

### AAVID CLIP ATTACH E-SERIES

Introducing Aavid's line of clip attach heat sinks for BGA applications. The series utilizes an easy to mount plastic frame along with flexible wire springs. The wire springs are resistant to breakage and allow for easy installation. They provide pressure to improve thermal contact.

### FEATURES & BENEFITS

- » 2.5mm keep out zone for high density PCB layout
- » Force applied by flexible wire spring
- » No short-circuit concern from UL94V-0 rated PA66
- » Easy mounting
- » Re-workable
- » Shock & Vibration tested
- » Cost Effective

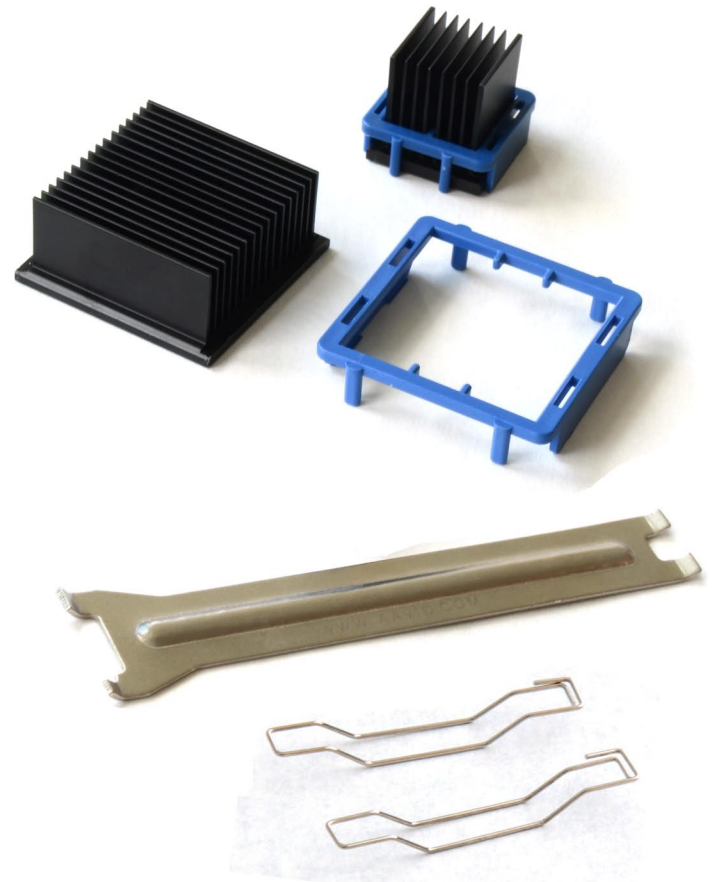
### ORDERING INFORMATION

Customization is possible with different interface materials, finishes, and expanded heat sink size for smaller  $R_{ca}$ . The standard finish is black anodize.

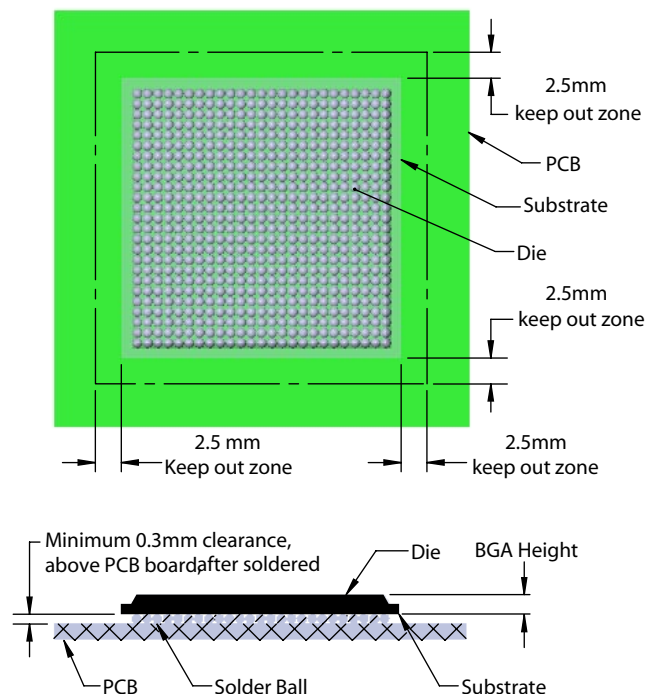
#### Part Number Specification

	<b>EA - XXX - HXXX - XXXX</b>
Example Part:	<b>EA 450 H175 T710</b>
E-series	EA
Assembled	450
BGA Size (45mm x 45mm)	H175
Heat Sink Height (17.5mm)	T710
TIM Spec (T710)	T710

Clip attach mounting tool part number: **EA-MT001**



#### Keep Out Zones

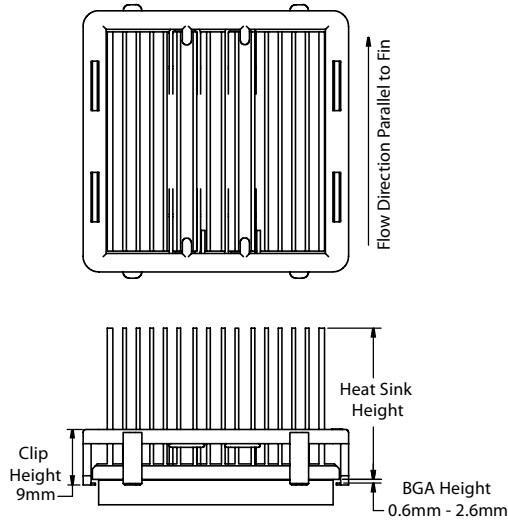


NOTE: Specifications are subject to change without notice



# AAVID THERMALLOY

## Aavid Clip Attach E-Series for BGAs



### R<sub>ca</sub> with Un-Ducted forced convection

- » Air direction: parallel to fin
- » Un-Ducted air region size: 3 times BGA nominal width; 1mm from fin top (i.e. 27x27mm BGA, region size 3x27mm = 81mm width)
- » Heat source size = BGA nominal size (i.e. 27x27mm BGA, heat source size 27x27mm)
- » TIM size: 1mm inward for 4 edges. (i.e. 27x27mm BGA, TIM size 25x25mm)

### R<sub>ca</sub> @ natural convection

- » Direction: fin perpendicular to ground
- » One value of R<sub>ca</sub> at 75 °C temperature rise over ambient
- » Heat power (Watts): Adjusted to reach ΔT=75 °C balanced
- » Heat source size = BGA nominal size. (i.e. 27x27mm BGA, heat source size 27x27mm)
- » TIM size: 1mm inward for 4 edges. (i.e. 27x27mm BGA, TIM size 25x25mm)

## Product Offerings

BGA Size (mm)	Description	BGA Height (mm)	Heat Sink Height (mm)	TIM	R <sub>ca</sub> (°C/W) @ un-ducted air flow (m/s)						R <sub>ca</sub> (°C/W) @ Natural Convection	R <sub>ca</sub> (°C/W) @ Ducted Air Flow @ 1m/s	Weight (G, +/-10%)	
					0.5	1.0	1.5	2.0	2.5	3.0				4.0
19x19	EA-190-H095-T710	0.6 - 2.6	9.5	T710	29.5	17.8	13.6	11.3	9.9	8.9	7.6	66.4	10.1	5
	EA-190-H125-T710	0.6 - 2.6	12.5	T710	22.5	13.4	10.2	8.6	7.6	6.8	5.9	54.8	8.3	5
	EA-190-H145-T710	0.6 - 2.6	14.5	T710	19.7	11.6	8.9	7.5	6.6	6.0	5.1	50.8	7.7	6
	EA-190-H175-T710	0.6 - 2.6	17.5	T710	16.6	9.8	7.5	6.4	5.6	5.1	4.5	45.2	6.8	6
	EA-190-H195-T710	0.6 - 2.6	19.5	T710	15.1	8.8	6.9	5.8	5.2	4.7	4.0	42.6	6.3	6
	EA-190-H225-T710	0.6 - 2.6	22.5	T710	13.3	7.8	6.1	5.2	4.6	4.2	3.7	38.9	5.7	7
21x21	EA-190-H245-T710	0.6 - 2.6	24.5	T710	12.4	7.3	5.7	4.9	4.3	4.0	3.5	36.8	5.4	7
	EA-210-H095-T710	0.6 - 2.6	9.5	T710	25.6	15.1	11.2	9.3	8.0	7.2	6.1	62.3	8.2	5
	EA-210-H125-T710	0.6 - 2.6	12.5	T710	19.6	11.3	8.5	7.0	6.1	5.5	4.7	51.6	6.7	6
	EA-210-H145-T710	0.6 - 2.6	14.5	T710	17.1	9.8	7.4	6.1	5.4	4.8	4.1	47.4	6.2	6
	EA-210-H175-T710	0.6 - 2.6	17.5	T710	14.5	8.3	6.2	5.2	4.5	4.1	3.6	42.3	5.4	7
	EA-210-H195-T710	0.6 - 2.6	19.5	T710	13.2	7.5	5.6	4.7	4.2	3.8	3.2	39.6	5.0	7
23x23	EA-210-H225-T710	0.6 - 2.6	22.5	T710	11.7	6.6	5.0	4.2	3.7	3.4	3.0	36.1	4.5	8
	EA-210-H245-T710	0.6 - 2.6	24.5	T710	10.9	6.2	4.7	4.0	3.5	3.2	2.8	34.2	4.3	8
	EA-230-H095-T710	0.6 - 2.6	9.5	T710	23.3	13.4	9.9	8.1	7.0	6.2	5.2	58.4	7.0	7
	EA-230-H125-T710	0.6 - 2.6	12.5	T710	17.9	10.1	7.4	6.1	5.3	4.7	4.0	48.5	5.8	8
	EA-230-H145-T710	0.6 - 2.6	14.5	T710	15.7	8.7	6.4	5.3	4.6	4.2	3.5	44.2	5.3	9
	EA-230-H175-T710	0.6 - 2.6	17.5	T710	13.3	7.4	5.4	4.5	3.9	3.5	3.0	39.5	4.6	10
25x25	EA-230-H195-T710	0.6 - 2.6	19.5	T710	12.2	6.7	4.9	4.1	3.6	3.2	2.8	36.8	4.3	10
	EA-230-H225-T710	0.6 - 2.6	22.5	T710	10.8	5.9	4.4	3.6	3.2	2.9	2.5	33.6	3.9	11
	EA-230-H245-T710	0.6 - 2.6	24.5	T710	10.1	5.5	4.1	3.4	3.0	2.7	2.4	31.9	3.7	12
	EA-250-H095-T710	0.6 - 2.6	9.5	T710	21.6	12.3	8.9	7.3	6.2	5.5	4.6	54.8	6.2	8
	EA-250-H125-T710	0.6 - 2.6	12.5	T710	16.7	9.2	6.7	5.4	4.7	4.2	3.5	45.5	5.1	9
	EA-250-H145-T710	0.6 - 2.6	14.5	T710	14.6	8.0	5.8	4.7	4.1	3.7	3.1	41.3	4.7	9
27x27	EA-250-H175-T710	0.6 - 2.6	17.5	T710	12.5	6.7	4.9	4.0	3.5	3.1	2.7	36.9	4.1	10
	EA-250-H195-T710	0.6 - 2.6	19.5	T710	11.4	6.1	4.4	3.6	3.2	2.8	2.4	34.2	3.8	11
	EA-250-H225-T710	0.6 - 2.6	22.5	T710	10.1	5.4	3.9	3.2	2.8	2.6	2.2	31.2	3.4	12
	EA-250-H245-T710	0.6 - 2.6	24.5	T710	9.4	5.0	3.7	3.0	2.7	2.4	2.1	29.6	3.2	12
	EA-270-H095-T710	0.6 - 2.6	9.5	T710	20.4	11.4	8.2	6.6	5.6	5.0	4.1	51.4	5.6	9
	EA-270-H125-T710	0.6 - 2.6	12.5	T710	15.8	8.6	6.1	4.9	4.2	3.8	3.2	42.8	4.6	10
29x29	EA-270-H145-T710	0.6 - 2.6	14.5	T710	13.8	7.4	5.3	4.3	3.7	3.3	2.8	38.5	4.2	11
	EA-270-H175-T710	0.6 - 2.6	17.5	T710	11.8	6.2	4.5	3.6	3.1	2.8	2.4	34.5	3.6	12
	EA-270-H195-T710	0.6 - 2.6	19.5	T710	10.8	5.7	4.0	3.3	2.8	2.5	2.2	31.8	3.4	13
	EA-270-H225-T710	0.6 - 2.6	22.5	T710	9.6	5.0	3.6	2.9	2.5	2.3	2.0	29.0	3.0	14
	EA-270-H245-T710	0.6 - 2.6	24.5	T710	9.0	4.6	3.3	2.7	2.4	2.2	1.8	27.6	2.9	15
	EA-290-H095-T710	0.6 - 2.6	9.5	T710	19.4	10.7	7.6	6.1	5.1	4.5	3.8	48.2	5.1	10
29x29	EA-290-H125-T710	0.6 - 2.6	12.5	T710	15.0	8.0	5.7	4.5	3.9	3.4	2.9	40.2	4.2	11
	EA-290-H145-T710	0.6 - 2.6	14.5	T710	13.2	6.9	4.9	3.9	3.3	3.0	2.5	36.0	3.8	12
	EA-290-H175-T710	0.6 - 2.6	17.5	T710	11.3	5.8	4.1	3.3	2.8	2.5	2.1	32.2	3.3	14
	EA-290-H195-T710	0.6 - 2.6	19.5	T710	10.3	5.3	3.7	3.0	2.6	2.3	1.9	29.6	3.0	15
	EA-290-H225-T710	0.6 - 2.6	22.5	T710	9.2	4.7	3.3	2.7	2.3	2.1	1.8	27.0	2.7	16
	EA-290-H245-T710	0.6 - 2.6	24.5	T710	8.6	4.4	3.1	2.5	2.2	1.9	1.7	25.7	2.6	17

NOTE: Specifications are subject to change without notice

USA: +1-603-528-3400

EUROPE: +39 051 764011

ASIA: +86-21-6115-2000

www.aavid.com



**AAVID  
THERMALLOY**

**Aavid Clip Attach E-Series for BGAs**

**Product Offerings Continued**

BGA Size (mm)	Description	BGA Height (mm)	Heat Sink Height (mm)	TIM	R <sub>ca</sub> (°C/W) @ un-ducted air flow (m/s)							R <sub>ca</sub> (°C/W) @ Natural Convection	R <sub>ca</sub> (°C/W) @ Ducted Air Flow @ 1m/s	Weight (G, +/-10%)
					0.5	1.0	1.5	2.0	2.5	3.0	4.0			
30x30	EA-300-H095-T710	0.6 - 2.6	9.5	T710	18.5	10.0	7.1	5.6	4.7	4.2	3.4	45.2	4.7	11
	EA-300-H125-T710	0.6 - 2.6	12.5	T710	14.3	7.5	5.3	4.2	3.5	3.1	2.6	37.8	3.8	12
	EA-300-H145-T710	0.6 - 2.6	14.5	T710	12.6	6.5	4.5	3.6	3.1	2.7	2.3	33.6	3.4	13
	EA-300-H175-T710	0.6 - 2.6	17.5	T710	10.8	5.5	3.8	3.0	2.6	2.3	1.9	30.1	3.0	15
	EA-300-H195-T710	0.6 - 2.6	19.5	T710	9.9	4.9	3.4	2.8	2.4	2.1	1.8	27.5	2.8	16
	EA-300-H225-T710	0.6 - 2.6	22.5	T710	8.8	4.4	3.1	2.4	2.1	1.9	1.6	25.1	2.5	17
31x31	EA-310-H095-T710	0.6 - 2.6	9.5	T710	17.7	9.5	6.6	5.2	4.4	3.8	3.2	42.4	4.3	12
	EA-310-H125-T710	0.6 - 2.6	12.5	T710	13.8	7.1	4.9	3.9	3.3	2.9	2.4	35.5	3.5	14
	EA-310-H145-T710	0.6 - 2.6	14.5	T710	12.1	6.2	4.2	3.3	2.8	2.5	2.1	31.3	3.2	15
	EA-310-H175-T710	0.6 - 2.6	17.5	T710	10.4	5.2	3.6	2.8	2.4	2.1	1.8	28.1	2.7	17
	EA-310-H195-T710	0.6 - 2.6	19.5	T710	9.5	4.7	3.2	2.5	2.2	1.9	1.6	25.6	2.5	18
	EA-310-H225-T710	0.6 - 2.6	22.5	T710	8.5	4.2	2.8	2.2	1.9	1.7	1.4	23.3	2.3	19
32.5x32.5	EA-325-H095-T710	0.6 - 2.6	9.5	T710	17.1	9.0	6.2	4.9	4.1	3.6	2.9	39.8	4.0	14
	EA-325-H125-T710	0.6 - 2.6	12.5	T710	13.3	6.8	4.6	3.6	3.0	2.6	2.2	33.4	3.2	15
	EA-325-H145-T710	0.6 - 2.6	14.5	T710	11.7	5.9	4.0	3.1	2.6	2.3	1.9	29.2	2.9	17
	EA-325-H175-T710	0.6 - 2.6	17.5	T710	10.1	4.9	3.3	2.6	2.2	1.9	1.6	26.3	2.5	18
	EA-325-H195-T710	0.6 - 2.6	19.5	T710	9.2	4.5	3.0	2.4	2.0	1.7	1.5	23.8	2.3	20
	EA-325-H225-T710	0.6 - 2.6	22.5	T710	8.2	4.0	2.7	2.1	1.8	1.6	1.3	21.7	2.1	21
33x33	EA-330-H095-T710	0.6 - 2.6	9.5	T710	16.5	8.6	5.9	4.6	3.8	3.3	2.7	37.3	3.7	14
	EA-330-H125-T710	0.6 - 2.6	12.5	T710	12.8	6.5	4.3	3.4	2.8	2.4	2.0	31.4	3.0	15
	EA-330-H145-T710	0.6 - 2.6	14.5	T710	11.3	5.6	3.7	2.9	2.4	2.1	1.7	27.3	2.7	17
	EA-330-H175-T710	0.6 - 2.6	17.5	T710	9.8	4.7	3.1	2.4	2.0	1.8	1.5	24.5	2.3	18
	EA-330-H195-T710	0.6 - 2.6	19.5	T710	8.9	4.3	2.8	2.2	1.8	1.6	1.3	22.1	2.1	20
	EA-330-H225-T710	0.6 - 2.6	22.5	T710	8.0	3.8	2.5	1.9	1.6	1.4	1.2	20.2	1.9	21
35x35	EA-350-H095-T710	0.6 - 2.6	9.5	T710	15.9	8.2	5.5	4.3	3.5	3.1	2.5	35.0	3.4	15
	EA-350-H125-T710	0.6 - 2.6	12.5	T710	12.4	6.2	4.1	3.1	2.6	2.2	1.8	29.5	2.8	16
	EA-350-H145-T710	0.6 - 2.6	14.5	T710	11.0	5.3	3.5	2.7	2.2	2.0	1.6	25.5	2.5	18
	EA-350-H175-T710	0.6 - 2.6	17.5	T710	9.5	4.5	3.0	2.3	1.9	1.6	1.3	22.9	2.1	19
	EA-350-H195-T710	0.6 - 2.6	19.5	T710	8.7	4.1	2.7	2.0	1.7	1.5	1.2	20.5	2.0	21
	EA-350-H225-T710	0.6 - 2.6	22.5	T710	7.8	3.6	2.3	1.8	1.5	1.3	1.1	18.7	1.8	23
37.5x37.5	EA-375-H095-T710	0.6 - 2.6	9.5	T710	15.4	7.9	5.3	4.0	3.3	2.9	2.3	32.8	3.2	17
	EA-375-H125-T710	0.6 - 2.6	12.5	T710	12.1	5.9	3.9	2.9	2.4	2.1	1.7	27.7	2.6	20
	EA-375-H145-T710	0.6 - 2.6	14.5	T710	10.7	5.1	3.3	2.5	2.1	1.8	1.5	23.8	2.3	21
	EA-375-H175-T710	0.6 - 2.6	17.5	T710	9.2	4.3	2.8	2.1	1.7	1.5	1.2	21.4	1.9	24
	EA-375-H195-T710	0.6 - 2.6	19.5	T710	8.5	3.9	2.5	1.9	1.6	1.4	1.1	19.1	1.8	25
	EA-375-H225-T710	0.6 - 2.6	22.5	T710	7.6	3.4	2.2	1.7	1.4	1.2	1.0	17.4	1.6	28
40x40	EA-400-H095-T710	0.6 - 2.6	9.5	T710	15.0	7.5	5.0	3.8	3.1	2.7	2.1	30.8	3.0	20
	EA-400-H125-T710	0.6 - 2.6	12.5	T710	11.7	5.7	3.7	2.8	2.2	1.9	1.6	26.1	2.4	23
	EA-400-H145-T710	0.6 - 2.6	14.5	T710	10.4	4.9	3.2	2.4	1.9	1.7	1.3	22.2	2.1	25
	EA-400-H175-T710	0.6 - 2.6	17.5	T710	9.0	4.1	2.6	2.0	1.6	1.4	1.1	20.0	1.8	28
	EA-400-H195-T710	0.6 - 2.6	19.5	T710	8.2	3.8	2.4	1.8	1.4	1.2	1.0	17.7	1.7	30
	EA-400-H225-T710	0.6 - 2.6	22.5	T710	7.4	3.3	2.1	1.6	1.3	1.1	0.9	16.2	1.5	33
42.5x42.5	EA-425-H095-T710	0.6 - 2.6	9.5	T710	14.6	7.3	4.7	3.6	2.9	2.5	2.0	28.9	2.8	22
	EA-425-H125-T710	0.6 - 2.6	12.5	T710	11.4	5.4	3.5	2.6	2.1	1.8	1.4	24.5	2.2	25
	EA-425-H145-T710	0.6 - 2.6	14.5	T710	10.1	4.7	3.0	2.2	1.8	1.5	1.2	20.7	1.9	27
	EA-425-H175-T710	0.6 - 2.6	17.5	T710	8.8	4.0	2.5	1.8	1.5	1.3	1.0	18.7	1.6	30
	EA-425-H195-T710	0.6 - 2.6	19.5	T710	8.0	3.6	2.2	1.7	1.3	1.1	1.0	16.5	1.5	33
	EA-425-H225-T710	0.6 - 2.6	22.5	T710	7.2	3.2	2.0	1.4	1.2	1.0	0.8	15.0	1.4	36
45x45	EA-450-H095-T710	0.6 - 2.6	9.5	T710	14.2	7.0	4.5	3.4	2.7	2.3	1.8	27.1	2.6	24
	EA-450-H125-T710	0.6 - 2.6	12.5	T710	11.1	5.2	3.3	2.4	2.0	1.7	1.3	23.0	2.1	27
	EA-450-H145-T710	0.6 - 2.6	14.5	T710	9.9	4.5	2.8	2.1	1.7	1.4	1.1	19.3	1.8	29
	EA-450-H175-T710	0.6 - 2.6	17.5	T710	8.5	3.8	2.4	1.7	1.4	1.2	0.9	17.5	1.5	33
	EA-450-H195-T710	0.6 - 2.6	19.5	T710	7.9	3.5	2.1	1.6	1.2	1.0	0.9	15.3	1.4	35
	EA-450-H225-T710	0.6 - 2.6	22.5	T710	7.0	3.1	1.9	1.4	1.1	1.0	0.8	14.0	1.2	38
EA-450-H245-T710	0.6 - 2.6	24.5	T710	6.6	2.8	1.7	1.2	1.0	0.9	0.7	13.4	1.2	40	

NOTE: Specifications are subject to change without notice

USA: +1-603-528-3400

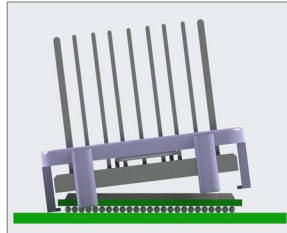
EUROPE: +39 051 764011

ASIA: +86-21-6115-2000

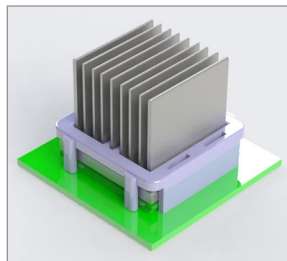
www.aavid.com

## Mounting Instructions

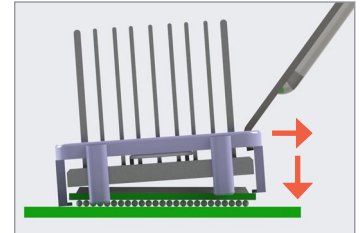
1. Snap plastic tab under one side of BGA substrate edge, beside solder balls.



3. Close when mounting tool has opened opposite side tab. Make sure all tabs engage edges of BGA substrate.



2. Rotate another side to touch BGA. Make sure guiding rods align with BGA edge. Insert mounting tool.

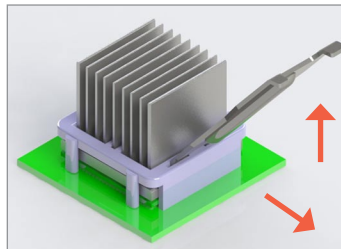


The 2 side tabs on the plastic frame should align with the PCB.

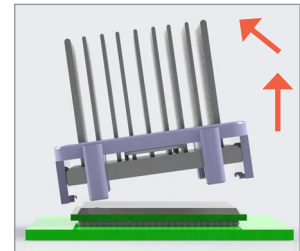
Heat sink should be attached to the BGA/PCB firmly and not rotate or move easily.

## Removal Instructions

1. Insert mounting tool from one side. Carefully open and lift from the same side.

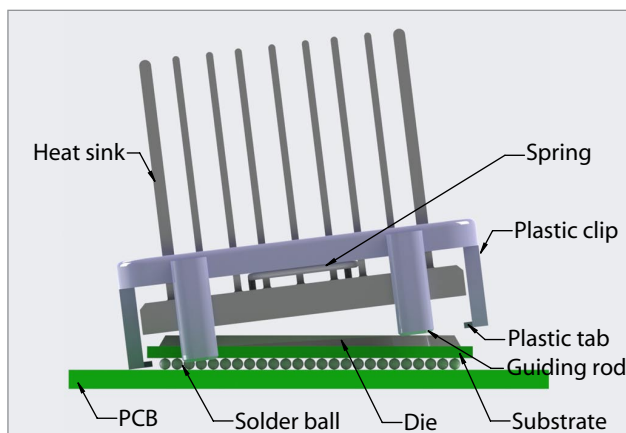
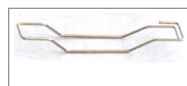


2. Slide out of opposite side, then lift plastic clip (attached to whole assembly) from the PCB.



## Legend

Spring already assembled inside before shipping



## Global Presence with Local Support

Aavid supports product development cycles with dedicated engineering resources and distribution partners that deliver on time, anywhere in the world.

**North America**  
USA  
+1-603-528-3400  
info@aavid.com

**Europe**  
Italy  
+39 051 764011  
sales.eu@aavid.com

**Asia**  
China  
+86-21-6115-2000  
sales.china@aavid.com

**WWW.AAVID.COM**

NOTE: Specifications are subject to change without notice