



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.

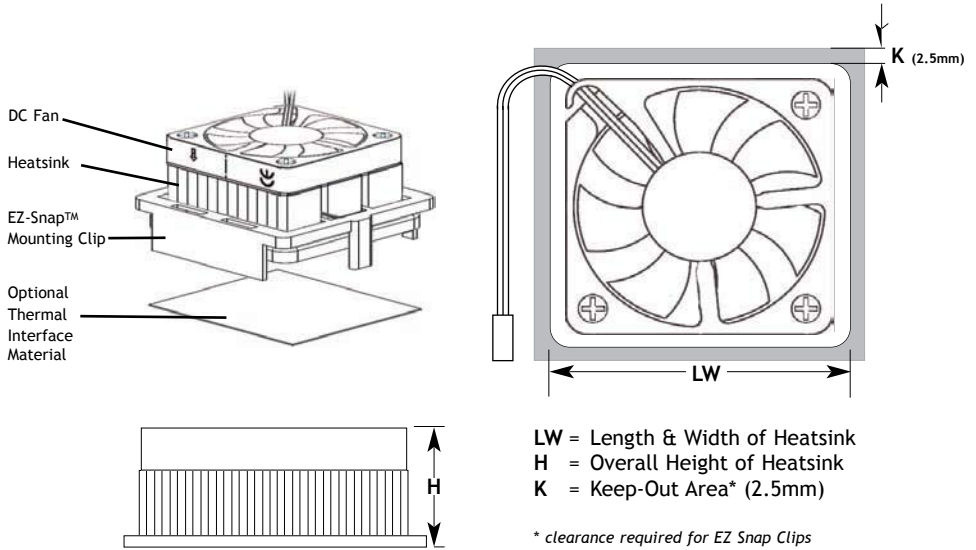
These devices mount with EZ Snap™ mounting clips to provide optimum cooling for various package sizes. These off-the-shelf, high efficiency solutions are easy to install and require no special board modifications or complex assemblies.

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

Mechanical Outline Drawing

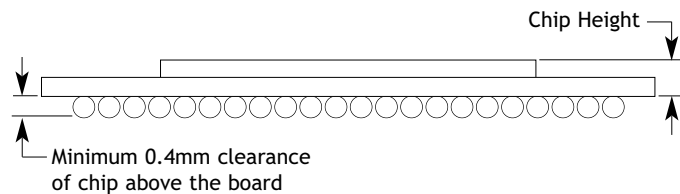
(See 2nd page for "LW" & "H" dimensional values)



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



Radian Heatsinks
A division of Intricast Co., Inc.

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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 | FA35 | 12V | +K25B | 1.5-2.1 | +3M8815 | 22.7 | 1.7 C/W | Airflow: 4.1 CFM Noise: 27.9 dBA Speed: 9,000 RPM Power: 0.5 Watts | Length: 300 mm (+/-20) Connector: Molex 22-01-3037 (Matching Connector 22-23-2031) |
| | | | -or- | | | | | | |
| | | | +K51B | 1.7-2.3 | | | | | |
| | FB35 | 5V | -or- | | -or- | 19.6 | 1.9 C/W | Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Tachometer (Blue or White) | |
| | | | +K52B | 2.5-3.1 | | | | | |
| | | | -or- | | | | | | |
| 40 | FA40 | 12V | +K35B | 3.2-3.8 | +3M8815 | 23.3 | 1.3 C/W | Airflow: 6.0 CFM Noise: 30.0 dBA Speed: 8,000 RPM Power: 0.8 Watts | Length: 300 mm (+/-20) Connector: Molex 22-01-3037 |
| | | | -or- | | | | | | |
| | | | +K36B | 3.2-3.8 | | | | | |
| | FB40 | 5V | -or- | | -or- | 23.3 | 1.3 C/W | Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Alarm (White) | |
| | | | +K54B | 1.7-2.3 | | | | | |
| | | | -or- | | | | | | |
| 42.5 | FA42.5 | 12V | +K55B | 2.5-3.1 | +3M8815 | 23.3 | 1.2 C/W | Airflow: 5.7 CFM Noise: 20.0 dBA Speed: 4,800 RPM Power: 1.0 Watts | Length: 300 mm (+/-20) Connector: Molex 22-01-3037 |
| | | | -or- | | | | | | |
| | | | +K30B | 3.4-4.0 | | | | | |
| | FB42.5 | 5V | -or- | | -or- | 23.3 | 1.2 C/W | Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Alarm (Blue) | |
| | | | +K41B | 1.4-2.0 | | | | | |
| | | | -or- | | | | | | |
| 45 | FA45 | 12V | +K31B | 2.7-3.3 | +3M8815 | 23.3 | 1.2 C/W | Airflow: 5.7 CFM Noise: 20.0 dBA Speed: 4,800 RPM Power: 1.0 Watts | Length: 300 mm (+/-20) Connector: Molex 22-01-3037 |
| | | | -or- | | | | | | |
| | | | +K28B | 1.5-2.1 | | | | | |
| | FB45 | 5V | -or- | | -or- | 23.3 | 1.2 C/W | Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Alarm (Blue) | |
| | | | +K31B | 2.7-3.3 | | | | | |
| | | | -or- | | | | | | |

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

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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 | 0.4-1.0* | +3M8815 | 16.7 | 2.3 C/W | Airflow: 4.90 CFM Noise: 25.0 dBA Speed: 9,500 RPM Size: 30 x 6mm Power: 0.9 Watts | Length: 300 mm (+/-20) Connector: Molex 22-01-3037 Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Tachometer (Yellow or White) | |
| | | | -or- K51B | 0.6-1.2* | | | | | | |
| | | | -or- K25A | 1.3-1.9* | | | | | | |
| | FD35 | 5V | -or- K52B | 1.4-2.1* | -or- | | | | | |
| | | | -or- K35B | 2.1-2.7* | | | | | | |
| | | | -or- K29B | 2.3-2.9* | | | | | | |
| 40 | FC40 | 12V | K27B | 0.3-0.9* | +3M8815 | 16.7 | 2.0 C/W | Airflow: 4.90 CFM Noise: 25.0 dBA Speed: 9,500 RPM Size: 30 x 6mm Power: 0.9 Watts | Length: 300 mm (+/-20) Connector: Molex 22-01-3037 Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Tachometer (Yellow or White) | |
| | | | -or- K54B | 0.6-1.2* | | | | | | |
| | | | -or- K27A | 1.2-1.8* | | | | | | |
| | FD40 | 5V | -or- K55B | 1.4-2.0* | -or- | | | | | |
| | | | -or- K36B | 2.1-2.7* | | | | | | |
| | | | -or- K30B | 2.3-2.9* | | | | | | |
| 42.5 | FC42.5 | 12V | K41B | 0.3-0.9* | +3M8815 | 20.4 | 1.6 C/W | Airflow: 6.40 CFM Noise: 25.0 dBA Speed: 6,000 RPM Size: 40 x 10mm Power: 1.1 Watts | Length: 300 mm (+/-20) Connector: Molex 22-01-3037 Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Alarm (Yellow or White) | |
| | | | -or- K40A | 0.6-1.2* | | | | | | |
| | | | -or- K41A | 1.2-1.8* | | | | | | -or- |
| | FD42.5 | 5V | -or- K31B | 1.6-2.2* | +T710 | | | | | |
| | | | -or- K31A | 2.5-3.1* | | | | | | |
| | | | -or- K31A | 2.5-3.1* | | | | | | |
| 45 | FC45 | 12V | K28B | 0.4-1.0* | +3M8815 | 20.4 | 1.5 C/W | Airflow: 6.40 CFM Noise: 25.0 dBA Speed: 6,000 RPM Size: 40 x 10mm Power: 1.1 Watts | Length: 300 mm (+/-20) Connector: Molex 22-01-3037 Pin 1: Ground (Black) Pin 2: + Voltage Input (Red) Pin 3: Alarm (Yellow or White) | |
| | | | -or- | -or- | | | | | | |
| | FD45 | 5V | K28A | 1.3-1.9* | +T710 | | | | | |

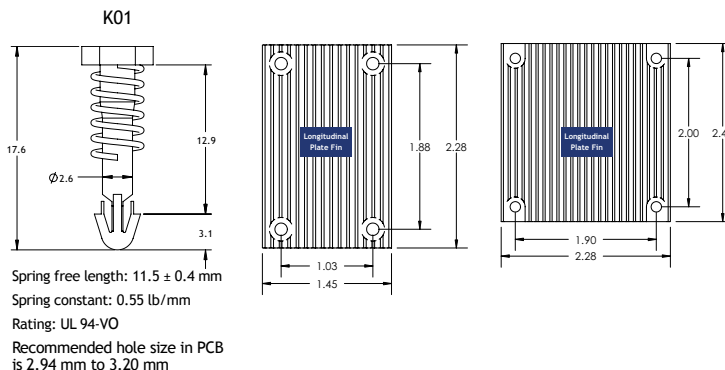
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FE & FF Series

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 Part # | Voltage Input | Optional Push Pin | Optional Thermal Tape/Pad Part # | | | | | | | |
| 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 | +K01 | +T710 | 2.28 | 2.4 | 16.5 | 1.9 | 1.90 x 2.00 | Airflow: 6.40 CFM | Length: 300 mm (+/-20) |
| FF1570 | 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 | +K01 | +T710 | 2.28 | 2.4 | 22.1 | 1.8 | 1.90 x 2.00 | | |
| FF1578 | 5V | | | | | | | | | |
| FE1579 | 12V | +K01 | +T710 | 2.28 | 2.4 | 28.4 | 1.0 | 1.90 x 2.00 | | |
| FF1579 | 5V | | | | | | | | | |
| FE1580 | 12V | +K01 | +T710 | 2.28 | 2.4 | 33.5 | 0.9 | 1.90 x 2.00 | | |
| FF1580 | 5V | | | | | | | | | |

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