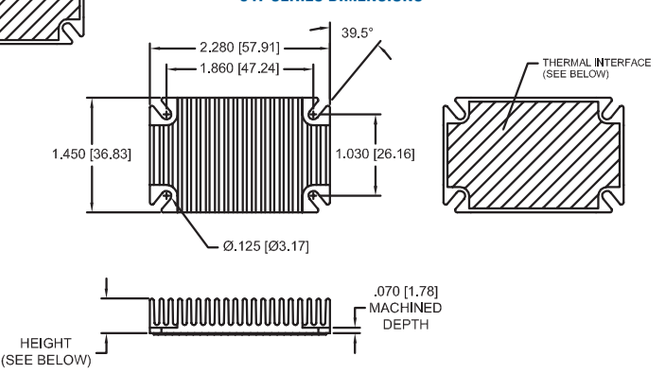
MECHANICAL DIMENSIONS

537 & 547 SERIES

537 SERIES DIMENSIONS



547 SERIES DIMENSIONS



PRODUCT DESIGNATION

SERIES 537 - 95 - AB - MS4

SERIES NUMBER

HEIGHT

24 = .24"
45 = .45"
95 = .95"

MATERIAL

A = ALUMINUM

THERMAL INTERFACE TYPE

S4 = DELTALINK IV

BLANK = NO THERMAL PAD

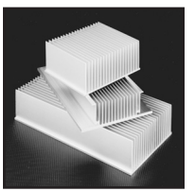
HARDWARE KIT	QTY
M = M3 X 8mm PHILLIPS HD SEM SCREW, WITH CAPTIVE WASHER	4
H = 4-40 X 5/16" PHILLIPS HD SEM SCREW, WITH CAPTIVE WASHER	4
BLANK = NO FASTENER OPTION	0

FINISH

B = BLACK ANODIZE

Dimensions: in. (mm)

HIGH FIN DENSITY HEAT SINKS FOR POWER MODULES, IGBTS, RELAYS



510, 511 & 512 SERIES

Standard Catalog P/N[5] Milled Base[1]	Nonmilled Base[2]	Base Width in. (mm)	Length in. (mm)	Height: Milled Base[1] ("M Series") in. (mm)	Height: Nonmilled Base[2] ("U" Series) in. (mm)	Thermal Resistance (Øsa) at Typical Load: Natural Convection[3] (°C/W)	Thermal Resistance (Øsa) at Typical Load: Forced Convection[4] (°C/W @ 100 CFM)
510-3M	510-3U	7.380 (187.452)	3.000 (76.2)	3.106 (78.9)	3.136 (79.7)	0.56	0.088
510-6M	510-6U	7.380 (187.452)	6.000 (152.4)	3.106 (78.9)	3.136 (79.7)	0.38	0.070
510-9M	510-9U	7.380 (187.452)	9.000 (228.6)	3.106 (78.9)	3.136 (79.7)	0.29	0.066
510-12M	510-12U	7.380 (187.452)	12.000 (304.8)	3.106 (78.9)	3.136 (79.7)	0.24	0.062
510-14M	510-14U	7.380 (187.452)	14.000 (355.6)	3.106 (78.9)	3.136 (79.7)	0.21	0.059
511-3M	511-3U	5.210 (132.33)	3.000 (76.2)	2.350 (59.7)	2.410 (61.2)	0.90	0.120
511-6M	511-6U	5.210 (132.33)	6.000 (152.4)	2,350 (59.7)	2.410 (61.2)	0.65	0.068
511-9M	511-9U	5.210 (132.33)	9.000 (228.6)	2.350 (59.7)	2.410 (61.2)	0.56	0.060
511-12M	511-12U	5.210 (132.33)	12.000 (304.8)	2.350 (59.7)	2.410 (61.2)	0.45	0.045
512-3M	512-3U	7.200 (182.88)	3.000 (76.2)	2.350 (59.7)	2.410 (61.2)	0.90	0.120
512-6M	512-6U	7.200 (182.88)	6.000 (152.4)	2.350 (59.7)	2.410 (61.2)	0.65	0.068
512-9M	512-9U	7.200 (182.88)	9.000 (228.6)	2.350 (59.7)	2.410 (61.2)	0.56	0.060
512-12M	512-12U	7.200 (182.88)	12.000 (304.8)	2.350 (59.7)	2.410 (61.2)	0.45	0.045

Notes:

1. Precision-milled base for maximum heat transfer performance (flatness 0.002 in./in.)

2. Nonmilled base flatness: 0.006 in./in.

3. Natural convection heat dissipation for distributed heat sources at 50°C rise.

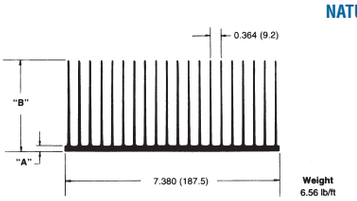
4. Forced convection heat dissipation for distributed heat sources at 100 cubic feet per minute, shrouded condition.

5. Standard models are provided without finish.

MECHANICAL DIMENSIONS

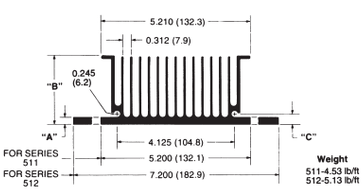
510 SERIES — **510 Series (Extrusion Profile 5113)**

Series	A	B	Flatness
510-U	0.216 (5.5)	3.136 (79.7)	0.006 in./in. (0.15 mm/mm)
510-M	0.165 (4.2)	3.106 (78.9)	0.002 in./in. (0.05 mm/mm)



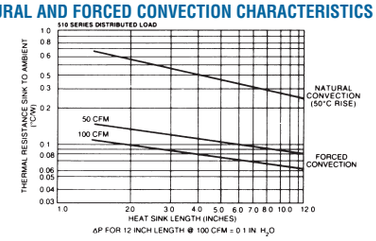
511 AND 512 SERIES — **511 Series (Extrusion Profile 6438-1)** / **512 Series (Extrusion Profile 6438-2)**

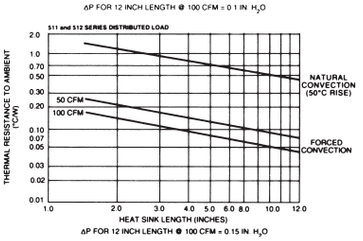
Series	A	B	C	Flatness
511-U 512-U	0.250 (6.4)	2.410 (61.2)	0.372 (9.4)	0.006 in./in. (0.15 mm/mm)
511-M 512-M	0.220 (5.6)	2.350 (59.7	0.342 (8.7)	0.002 in./in. (0.05 mm/mm)

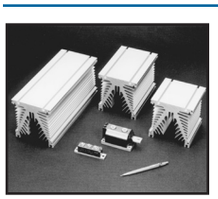


Dimensions: in. (mm)

NATURAL AND FORCED CONVECTION CHARACTERISTICS





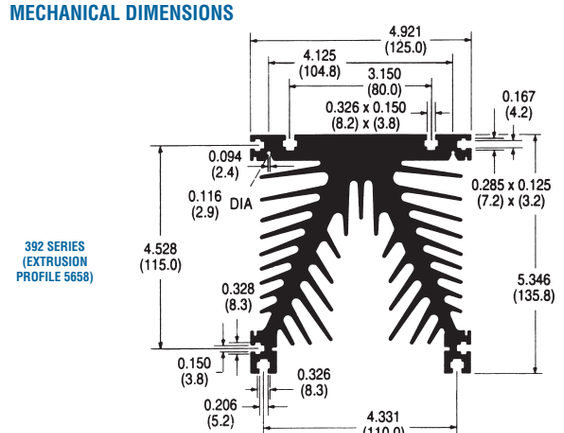


392 SERIES

High Performance Heat Sinks for Power Modules, IGBTs and Solid State Relays

Standard P/N, Finish: Black Anodized	Gold Iridite	Length in. (mm)	Thermal Resistance at Typical Load: Natural Convection (Øsa) (°CW)	Thermal Resistance at Typical Load: Forced Convection (Øsa) (°CW)	Weight lbs. (grams)
392-120AB	392-120AG	4.725 (120.0)	0.50	0.16 @ 100 CFM	4.452 (2019.43)
392-180AB	392-180AG	7.087 (180.0)	0.43	0.11 @ 100 CFM	6.636 (3010.09)
392-300AB	392-300AG	11.811 (300.0)	0.33	0.08 @ 100 CFM	10.420 (4726.51)

MECHANICAL DIMENSIONS



Dimensions: in. (mm)

NATURAL AND FORCED CONVECTION CHARACTERISTICS