



BGA Heat Sinks

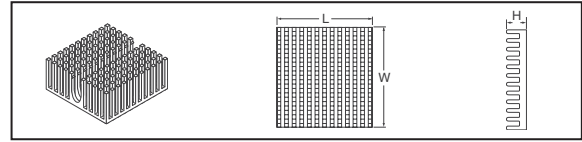
Aavid Thermalloy's innovative BGA heat sinks include standard solutions to support the most demanding applications.
Features: • Flat base • Light weight • Long-term reliability

Tape Attachment Method

Features and Benefits:

- Tape mounted versions eliminate the need for mounting holes in the PC Board
- These Heat Sinks can be used with either plastic or metal/ceramic BGA Packages
- These Heat Sinks are compatible with Ther-a-grip Tapes

Finish: Black Anodize



Tape Surface	Dimensions – mm			Thermal Resistance Natural†	Thermal Resistance Forced‡	Digi-Key Part No.	Price Each			Aavid Part No.
	W	L	H				1	10	100	
Plastic	27.0	27.0	18.0	20.3	6.46	HS319-ND◆	1.59	1.44	1.39	374424B00035G
Plastic	35.0	35.0	7.0	31.9	9.67	HS393-ND◆	3.12	2.81	2.71	371824B00034G
Metal	35.0	35.0	10.0	23.4	7.55	HS395-ND◆	5.33	4.80	4.62	374624B00032G
Plastic	35.0	35.0	10.0	23.4	7.55	HS321-ND◆	6.76	6.09	5.87	374624B00035G
Metal	35.0	35.0	18.0	15.3	5.15	HS322-ND	2.96	2.67	2.57	374724B00032
Plastic	35.0	35.0	18.0	15.3	5.15	HS323-ND◆	3.05	2.74	2.64	374724B00035G
Metal	37.4	37.4	6.0	32.6	9.91	HS394-ND◆	6.92	6.23	6.00	373324M00032G

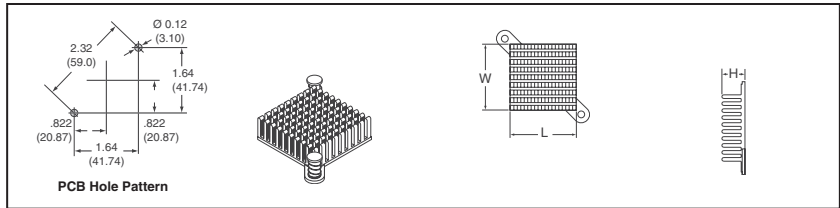
† Natural convection thermal resistance based on a 75°C heat sink temperature rise.
 ‡ Forced convection thermal resistance based on an entering 1.0 m/s (200 fpm) airflow.
 ◆ RoHS Compliant

Push Pin Attachment Method

Features and Benefits:

- All Heat Sinks utilize industry standard hole patterns
- Plastic push pins are standard. Consult Aavid Thermalloy for versions available with brass push pins for more rugged applications
- Minimal diameter holes are necessary for mounting to PC Board

Finish: Green Anodize



Dimensions – mm			Thermal Resistance Natural†	Thermal Resistance Forced‡	Digi-Key Part No.	Price Each			Aavid Part No.
W	L	H				1	10	100	
37.4	37.4	6.0	32.6	9.91	HS308-ND	3.87	3.49	3.36	372924M02000G

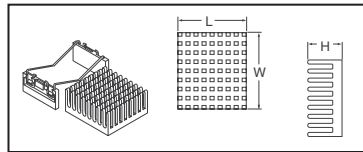
† Natural convection thermal resistance based on a 75°C heat sink temperature rise.
 ‡ Forced convection thermal resistance based on an entering 1.0 m/s (200 fpm) airflow.

Clip Attachment Method

Features and Benefits:

- A unique clip eliminates the need for mounting holes in the PC Board
- Each Heat Sink utilizes a Phase Change Pad as the interface for optimal thermal performance
- The clips unique design eliminates the need for thermal tape attachment

Finish: Black Anodize



Dimensions – mm			Thermal Resistance Natural†	Thermal Resistance Forced‡	Digi-Key Part No.	Price Each			Aavid Part No.
W	L	H				1	10	100	
34.5	31.4	15.6	19.7	6.30	HS309-ND	4.31	3.88	3.74	2519B-EP11-BGSSG

† Natural convection thermal resistance based on a 75°C heat sink temperature rise.
 ‡ Forced convection thermal resistance based on an entering 1.0 m/s (200 fpm) airflow.

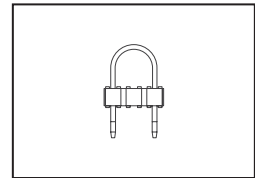
Solder Anchor Attachment Method

Features and Benefits:

- Solder Anchors provide the most rugged mounting in the industry

Note:

Solder anchors must be soldered to the PCB prior to attaching the heat sink clip.



Description	Digi-Key Part No.	Price Each			Aavid Part No.
		1	10	100	
Solder Anchor	HS400-ND	.73	.61	.43	125700D00000G

Panasonic® “PGS” (Pyrolytic Graphite Sheet) Heat Sink Sheets



PGS is a thermal interface material which is very thin, synthetically made, has high thermal conductivity, and is made from a highly oriented graphite polymer film. It is ideal for providing thermal management/heat-sinking in limited spaces or to provide supplemental heat-sinking in addition to conventional means. This material is flexible and can be cut into customizable shapes.

Features:

- Excellent Thermal Conductivity (2 - 4 times as high as copper, 3 - 6 times as high as aluminum)
- Lightweight: Specific Gravity: 0.85 - 2.1 g/cm³ (1/4 - 1/10 of copper, 1/1.3 - 1/3 of aluminum in density)
- Flexible and easy to be cut or trimmed (withstands repeated bending)
- Low Thermal Resistance

Application Examples:

- Notebook PCs, DVDs, DVCs, Mobile Phones
- Semiconductor Manufacturing Equipment (Sputtering, Dry Etching, Steppers)
- Optical Communications Equipment

Characteristics	Specifications		
Thickness	0.1 ±0.03mm	0.07 ±0.015mm	0.025 ±0.01mm
Density	0.85 g/cm ³	1.1 g/cm ³	2.1 g/cm ³
Thermal Conductivity (a-b plane)	600 - 800 W/(m.K)	750 - 950 W/(m.K)	1500 - 1700 W/(m.K)
Electrical Conductivity	10000 S/cm	10000 S/cm	20000 S/cm
Expansion Coefficient (a-b plane)	9.3 x 10 ⁻⁷ 1/K		
Expansion Coefficient (c axis)	3.2 x 10 ⁻⁵ 1/K		
Heat Resistance	400°C		
Bending (angle, R5)	10000 cycles		

Dimensions L x W (mm)	Digi-Key Part No.	Price Each	Panasonic Part No.
125 x 180	P11438-ND	93.94	EYG-S131810
125 x 90	P11439-ND	51.66	EYG-S091310
115 x 180	P13689-ND	64.18	EYG-S121807
115 x 180	P13691-ND	64.18	EYG-S121803
90 x 115	P12726-ND	32.76	EYG-S091210
90 x 115	P13688-ND	32.09	EYG-S091207
90 x 115	P13690-ND	32.09	EYG-S091203
60 x 90	P11440-ND	26.86	EYG-S060910
57 x 90	P12727-ND†	30.15	EYG-M060910SS
57 x 90	P12728-ND‡	17.91	EYG-A060910P
57 x 90	P12729-ND‡	17.91	EYG-A060910B

† With Silicon ‡ With Tape

ITW Chemtronics® Heat Sink Grease



For fast heat transfer from components.

Features:

- Nonflammable
- Noncorrosive
- Silicon
- Will not dry out, harden or melt
- 5 oz. tube
- Meets MIL-C-47113
- Stable from: -40°F ~ 392°F (-40°C ~ 200°C)

Digi-Key Part No.	Price Each			ITW Chemtronics Part No.
	1	25	100	
CT40-5-ND	27.81	25.03	20.17	CT40-5

Free shipping on orders over \$200 CAD! All prices in Canadian dollars and include duty and brokerage fees.

2584 (CA2011)

1-800-344-4539 • www.digikey.ca • 218-681-6674 • Fax: 218-681-3380