

## 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 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

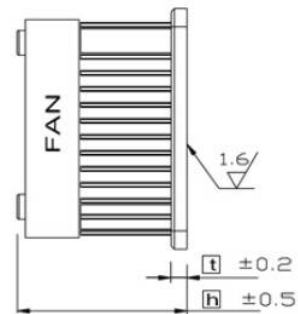
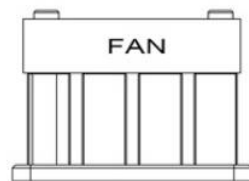
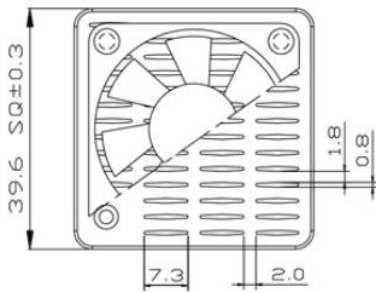
The FHS-090 Series of integrated-fan heat sinks is uniquely designed to absorb and disperse heat away from high temperature devices while offering key features such as an operating temperature range of -10°C to 90°C, calculated MTTF @ 90°C: 86,858 hours (GEM, 90% confidence) and various package sizes to best fit the application. Thermal resistance values range from 3.45 °C/W to as low as 0.51 °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 <sub>TH</sub> )
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
FHE48-48-24	47.5 x 47.5 x 23.6	1.44
FHE48-48-27	47.5 x 47.5 x 26.6	1.18

Part Number	Length x Width x Height (mm)	Thermal Resistance (R <sub>TH</sub> )
FHE48-48-30	47.5 x 47.5 x 29.6	1.01
FHE48-48-33	47.5 x 47.5 x 32.6	0.91
FHE48-48-35	47.5 x 47.5 x 34.6	0.86
FHE48-48-40	47.5 x 47.5 x 39.6	0.80
FHE48-48-45	47.5 x 47.5 x 44.6	0.75
FHE50-50-24	50 x 50 x 23.6	1.34
FHE50-50-27	50 x 50 x 26.6	1.09
FHE50-50-30	50 x 50 x 29.6	0.94
FHE50-50-33	50 x 50 x 32.6	0.85
FHE50-50-35	50 x 50 x 34.6	0.80
FHE50-50-40	50 x 50 x 39.6	0.74
FHE50-50-45	50 x 50 x 44.6	0.70
FHE53-53-24	52.5 x 52.5 x 23.6	1.25
FHE53-53-27	52.5 x 52.5 x 26.6	1.02
FHE53-53-30	52.5 x 52.5 x 29.6	0.87
FHE53-53-33	52.5 x 52.5 x 32.6	0.79
FHE53-53-35	52.5 x 52.5 x 34.6	0.74
FHE53-53-40	52.5 x 52.5 x 39.6	0.69
FHE53-53-45	52.5 x 52.5 x 44.6	0.65
FHE55-55-24	55 x 55 x 23.6	1.03
FHE55-55-27	55 x 55 x 26.6	0.84
FHE55-55-30	55 x 55 x 29.6	0.72
FHE55-55-33	55 x 55 x 32.6	0.65
FHE55-55-35	55 x 55 x 34.6	0.62
FHE55-55-40	55 x 55 x 39.6	0.57
FHE55-55-45	55 x 55 x 44.6	0.54



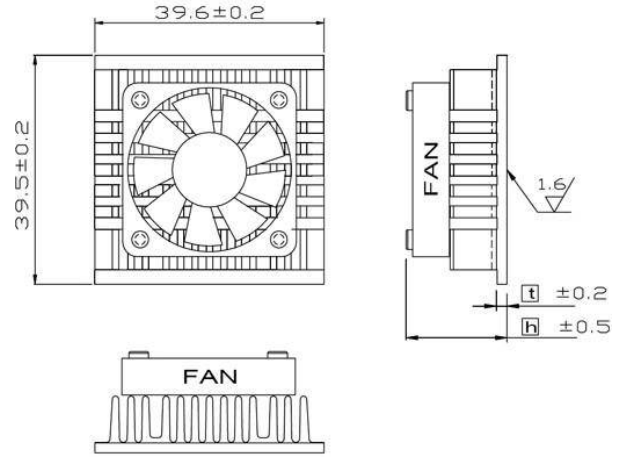
**FHE40-40-xx**

## Pin Fins

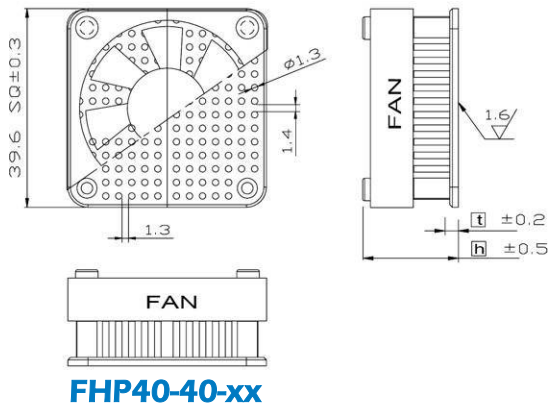
Part Number	Length x Width x Height (mm)	Thermal Resistance (R <sub>TH</sub> )
FHP27-27-20	27 x 27 x 20.0	3.35
FHP31-31-21	31 x 31 x 20.9	2.98
FHP35-35-21	35 x 35 x 20.9	2.53
FHP40-40-21	40 x 40 x 20.9	1.95
FHP48-48-24	47.5 x 47.5 x 23.6	1.41
FHP48-48-27	47.5 x 47.5 x 26.6	1.14
FHP48-48-30	47.5 x 47.5 x 29.6	0.98
FHP48-48-33	47.5 x 47.5 x 32.6	0.88
FHP48-48-35	47.5 x 47.5 x 34.6	0.83
FHP48-48-40	47.5 x 47.5 x 39.6	0.77
FHP48-48-45	47.5 x 47.5 x 44.6	0.72
FHP50-50-24	50 x 50 x 23.6	1.31
FHP50-50-27	50 x 50 x 26.6	1.06
FHP50-50-30	50 x 50 x 29.6	0.91
FHP50-50-33	50 x 50 x 32.6	0.82
FHP50-50-35	50 x 50 x 34.6	0.77
FHP50-50-40	50 x 50 x 39.6	0.71
FHP50-50-45	50 x 50 x 44.6	0.67
FHP52-52-24	52.5 x 52.5 x 23.6	1.22
FHP52-52-27	52.5 x 52.5 x 26.6	0.99
FHP52-52-30	52.5 x 52.5 x 29.6	0.85
FHP52-52-33	52.5 x 52.5 x 32.6	0.76
FHP52-52-35	52.5 x 52.5 x 34.6	0.72
FHP52-52-40	52.5 x 52.5 x 39.6	0.66
FHP52-52-45	52.5 x 52.5 x 44.6	0.62
FHP55-55-24	55 x 55 x 23.6	1.00
FHP55-55-27	55 x 55 x 26.6	0.81
FHP55-55-30	55 x 55 x 29.6	0.70
FHP55-55-33	55 x 55 x 32.6	0.63
FHP55-55-35	55 x 55 x 34.6	0.59
FHP55-55-40	55 x 55 x 39.6	0.55
FHP55-55-45	55 x 55 x 44.6	0.51

## Extruded Fins

Part Number	Length x Width x Height (mm)	Thermal Resistance (R <sub>TH</sub> )
FEX35-35-21	35 x 35 x 21.0	1.92
FEX40-40-21	40 x 40 x 21.2	1.79



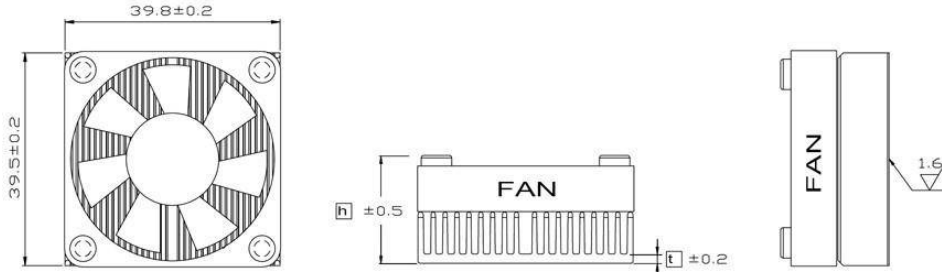
**FEX40-40-20**



**FHP40-40-xx**

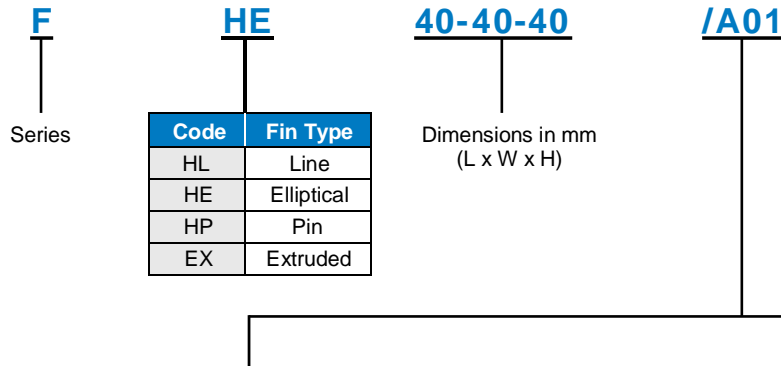
Part Number	Length x Width x Height (mm)	Thermal Resistance (R <sub>TH</sub> )
FHL21-21-18	21 x 21 x 18	3.45
FHL21-21-21	21 x 21 x 21	3.23
FHL21-21-24	21 x 21 x 24	2.89
FHL22-22-18	22 x 22 x 18	3.18
FHL22-22-21	22 x 22 x 21	3.02
FHL22-22-24	22 x 22 x 24	2.73
FHL23-23-18	23 x 23 x 18	3.14
FHL23-23-21	23 x 23 x 21	2.95
FHL23-23-24	23 x 23 x 24	2.67
FHL24-24-18	24 x 24 x 18	3.09
FHL24-24-21	24 x 24 x 21	2.88
FHL24-24-24	24 x 24 x 24	2.61
FHL25-25-18	25 x 25 x 18.1	2.83
FHL25-25-21	25 x 25 x 21.1	2.61
FHL25-25-24	25 x 25 x 24.1	2.42
FHL27-27-18	27 x 27 x 18.1	2.73
FHL27-27-21	27 x 27 x 21.1	2.53
FHL27-27-24	27 x 27 x 24.1	2.21
FHL29-29-18	29 x 29 x 18.1	2.44
FHL29-29-21	29 x 29 x 21.1	2.10
FHL29-29-24	29 x 29 x 24.1	2.05
FHL31-31-17	31 x 31 x 17.0	2.32
FHL31-31-21	31 x 31 x 21.1	2.02
FHL31-31-24	31 x 31 x 24.1	1.93
FHL33-33-18	33 x 33 x 18.1	2.18
FHL33-33-21	33 x 33 x 21.1	1.98
FHL33-33-24	33 x 33 x 24.1	1.75
FHL34-34-18	34 x 34 x 18.1	2.10
FHL34-34-21	34 x 34 x 21.1	1.95
FHL34-34-24	34 x 34 x 24.1	1.75
FHL35-35-18	35 x 35 x 18.1	2.03
FHL35-35-21	35 x 35 x 21.1	1.87
FHL35-35-24	35 x 35 x 24.1	1.65
FHL38-38-18	37.5 x 37.5 x 18.1	1.91
FHL38-38-21	37.5 x 37.5 x 21.1	1.75
FHL38-38-24	37.5 x 37.5 x 24.1	1.55
FHL40-40-16	40 x 40 x 16.1	1.85
FHL40-40-20	40 x 40 x 20.1	1.69
FHL40-40-23	40 x 40 x 23.1	1.47
FHL43-43-17	42.5 x 42.5 x 17.2	1.77
FHL43-43-20	42.5 x 42.5 x 20.1	1.61

Part Number	Length x Width x Height (mm)	Thermal Resistance (R <sub>TH</sub> )
FHL43-43-23	42.5 x 42.5 x 23.1	1.32
FHL45-45-16	45 x 45 x 16.1	1.64
FHL45-45-20	45 x 45 x 20.1	1.41
FHL45-45-23	45 x 45 x 23.1	1.29



**FHL40-40-xx**

## ORDERING INFORMATION



Clip Mount (only) or Thermal Tape (only)			
Code	Specifications	Code	Specifications
/S	Short	/A01	CTS Double-sided Kapton®
/M	Medium	/T410 /T411 or /T412	Chomerics Thermattach®
/T	Tall	/A21	3M™ 8815

**Both (Thermal Tape and Clip Mount Options)**

Tape code/Clip code Example:  
 The above fansink with A01 tape and tall clip is FHE40-40-40/A01/T  
 The above fansink with Chomerics T710 phase change TIM and tall clip is FHE40-40-40/T710/T