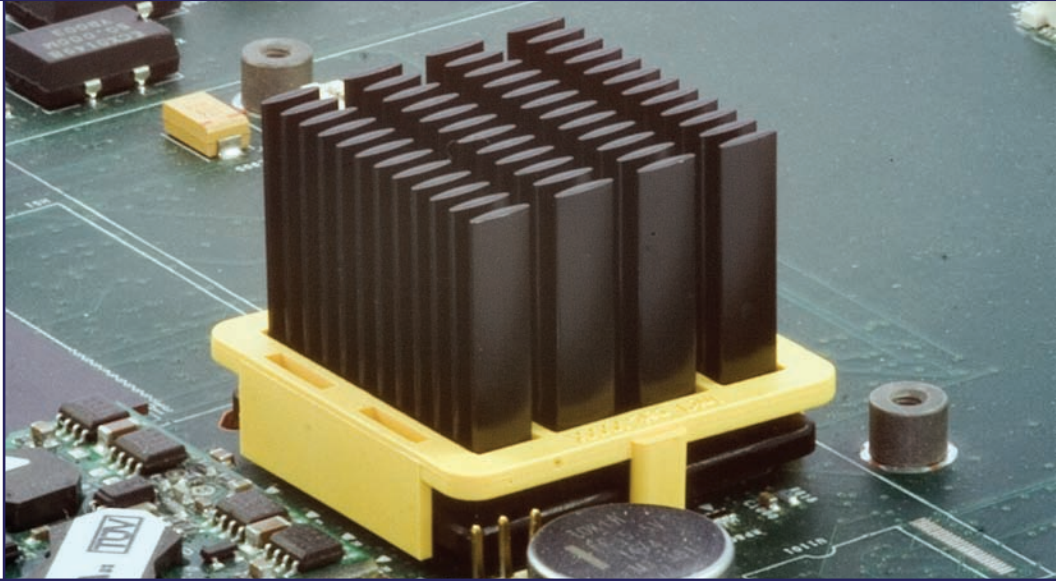


# INM-W Series

Elliptical Fin Aluminum BGA Heatsink



Removable Heatsinks for BGA Chipsets



The INM-W Series of elliptical fin aluminum BGA Heatsinks are high efficiency cooling products which are ideal for linear air flow environments.

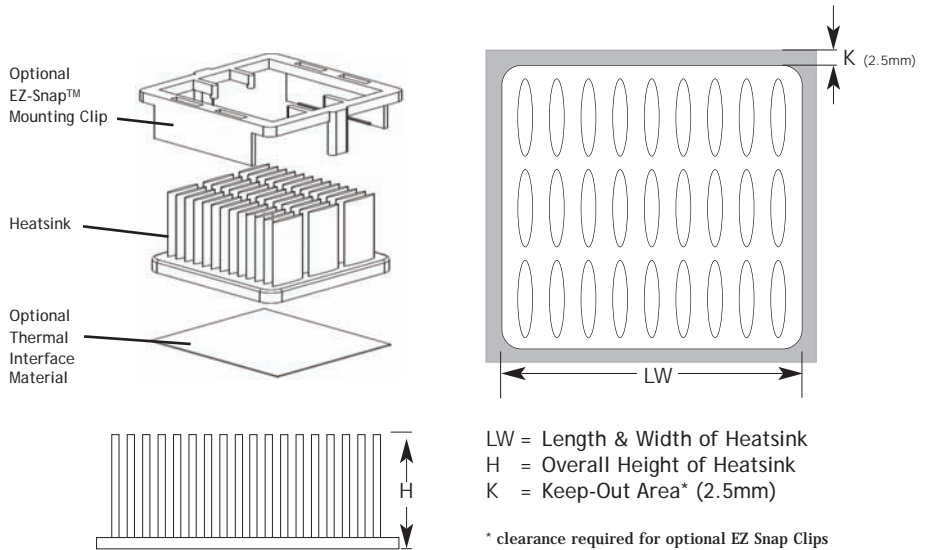
These devices mount with EZ Snap™ mounting clips and / or thermal tape to provide optimum cooling for various package sizes and airflow. These off-the-shelf, high efficiency solutions are easy to install and require no special board modifications or complex assemblies.

### Features:

- \* High efficiency aluminum elliptical fin design provides low pressure-drop characteristics
- \* Constructed of forged aluminum AL6063 for optimum heat transfer
- \* Ideal for linear air flow environments
- \* Designed specifically for BGAs and other surface mount packages
- \* Optional EZ-Snap™ mounting clip is constructed of UL94-V0 rated nylon
- \* Use clip tool HS8063 to attach or remove heatsink assembly directly to BGA chip
- \* Finished with black anodize plating
- \* Selected clip & thermal pad options are pre-assembled at the factory

### Mechanical Outline Drawing

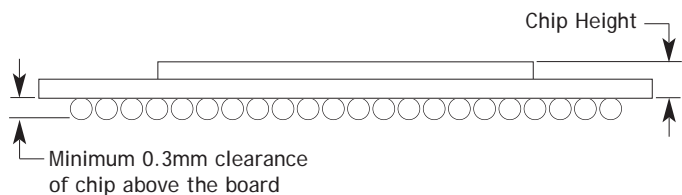
(See 2nd page for "LW" & "H" dimensional values)



### 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 (0.3mm)  
 Note 2: Chip must have 0.3mm 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



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# INM-W Series Elliptical Fin Aluminum BGA Heatsink

## 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

**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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Length & Width of Heatsink (mm)	Part Number <sup>(1)</sup>				Heatsink Height (mm)	Weight (g)	Thermal Resistance Theta_SA (C/W)			
	Heatsink Part Number	Optional Mounting Clip		Optional Thermal Tape / Pad Part # <sup>(2)</sup>			100 LFM	200 LFM	400 LFM	600 LFM
		Part Number <sup>(3)</sup>	Fits Chip Heights (mm)							
19	INM19001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	6.2	10.2	7.2	5.3	4.5
	INM19001-18W/2.6	-or-	-or-	-or-	17.6	6.8	9.6	6.7	4.8	3.9
	INM19001-21W/2.6	BU	1.4-2.0*	-or-	20.6	7.4	7.9	5.5	4.0	3.3
	INM19001-23W/2.6	-or-	-or-	-or-	22.6	7.8	6.7	4.7	3.5	2.9
	INM19001-28W/2.6	Y	3.0-3.6*	+T710	27.6	8.8	6.0	4.3	3.1	2.6
INM19001-33W/2.6	-or-	-or-	-or-	32.6	9.8	5.5	3.9	2.9	2.4	
21	INM21001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	7.2	9.5	6.6	4.8	4.0
	INM21001-18W/2.6	-or-	-or-	-or-	17.6	7.8	7.8	5.4	4.0	3.3
	INM21001-21W/2.6	BU	1.4-2.0*	-or-	20.6	8.4	6.6	4.7	3.5	2.7
	INM21001-23W/2.6	-or-	-or-	-or-	22.6	8.8	6.0	4.3	3.2	2.7
	INM21001-28W/2.6	Y	3.0-3.6*	+T710	27.6	9.8	5.5	3.8	2.9	2.5
INM21001-33W/2.6	-or-	-or-	-or-	32.6	10.8	4.5	3.2	2.5	2.1	
23	INM23001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	8.7	7.8	5.4	3.9	3.2
	INM23001-18W/2.6	-or-	-or-	-or-	17.6	9.4	6.4	4.4	3.2	2.6
	INM23001-21W/2.6	BU	1.4-2.0*	-or-	20.6	10.0	5.5	3.8	2.8	2.3
	INM23001-23W/2.6	-or-	-or-	-or-	22.6	10.5	5.0	3.5	2.5	2.1
	INM23001-28W/2.6	Y	3.0-3.6*	+T710	27.6	11.6	4.4	3.1	2.3	2.0
INM23001-33W/2.6	-or-	-or-	-or-	32.6	12.7	3.8	2.7	2.0	1.8	
25	INM25001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	9.7	6.9	4.6	3.3	2.6
	INM25001-18W/2.6	-or-	-or-	-or-	17.6	10.4	5.6	3.8	2.7	2.2
	INM25001-21W/2.6	BU	1.4-2.0*	-or-	20.6	11.1	4.8	3.3	2.4	1.9
	INM25001-23W/2.6	-or-	-or-	-or-	22.6	11.6	4.4	3.0	2.2	1.8
	INM25001-28W/2.6	Y	3.0-3.6*	+T710	27.6	12.7	3.9	2.7	2.0	1.7
INM25001-33W/2.6	-or-	-or-	-or-	32.6	13.9	3.3	2.4	1.8	1.5	
27	INM27001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	11.0	6.7	4.5	3.2	2.7
	INM27001-18W/2.6	-or-	-or-	-or-	17.6	11.8	5.5	3.7	2.6	2.2
	INM27001-21W/2.6	BU	1.4-2.0*	-or-	20.6	12.6	4.7	3.1	2.3	1.9
	INM27001-23W/2.6	-or-	-or-	-or-	22.6	13.1	4.2	2.9	2.1	1.8
	INM27001-28W/2.6	K32	2.3-2.9	+T710	27.6	14.5	3.8	2.7	2.0	1.7
INM27001-33W/2.6	Y	3.0-3.6*	-or-	32.6	15.8	3.3	2.3	1.8	1.5	
29	INM29001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	12.5	6.8	4.4	3.1	2.5
	INM29001-18W/2.6	-or-	-or-	-or-	17.6	13.3	5.9	3.9	2.8	2.3
	INM29001-21W/2.6	BU	1.4-2.0*	-or-	20.6	14.1	4.9	3.3	2.3	1.9
	INM29001-23W/2.6	-or-	-or-	-or-	22.6	14.6	4.2	2.8	2.0	1.7
	INM29001-28W/2.6	Y	3.0-3.6*	+T710	27.6	16.0	3.8	2.5	1.8	1.5
INM29001-33W/2.6	-or-	-or-	-or-	32.6	17.3	3.4	2.3	1.7	1.4	
31	INM31001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	15.3	5.2	3.3	2.3	1.8
	INM31001-18W/2.6	-or-	-or-	-or-	17.6	16.7	4.3	2.7	1.9	1.5
	INM31001-21W/2.6	BU	1.4-2.0*	-or-	20.6	18.0	3.6	2.3	1.7	1.4
	INM31001-23W/2.6	-or-	-or-	-or-	22.6	18.9	3.3	2.1	1.5	1.3
	INM31001-28W/2.6	Y	3.0-3.6*	+T710	27.6	21.1	2.9	1.9	1.4	1.2
INM31001-33W/2.6	-or-	-or-	-or-	32.6	23.4	2.5	1.7	1.2	1.0	
33	INM33001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	17.8	5.5	3.4	2.2	1.7
	INM33001-18W/2.6	-or-	-or-	-or-	17.6	19.2	4.8	2.9	1.9	1.4
	INM33001-21W/2.6	BU	1.4-2.0*	-or-	20.6	20.5	3.9	2.4	1.5	1.1
	INM33001-23W/2.6	-or-	-or-	-or-	22.6	21.4	3.3	1.9	1.3	0.9
	INM33001-28W/2.6	K33	2.3-2.9	+T710	27.6	23.6	2.9	1.7	1.1	0.8
INM33001-33W/2.6	Y	3.0-3.6*	-or-	32.6	25.9	2.5	1.5	1.0	0.7	
35	INM35001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	20.9	4.5	2.9	2.1	1.7
	INM35001-18W/2.6	-or-	-or-	-or-	17.6	22.6	3.7	2.4	1.7	1.4
	INM35001-21W/2.6	BU	1.4-2.0*	-or-	20.6	23.7	3.2	2.1	1.5	1.2
	INM35001-23W/2.6	-or-	-or-	-or-	22.6	26.4	2.9	1.9	1.3	1.1
	INM35001-28W/2.6	K29	2.3-2.9	+T710	27.6	29.2	2.5	1.7	1.2	1.0
INM35001-33W/2.6	Y	3.0-3.6*	-or-	32.6	30.9	2.2	1.5	1.0	0.8	
37.5	INM37.5001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	22.2	4.2	2.7	1.9	1.6
	INM37.5001-18W/2.6	-or-	-or-	-or-	17.6	24.1	3.4	2.2	1.6	1.3
	INM37.5001-21W/2.6	BU	1.4-2.0*	-or-	20.6	26.1	2.9	1.9	1.4	1.2
	INM37.5001-23W/2.6	-or-	-or-	-or-	22.6	27.4	2.7	1.7	1.3	1.1
	INM37.5001-28W/2.6	Y	3.0-3.6*	+T710	27.6	30.6	2.3	1.5	1.2	0.9
INM37.5001-33W/2.6	-or-	-or-	-or-	32.6	33.9	2.0	1.3	1.0	0.8	
40	INM40001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	25.2	3.7	2.4	1.6	1.3
	INM40001-18W/2.6	-or-	-or-	-or-	17.6	27.4	3.0	1.9	1.4	1.1
	INM40001-21W/2.6	BU	1.4-2.0*	-or-	20.6	29.6	2.5	1.7	1.2	0.9
	INM40001-23W/2.6	-or-	-or-	-or-	22.6	31.1	2.3	1.5	1.1	0.8
	INM40001-28W/2.6	K30	2.3-2.9	+T710	27.6	34.7	2.0	1.3	1.0	0.8
INM40001-33W/2.6	Y	3.0-3.6*	-or-	32.6	38.4	1.7	1.2	0.8	0.7	
42.5	INM42.5001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	27.8	3.4	2.1	1.4	1.2
	INM42.5001-18W/2.6	-or-	-or-	-or-	17.6	30.2	2.8	1.7	1.2	0.9
	INM42.5001-21W/2.6	BU	1.4-2.0*	-or-	20.6	32.6	2.4	1.5	1.0	0.8
	INM42.5001-23W/2.6	-or-	-or-	-or-	22.6	34.2	2.1	1.4	0.9	0.7
	INM42.5001-28W/2.6	Y	3.0-3.6*	+T710	27.6	38.2	1.8	1.2	0.8	0.7
INM42.5001-33W/2.6	-or-	-or-	-or-	32.6	42.2	1.6	1.0	0.7	0.6	
45	INM45001-15W/2.6	O	0.6-1.2*	+3M8815	14.6	31.2	3.1	1.9	1.3	1.1
	INM45001-18W/2.6	-or-	-or-	-or-	17.6	34.0	2.5	1.6	1.1	0.8
	INM45001-21W/2.6	BU	1.4-2.0*	-or-	20.6	36.7	2.1	1.4	0.9	0.7
	INM45001-23W/2.6	-or-	-or-	-or-	22.6	38.6	1.9	1.2	0.8	0.7
	INM45001-28W/2.6	Y	3.0-3.6*	+T710	27.6	43.2	1.7	1.1	0.7	0.6
INM45001-33W/2.6	-or-	-or-	-or-	32.6	47.8	1.4	0.9	0.7	0.5	

### Notes:

- 1) Example Part Numbers:  
 INM27001-15W/2.6      27 x 14.6mm Heatsink Only  
 INM35001-18W/2.6O      35 x 17.6mm Heatsink with "O" (orange) mounting clip (0.6-1.2mm Chip Height)  
 INM40001-15W/2.6+3M8815      40 x 14.6mm Heatsink with 3M8815 thermal tape  
 INM42.5001-28W/2.6BU+T710      42.5 x 27.6mm Heatsink with "BU" (blue) mounting clip for 1.4-2.0mm chip heights and T710 thermal pad
  - 2) Optional thermal interface materials are defined as follows:  
 T710 - Thermally conductive phase change pad for use with mounting clip (Chomerics Part # T710)  
 3M8815 - Thermally conductive adhesive tape
  - 3) Mounting clips are constructed of UL94-VO rated nylon material.
  - 4) Thermal data provided are for reference only. Actual cooling performance may vary by application.
  - 5) Contact Radian to discuss unique heatsink, clip and interface requirements.
  - 6) Specifications are subject to change without notice.
- \*Contact Radian for mounting clips to fit chip heights not displayed above.

