

# Flat Heat Pipe

ATS Part#: **ATS-HP-F4L250S12W-196**

**Description:** Closed evaporator-condenser heat transfer systems. A heat pipe's wick structure and embedded liquid enables it to produce a very high heat flux transport capability, which can be 10-20 times higher than the equivalent diameter solid copper pipe. Flat heat pipes are easier to attach to heat dissipating components.



For Illustration Purposes ONLY.

## Features & Benefits

- » Tube material: copper
- » Wick structures: grooved or sintered copper powder
- » High thermal conductivity
- » Light weight
- » Fast thermal response

## Applications for Heat Pipes

- » Compact Electronics Enclosures
- » Aerospace
- » Medical
- » Consumer Electronics
- » HVAC



$$Q_{max} = \frac{Q_t}{L_{eff}} \times 1000$$

$$L_{eff} = L - (L_e + L_c) / 2$$



## PRODUCT SPECIFICATIONS

L=Length (mm); W=Width (mm); H=Height (mm); WT=Wick Type (S=Sintered, G=Grooved); WF=Working Fluid; TR= Temperature Range (°C)

### Product Detail

| Part Number           | L   | W    | H | Wick Type | Working Fluid              | Temp Range (°C) | QT (w.m) | L <sub>eff</sub> (mm) | Q <sub>max</sub> (W) | L <sub>eff</sub> (mm) | Q <sub>max</sub> (W) | L <sub>eff</sub> (mm) | Q <sub>max</sub> (W) |
|-----------------------|-----|------|---|-----------|----------------------------|-----------------|----------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|
| ATS-HP-F4L250S12W-196 | 250 | 4.83 | 3 | Sintered  | Distilled H <sub>2</sub> O | 30-120          | 2.17     | 150                   | 14.5                 | 187.5                 | 11.6                 | 225                   | 9.6                  |

## SUGGESTED MINIMUM BEND RADIUS ON ATS HEAT PIPES

| Heat Pipe Diameter in mm | Minimum Bend Radius in mm |
|--------------------------|---------------------------|
| 4                        | 12                        |
| 5                        | 15                        |
| 6                        | 18                        |
| 7                        | 21                        |
| 8                        | 24                        |

## HEAT PIPE JOINING TECHNIQUES

- 1) For small batches/prototypes, heat pipes can be joined to heat sinks or other pieces with thermal epoxy.
- 2) For optimal results, heat pipes should be soldered using low temperature solder at temperatures above 139°C but no greater than 250°C.



For further technical information, please contact Advanced Thermal Solutions, Inc. by phone: 1-781-769-2800, email [ats-hq@qats.com](mailto:ats-hq@qats.com) or visit [www.qats.com](http://www.qats.com).