

F Series

Active BGA Heatsinks



Removable Fan Sinks for BGA Chipsets



The F-Series of aluminum cross cut fin BGA heatsinks with fans are high efficiency cooling products designed for BGA chipsets.

These devices mount with EZ Snap™ mounting clips to provide optimum cooling for various package sizes. These off-the-shelf, high efficiency solutions are easy to install and require no special board modifications or complex assemblies.

Features:

- * High efficiency aluminum cross-cut fin design provides low pressure-drop characteristics
- * Constructed of extruded aluminum AL6063 for optimum heat transfer
- * DC Fan for improved heat dissipation
- * Designed specifically for BGAs and other surface mount packages
- * EZ-Snap™ mounting clip is constructed of UL94-V0 rated nylon
- * Use clip tool HS8063 to attach (or remove) heatsink directly to BGA chip
- * Finished with black anodize plating
- * Clip & thermal pad options are pre-assembled at the factory



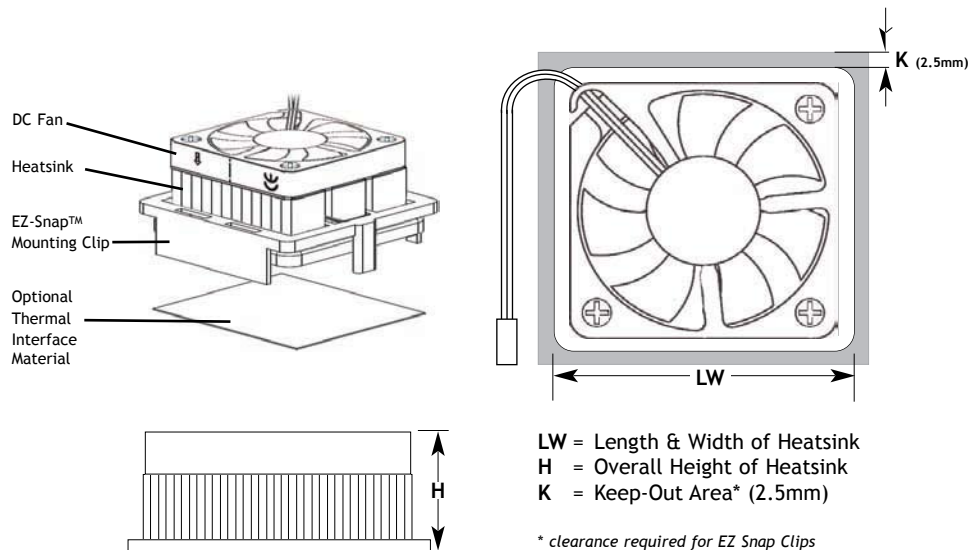
Radian Heatsinks
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Mechanical Outline Drawing

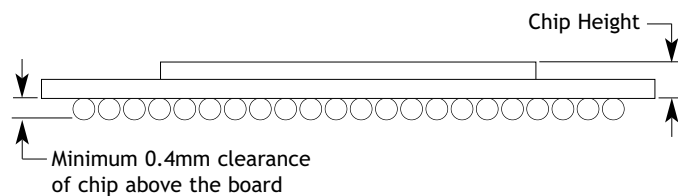
(See 2nd page for "LW" & "H" dimensional values)



EZ Snap™ Mounting Clip

CLIPS DIRECTLY TO BGA CHIP WITH HS8063 CLIP TOOL

See page 2 for fitting chip heights. Consult factory for unique chip height requirements



- Note 1: Chip height measurements exclude ball dimensions (0.4mm)
Note 2: Chip must have 0.4mm clearance above the board for clip to adhere properly
Note 3: Maintain keep-out clearance of 2.5mm around chip for clip to adhere properly

Length & Width of Heatsink (mm)	Part Number ⁽¹⁾					Heatsink Height (mm)	Thermal Resistance Theta_SA	Fan Spec	Harness Spec					
	Fansink		Optional Mounting Clip		Optional Thermal Tape/Pad Part #									
	Fansink Part #	Voltage Input	Optional Mounting Clip	Fits Chip Heights (mm)										
35	FA35	12V	+K25B	1.5-2.1	+3M8815	22.7	1.7 C/W	Airflow: 4.1 CFM	Length: 300 mm (+/-20)					
			-or-											
			+K51B	1.7-2.3										
			-or-											
	FB35	5V	+K52B	2.5-3.1	-or-	19.6	1.9 C/W	Noise: 27.9 dBa	Connector: Molex 22-01-3037 (Matching Connector 22-23-2031)					
			-or-											
			+K35B	3.2-3.8										
			-or-											
			+K29B	3.4-4.0	+T710			Speed: 9,000 RPM	Pin 1: Ground (Black)					
			-or-											
			+K53B	4.1-4.7										
40	FA40	12V	+K27B	1.3-2.1	+3M8815	23.3	1.3 C/W	Airflow: 6.0 CFM	Length: 300 mm (+/-20)					
			-or-											
			+K36B	3.2-3.8										
			-or-											
	FB40	5V	+K54B	1.7-2.3	-or-			Noise: 30.0 dBa	Connector: Molex 22-01-3037					
			-or-											
			+K55B	2.5-3.1										
			-or-											
			+K30B	3.4-4.0	+T710			Speed: 8,000 RPM	Pin 1: Ground (Black)					
			-or-											
			+K56B	4.1-4.7										
42.5	FA42.5	12V	+K40B	0.8-1.4	+3M8815	23.3	1.2 C/W	Airflow: 5.7 CFM	Length: 300 mm (+/-20)					
			-or-											
	FB42.5	5V	+K41B	1.4-2.0	-or-			Noise: 20.0 dBa	Connector: Molex 22-01-3037					
			-or-											
			+K31B	2.7-3.3	+T710			Speed: 4,800 RPM	Pin 1: Ground (Black)					
45	FA45	12V			+3M8815	23.3	1.2 C/W	Airflow: 5.7 CFM	Length: 300 mm (+/-20)					
	FB45	5V										+K28B	1.5-2.1	-or-
					+T710			Speed: 4,800 RPM	Pin 1: Ground (Black)					
								Power: 1.0 Watts	Pin 2: + Voltage Input (Red)					
									Pin 3: Alarm (Blue)					

Notes:

- 1) Add suffix "+T710" to designate thermally conductive phase change pad (Chomerics Part # T710).
 - 2) Mounting clips are constructed of UL94-VO rated nylon material.
 - 3) Thermal data provided are for reference only. Actual cooling performance may vary by application.
 - 4) Specifications are subject to change without notice.
 - 5) 27mm size available, contact Radian for specifications
- * Contact Radian to discuss unique heatsink, clip and interface requirements.

**Passive BGA Cooler Products:****HS1800 Series:**

21-45mm plate fin (aluminum) ideal for linear air flow

INL Series:

27-37.5mm plate fin (aluminum) ideal for linear air flow

INM-W Series

19-45mm elliptical fin (aluminum) ideal for linear airflow and where multiple heatsinks are utilized

HS2000-60 Series:

21-45mm round pin (aluminum) ideal for omni directional air flow

HS2000-80 Series:

21-45mm round pin (aluminum) ideal for omni directional air flow

INM-P Series:

27-42.5mm round pin (aluminum) ideal for omni-directional air flow

INM-PCU Series:

19-42.5mm round pin (copper) ideal for omni directional air flow

Small Round Pin:

12.7-25.4mm round pin (aluminum) ideal for omni directional air flow

37.5004 Series:

37.5mm round pin (aluminum or copper) ideal for omni directional air flow

Pushpin Heatsinks:

Pushpin heatsinks (aluminum) ideal for linear air flow

Custom Design and**Manufacturing Services:**

Our experienced engineers and production specialists are dedicated to the design and manufacture of cooling solutions to match our customers specific thermal issues, quickly and cost-effectively.

Features of our services include:

- * Free engineering consultation
- * Complimentary thermal analysis (computational fluid dynamics and design simulation/modeling)
- * Wide range of technologies including: investment casting; die casting; precision forging; skived fin; extrusions; stamped fin; and custom machining
- * Rapid prototyping services to deliver concept models in as little as 2-5 business days and working prototypes in 1-3 weeks

Contact Radian Heatsinks to discuss your specific requirement today.



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FC & FD Series Active BGA Heatsinks

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Length & Width of Heatsink (mm)	Part Number ⁽¹⁾					Heatsink Height (mm)	Thermal Resistance Theta_SA	Fan Spec	Harness Spec
	Fansink		Optional Mounting Clip		Optional Thermal Tape/Pad Part #				
	Fansink Part #	Voltage Input	Optional Mounting Clip	Fits Chip Heights (mm)					
35	FC35	12V	K25B -or- K51B -or- K25A -or- K52B	0.4-1.0* 0.6-1.2* 1.3-1.9* 1.4-2.1*	+3M8815	16.7	2.3 C/W	Airflow: 4.90 CFM Noise: 25.0 dBa	Length: 300 mm (+/-20) Connector: Molex 22-01-3037
	FD35	5V	K35B -or- K29B -or- K53B -or- K29A -or- K53A	2.1-2.7* 2.3-2.9* 3.0-3.6* 3.2-3.8* 3.9-4.5*	-or- +T710			Speed: 9,500 RPM Size: 30 x 6mm Power: 0.9 Watts	Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Tachometer (Yellow or White)
40	FC40	12V	K27B -or- K54B -or- K27A -or- K55B	0.3-0.9* 0.6-1.2* 1.2-1.8* 1.4-2.0*	+3M8815	16.7	2.0 C/W	Airflow: 4.90 CFM Noise: 25.0 dBa	Length: 300 mm (+/-20) Connector: Molex 22-01-3037
	FD40	5V	K36B -or- K30B -or- K56B -or- K30A -or- K56A	2.1-2.7* 2.3-2.9* 3.0-3.6* 3.2-3.8* 3.9-4.5*	-or- +T710			Speed: 9,500 RPM Size: 30 x 6mm Power: 0.9 Watts	Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Tachometer (Yellow or White)
42.5	FC42.5	12V	K41B -or- K40A -or- K41A	0.3-0.9* 0.6-1.2* 1.2-1.8*	+3M8815	20.4	1.6 C/W	Airflow: 6.40 CFM Noise: 25.0 dBa	Length: 300 mm (+/-20) Connector: Molex 22-01-3037
	FD42.5	5V	K31B -or- K31A	1.6-2.2* 2.5-3.1*	-or- +T710			Speed: 6,000 RPM Size: 40 x 10mm Power: 1.1 Watts	Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Alarm (Yellow or White)
45	FC45	12V	K28B	0.4-1.0*	+3M8815	20.4	1.5 C/W	Airflow: 6.40 CFM Noise: 25.0 dBa	Length: 300 mm (+/-20) Connector: Molex 22-01-3037
	FD45	5V	K28A	1.3-1.9*	+T710			Speed: 6,000 RPM Size: 40 x 10mm Power: 1.1 Watts	Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Alarm (Yellow or White)

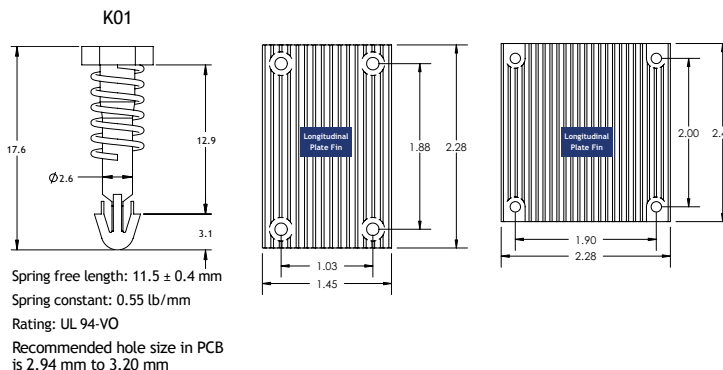
Notes:

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FE & FF Series

Active BGA Heatsinks



Part Number ⁽¹⁾				Width of Heatsink (In)	Length of Heatsink (In)	Overall Height (mm)	Thermal Resistance Theta_SA (C/W)	Hole to Hole Distance (In)	Fan Spec	Harness Spec
Fansink		Optional Push Pin	Optional Thermal Tape/Pad Part #							
Fansink Part #	Voltage Input									
FE1567	12V	+K01	+T710	1.45	2.28	12.7	2.3	1.03 x 1.86	Airflow: 4.90 CFM	Length: 300 mm (+/-20)
FF1567	5V					Noise: 25.0 dBA	Connector: Molex 22-01-3037			
FE1568	12V					Speed: 9,500 RPM	Pin 1: Ground (Black)			
FF1568	5V					Size: 30 x 6mm	Pin 2: + Voltage Input (Red)			
FE1569	12V					Power: 0.9 Watts	Pin 3: Tachometer (Yellow or White)			
FF1569	5V									
FE1570	12V									
FF1570	5V									
FE1575	12V	+K01	+T710	2.28	2.4	16.5	1.9	1.90 x 2.00	Airflow: 6.40 CFM	Length: 300 mm (+/-20)
FF1575	5V					Noise: 25.0 dBA	Connector: Molex 22-01-3037			
FE1576	12V					Speed: 6,000 RPM	Pin 1: Ground (Black)			
FF1576	5V					Size: 40 x 10mm	Pin 2: + Voltage Input (Red)			
FE1577	12V					Power: 1.1 Watts	Pin 3: Alarm (Yellow or White)			
FF1577	5V									
FE1578	12V									
FF1578	5V									

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