

HIGH TEMP FAN HEAT SINKS - FHS-090 SERIES

High Operating Temperature Integrated Fan Heat Sinks

DESIGN FEATURES

- Industry-leading maximum operating temperature of 90°C
- Compatible with chipset footprints ranging from 21x21 mm to 45x45 mm
- Total heights from 16.1 mm for low profile applications to 44.6 mm for lowest thermal resistance
- Common 5VDC @ 0.5 A (max) USB 2.0 fan electrical specifications
- Forged and extruded versions available
- Choice of elliptical, round pin, and plate fin styles



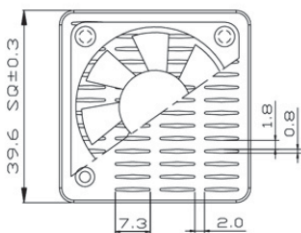
DESCRIPTION

The FHS-090 Series of integrated-fan heat sinks is uniquely designed to absorb and disperse heat away from high temperature devices while offering key features such as an operating temperature range of -10°C to 90°C, calculated MTTF @ 90°C: 86,858 hours (GEM, 90% confidence) and various package sizes to best fit the application. Thermal resistance values range from 4.07°C/W to as low as 1.24°C/W.

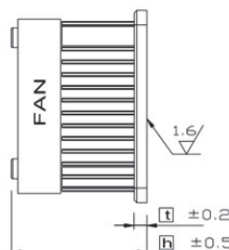
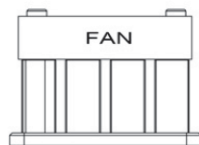
These new fansinks can maintain superior thermal dissipation for devices that emit high amount of heat. CTS' fansinks are available in a wide range of footprints and fin heights which make them suitable for many elevated temperature applications such as component testing, burn-in, high density servers, high-speed computing and video, and use in areas where the system airflow is constrained.

Elliptical Fins

Part Number	Length x Width x Height (mm)	Thermal Resistance (R _{TH})
FHE35-35-26	35 x 35 x 26.0	1.65
FHE35-35-30	35 x 35 x 29.6	1.54
FHE35-35-33	35 x 35 x 32.6	1.48
FHE35-35-35	35 x 35 x 34.6	1.46
FHE35-35-40	35 x 35 x 39.6	1.40
FHE35-35-45	35 x 35 x 44.6	1.36
FHE40-40-24	40 x 40 x 23.6	1.75
FHE40-40-27	40 x 40 x 26.6	1.54
FHE40-40-30	40 x 40 x 29.6	1.42
FHE40-40-33	40 x 40 x 32.6	1.34
FHE40-40-35	40 x 40 x 34.6	1.32
FHE40-40-40	40 x 40 x 39.6	1.27
FHE40-40-45	40 x 40 x 44.6	1.24
FHE43-43-22	42.5 x 42.5 x 21.6	1.65
FHE43-43-25	42.5 x 42.5 x 24.6	1.46
FHE43-43-28	42.5 x 42.5 x 27.6	1.33
FHE43-43-31	42.5 x 42.5 x 30.6	1.28
FHE43-43-33	42.5 x 42.5 x 32.6	1.26
FHE43-43-38	42.5 x 42.5 x 37.6	1.23
FHE43-43-43	42.5 x 42.5 x 42.6	1.19

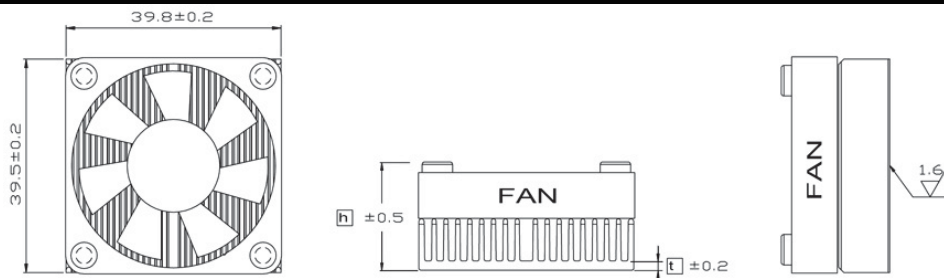


FHE40-40-xx



Line Fins

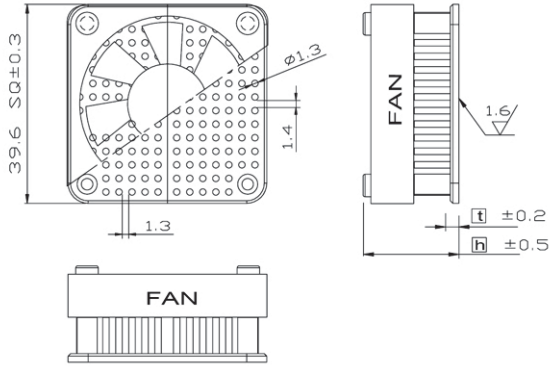
Part Number	Length x Width x Height (mm)	Thermal Resistance (R _{TH})
FHL21-21-18	21 x 21 x 18	4.07
FHL21-21-21	21 x 21 x 21	3.76
FHL21-21-24	21 x 21 x 24	3.72
FHL22-22-18	22 x 22 x 18	3.87
FHL22-22-21	22 x 22 x 21	3.42
FHL22-22-24	22 x 22 x 24	3.20
FHL23-23-18	23 x 23 x 18	3.87
FHL23-23-21	23 x 23 x 21	3.42
FHL23-23-24	23 x 23 x 24	3.20
FHL24-24-18	24 x 24 x 18	3.64
FHL24-24-21	24 x 24 x 21	3.25
FHL24-24-24	24 x 24 x 24	3.19
FHL25-25-18	25 x 25 x 18.1	3.82
FHL25-25-21	25 x 25 x 21.1	3.50
FHL25-25-24	25 x 25 x 24.1	3.16
FHL27-27-18	27 x 27 x 18.1	3.10
FHL27-27-21	27 x 27 x 21.1	3.07
FHL27-27-24	27 x 27 x 24.1	2.89
FHL29-29-18	29 x 29 x 18.1	3.36
FHL29-29-21	29 x 29 x 21.1	3.31
FHL29-29-24	29 x 29 x 24.1	2.91
FHL31-31-17	31 x 31 x 17.0	3.01
FHL31-31-21	31 x 31 x 21.1	2.86
FHL31-31-24	31 x 31 x 24.1	2.69
FHL33-33-18	33 x 33 x 18.1	3.11
FHL33-33-21	33 x 33 x 21.1	2.80
FHL33-33-24	33 x 33 x 24.1	2.67
FHL34-34-18	34 x 34 x 18.1	2.78
FHL34-34-21	34 x 34 x 21.1	2.58
FHL34-34-24	34 x 34 x 24.1	2.56
FHL35-35-18	35 x 35 x 18.1	2.76
FHL35-35-21	35 x 35 x 21.1	2.56
FHL35-35-24	35 x 35 x 24.1	2.52
FHL38-38-18	37.5 x 37.5 x 18.1	2.97
FHL38-38-21	37.5 x 37.5 x 21.1	2.74
FHL38-38-24	37.5 x 37.5 x 24.1	2.53
FHL40-40-16	40 x 40 x 16.1	2.74
FHL40-40-20	40 x 40 x 20.1	2.65
FHL40-40-23	40 x 40 x 23.1	2.53
FHL43-43-17	42.5 x 42.5 x 17.2	3.16
FHL43-43-20	42.5 x 42.5 x 20.1	2.93
FHL43-43-23	42.5 x 42.5 x 23.1	2.79
FHL45-45-16	45 x 45 x 16.1	3.10
FHL45-45-20	45 x 45 x 20.1	2.90
FHL45-45-23	45 x 45 x 23.1	2.75



FHL40-40-xx

Pin Fins

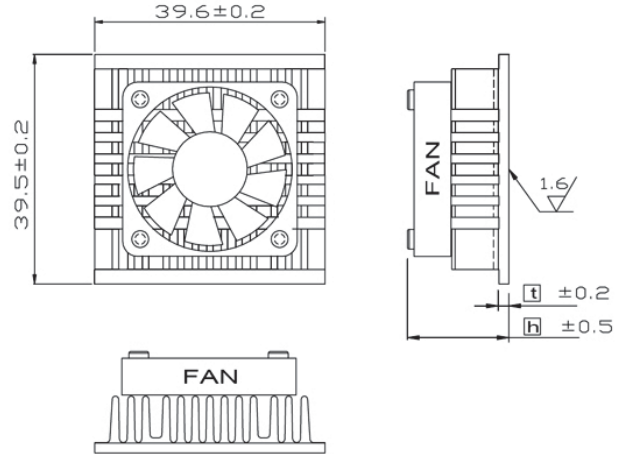
Part Number	Length x Width x Height (mm)	Thermal Resistance (R _{TH})
FHP27-27-20	27 x 27 x 20.0	3.35
FHP31-31-21	31 x 31 x 20.9	2.98
FHP35-35-21	35 x 35 x 20.9	2.53
FHP40-40-21	40 x 40 x 20.9	1.95



FHP40-40-xx

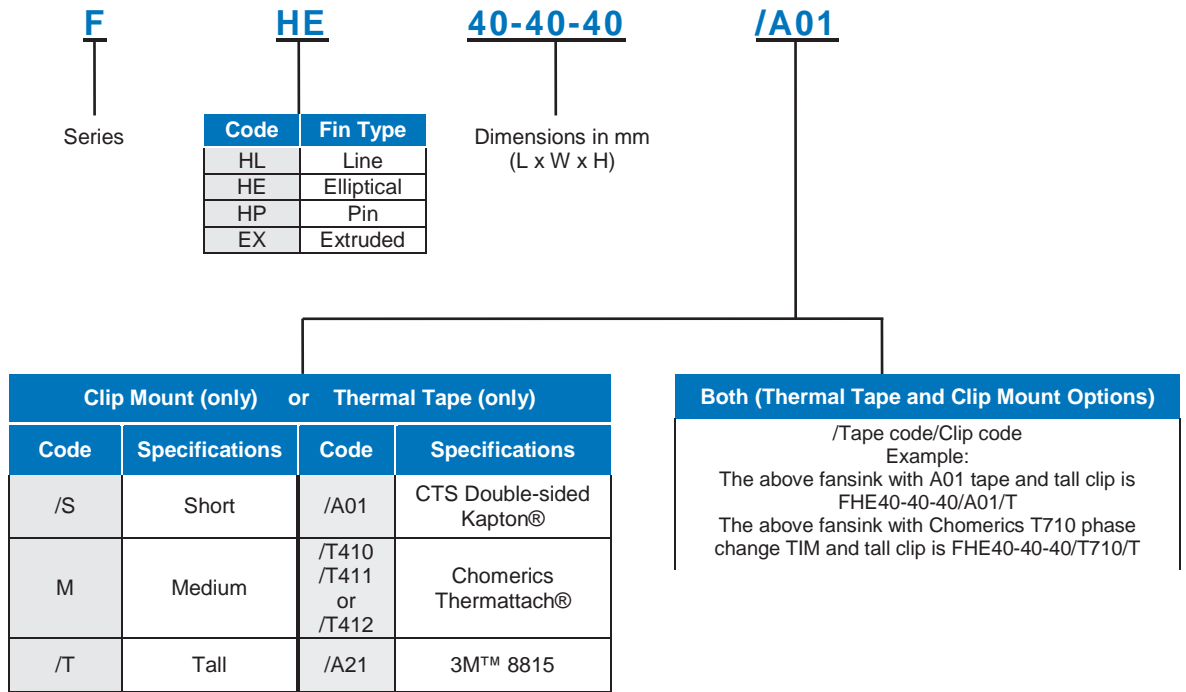
Extruded Fins

Part Number	Length x Width x Height (mm)	Thermal Resistance (R _{TH})
FEX35-35-21	35 x 35 x 21.0	1.92
FEX40-40-21	40 x 40 x 21.2	1.79



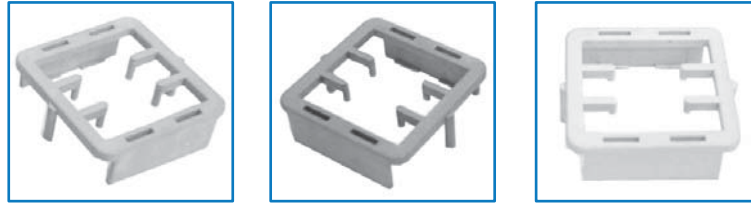
FEX40-40-20

ORDERING INFORMATION

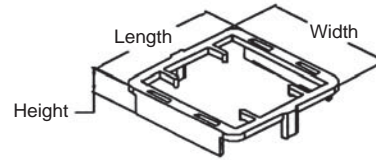


CLIP STYLES

MATERIAL: Nylon Plastic per UL94-V0



Component Size Length x Width (mm)	0.9mm +/- 0.3mm Short Height Color: Orange	1.7mm +/- 0.3mm Medium Height Color: Blue	3.3mm +/- 0.3mm Tall Height Color: Yellow	Clip Size Length x Width x Height (mm)
	Part Number			
19 x 19	C1919S	C1919M	C1919T	21.2 x 21.2 x 9.1
21 x 21	C2121S	C2121M	C2121T	23.2 x 23.7 x 9.1
23 x 23	C2323S	C2323M	C2323T	25.2 x 25.7 x 9.1
25 x 25	C2525S	C2525M	C2525T	27.2 x 27.7 x 9.1
27 x 27	C2727S	C2727M	C2727T	29.2 x 29.7 x 9.1
29 x 29	C2929S	C2929M	C2929T	31.2 x 31.2 x 9.1
31 x 31	C3131S	C3131M	C3131T	33.2 x 33.7 x 9.1
33 x 33	C3333S	C3333M	C3333T	35.2 x 35.2 x 9.1
35 x 35	C3535S	C3535M	C3535T	37.2 x 37.7 x 9.1
37.5 x 37.5	C3838S	C3838M	C3838T	39.7 x 40.2 x 9.1
40 x 40	C4040S	C4040M	C4040T	42.2 x 42.7 x 9.1
42.5 x 42.5	C4343S	C4343M	C4343T	44.7 x 45.1 x 9.1
45 x 45	C4545S	C4545M	C4545T	47.2 x 47.7 x 9.1



TAPE STYLES

Thermal Tape	Supplier	Thickness (mm)	Thermal Impedance (°C-in. ² /W)	Dielectric Strength (V/mil)	Description
A01	CTS	0.13	0.82	4,000	Double-sided acrylic adhesive on a Kapton® MT carrier
T410	Chomerics	0.18	1.10	N/A	Double-sided acrylic adhesive loaded with aluminum oxide on an aluminum foil carrier
T411	Chomerics	0.28	1.00	N/A	Double-sided silicone adhesive with expanded aluminum mesh carrier
T412	Chomerics	0.23	0.25	N/A	Double-sided acrylic adhesive loaded with titanium diboride on an expanded aluminum carrier
8815	3M	0.38	1.20	668	Double-sided acrylic adhesive loaded with ceramic particles

ORDERING INFORMATION

AER - 19-19-12 - CB - /A01

Part Number Series ————

Dimensions in mm (LxWxH) ————

Mounting Options (Clip and/or Adhesive) ————

Commercial Black Anodize ————

CLIP	ADHESIVE
Short "/S"	Double-sided Kapton® "/A01"
Medium "/M"	Chomerics Thermattach®
Tall "/T"	"/T410, T411, or T412"
	3M™ "/8815"