

## 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 55x55 mm
- Total heights from 17 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



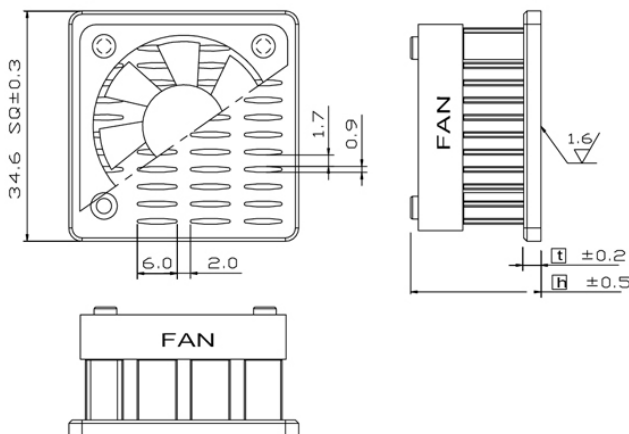
#### DESCRIPTION

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 4.11°C/W to as low as 0.53°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

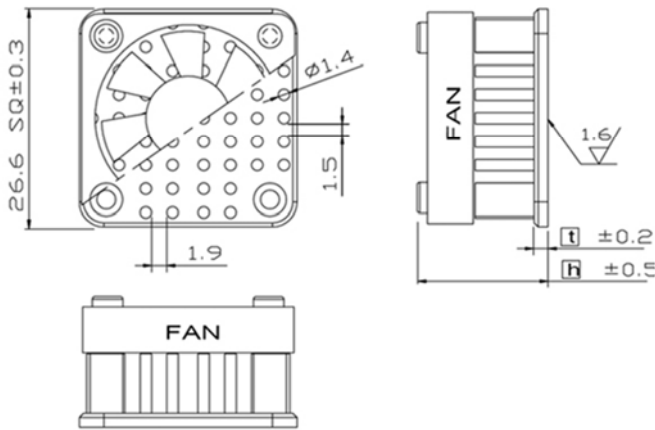
Available Part Numbers	Length x Width x Height (mm)	Thermal Resistance (R <sub>TH</sub> ) (°C/W)	Case Height Range (mm) See Below
FHE35-35-26/T410/M	35 x 35 x 26	2.19	1.4~2.0
FHE35-35-26/T710/T	35 x 35 x 26	1.68	3.0~3.6
FHE35-35-4530/A03/T	35 x 35 x 45	1.36	3.4~4.0
FHE45-45-2229/A01/T	45 x 45 x 22	1.83	3.3~3.9
FHE45-45-45/T710/T	45 x 45x 44	1.12	3.0~3.6



**FHE35-35-XX is shown, clip removed for clarity**

## Pin Fins

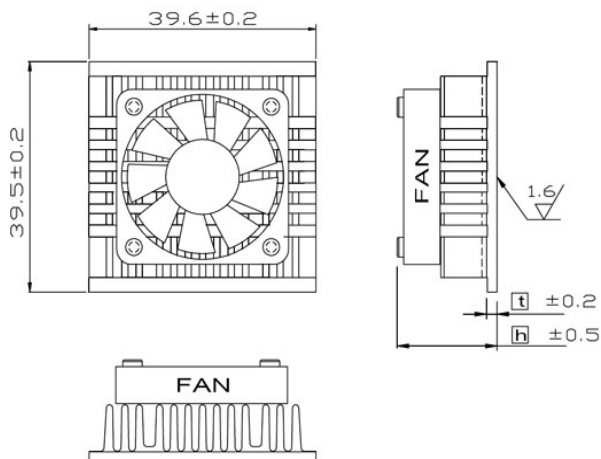
Available Part Numbers	Length x Width x Height (mm)	Thermal Resistance ( $R_{TH}$ ) ( $^{\circ}C/W$ )	Case Height Range (mm) See Below
FHP27-27-20/T710/M	27 x 27 x 20	3.41	1.4~2.0
FHP48-48-28/A01/T	48 x 48 x 28.5	1.18	3.0~3.6
FHP48-48-28/T710/T	48 x 48 x 28.5	1.00	3.0~3.6
FHP55-55-28/T710/T	55 x 55 x 28.5	0.82	3.0~3.6
FHP55-55-45/T710/T	55 x 55 x 44	0.53	3.0~3.6



**FHP27-27-XX is shown, clip removed for clarity**

## Extruding Fins

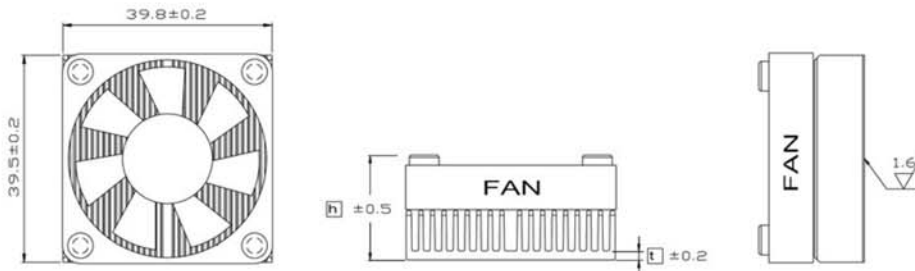
Available Part Numbers	Length x Width x Height (mm)	Thermal Resistance ( $R_{TH}$ ) ( $^{\circ}C/W$ )	Case Height Range (mm) See Below
FEX35-35-21/T710/M2	35 x 35 x 21.0	1.95	0.9~1.7
FEX40-40-21/T710/M2	40 x 40 x 21.2	1.82	0.9~1.7



**FEX40-40-21 is shown, clip removed for clarity**

## Line Fins

Available Part Numbers	Length x Width x Height (mm)	Thermal Resistance (R <sub>TH</sub> )	Case Height Range (mm) See Below
FHL21-21-18/T710/M	21 x 21 x 18	3.54	1.4~2.0
FHL21-21-21/A01/S	21 x 21 x 21	4.11	0.9~1.4
FHL23-23-18/T710/S	23 x 23 x 17.5	3.22	0.9~1.4
FHL27-27-18/T710/M	27 x 27 x 18	2.79	1.4~2.0
FHL27-27-2314/A01/T	27 x 27 x 24	2.85	2.1~2.6
FHL29-29-18/A01/T	29 x 29 x 18	2.99	2.1~2.6
FHL31-31-17/T710/T	31 x 31 x 18	2.36	2.1~2.6
FHL35-35-18/T710/T	35 x 35 x 18	2.06	2.1~2.6
FHL40-40-18/T710/T	40 x 40 x 18	1.88	2.1~2.6
FHL43-43-17/T710/T	42.5 x 42.5 x 18	1.79	2.1~2.6
FHL43-3-23/T710/T	42.5 x 42.5 x 23	1.32	2.1~2.6
FHL45-45-23/T710/T	45 x 45 x 23	1.43	2.1~2.6



**FHL40-40-XX is shown, clip removed for clarity**

## CHIPSET CASE HEIGHT



## THERMAL INTERFACE MATERIAL STYLES

Thermal Interface Material	Supplier	Thickness (mm)	Thermal Impedance (°C-in. <sup>2</sup> /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	0.30	N/A	Double-sided acrylic adhesive loaded with titanium diboride on an expanded aluminum carrier
T710	Chomerics	0.13	0.16	N/A	Phase change thermal pad

## PART NUMBER CODE

