



# Heat Pipes

ATS' high performance **Round and Flat Heat Pipes** are used to transfer heat with minimal temperature difference or spread the heat across a surface. ATS' heat pipes are low profile and can easily attach to a heat sink.

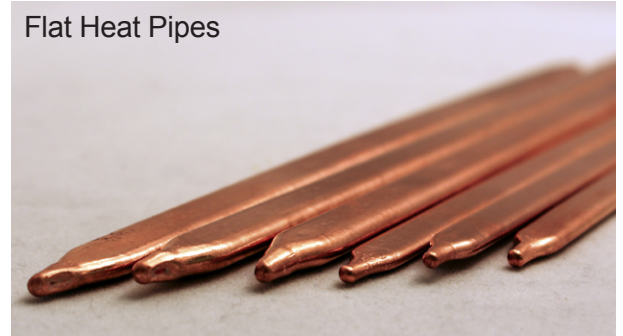
## FEATURES & BENEFITS

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

Round Heat Pipes



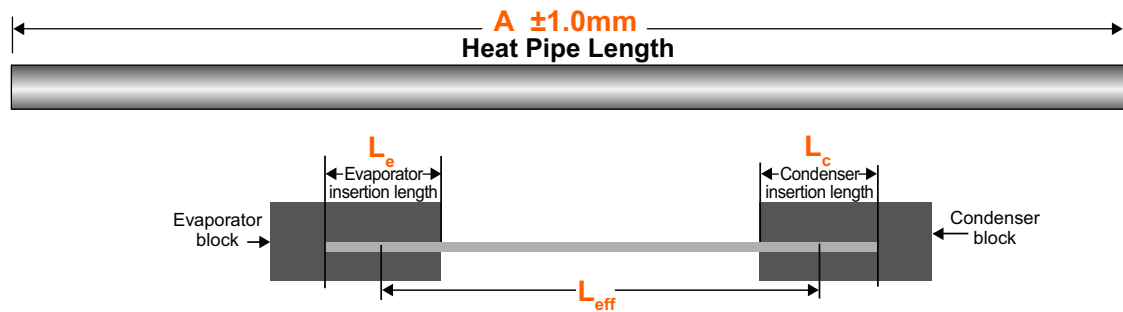
Flat Heat Pipes



## Round Heat Pipes



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

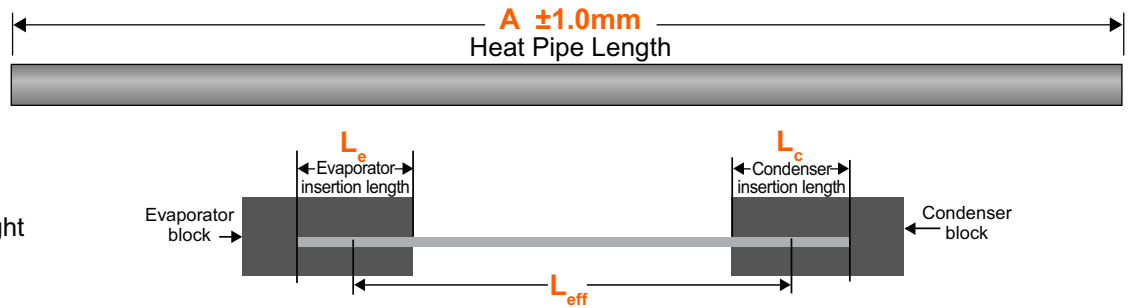
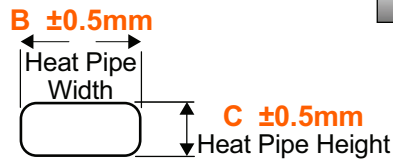


## PRODUCT SPECIFICATIONS

A=Length (mm); B=Diameter (mm); W=Weight (g); WT=Wick Type (S=Sintered, G=Grooved); WF=Working Fluid; TR=Temperature Range (°C);  $L_{off} = A - (L_e + L_c) / 2$

Part Number	A	B	W	WT	WF	TR	QT (W·m)	$L_{eff}$ (mm)	$Q_{max}$ (W)	$L_{eff}$ (mm)	$Q_{max}$ (W)	$L_{eff}$ (mm)	$Q_{max}$ (W)
ATS-HP-D4L200G30W-001	200	4.0	8	G	Distilled H <sub>2</sub> O	30-120	4.1	100	41	125	32	150	27.0
ATS-HP-D4L300G20W-002	300	4.0	12	G	Distilled H <sub>2</sub> O	30-120	4.1	150	27	200	20	250	16.0
ATS-HP-D5L200G40W-003	200	5.0	9.3	G	Distilled H <sub>2</sub> O	30-120	4.7	100	47	125	38	150	32.0
ATS-HP-D5L300G25W-004	300	5.0	14.2	G	Distilled H <sub>2</sub> O	30-120	4.5	150	30	200	23	250	18.0
ATS-HP-D6L200G45W-005	200	6.0	12.2	G	Distilled H <sub>2</sub> O	30-120	6.4	100	64	125	51	150	42.0
ATS-HP-D6L300G30W-006	300	6.0	18.4	G	Distilled H <sub>2</sub> O	30-120	7.9	150	53	200	39	250	32.0
ATS-HP-D5L200S40W-007	200	5.0	12	S	Distilled H <sub>2</sub> O	30-120	4.1	100	41	125	32	150	27.0
ATS-HP-D5L300S25W-008	300	5.0	17.4	S	Distilled H <sub>2</sub> O	30-120	5.6	150	38	200	28	250	23.0
ATS-HP-D6L200S45W-009	200	6.0	15.7	S	Distilled H <sub>2</sub> O	30-120	2.0	100	20	125	16	150	14.0
ATS-HP-D6L300S30W-010	300	6.0	22.6	S	Distilled H <sub>2</sub> O	30-120	3.2	150	21	200	16	250	13.0
ATS-HP-D8L300S55W-011	300	8.0	33.3	S	Distilled H <sub>2</sub> O	30-120	7.2	150	48	200	36	250	29.0

## Flat Heat Pipes



### PRODUCT SPECIFICATIONS

A=Length (mm); B=Width (mm); C=Height (mm); W=Weight (g); WT=Wick Type (S=Sintered, G=Grooved); WF=Working Fluid; TR= Temperature Range (°C);  $L_{eff} = A - (L_e + L_c) / 2$

Part Number	A	B	C	W	WT	WF	TR	QT (W·m)	$L_{eff}$ (mm)	$Q_{max}$ (W)	$L_{eff}$ (mm)	$Q_{max}$ (W)	$L_{eff}$ (mm)	$Q_{max}$ (W)
ATS-HP-F9L100S80W-012	100	10.5	4.5	12	S	Distilled H <sub>2</sub> O	30-120	3.1	50	62	62.5	49	75	41
ATS-HP-F9L150S70W-013	150	10.5	4.5	19.2	S	Distilled H <sub>2</sub> O	30-120	5.5	75	74	106.3	52	125	44
ATS-HP-F9L200S70W-014	200	10.5	4.5	25.3	S	Distilled H <sub>2</sub> O	30-120	9.1	100	91	125	73	150	61
ATS-HP-F9L250S70W-015	250	10.5	4.5	33.5	S	Distilled H <sub>2</sub> O	30-120	10.0	125	80	150	67	200	50
ATS-HP-F7L100S70W-016	100	11.2	3.5	12.3	S	Distilled H <sub>2</sub> O	30-120	3.1	50	61	62.5	49	75	41
ATS-HP-F7L150S65W-017	150	11.2	3.5	18.9	S	Distilled H <sub>2</sub> O	30-120	6.4	75	85	106.3	60	125	51
ATS-HP-F7L200S65W-018	200	11.2	3.5	25.4	S	Distilled H <sub>2</sub> O	30-120	9.1	100	91	125	73	150	61
ATS-HP-F7L250S65W-019	250	11.2	3.5	31.9	S	Distilled H <sub>2</sub> O	30-120	12.5	125	100	150	83	200	62
ATS-HP-F6L100S70W-020	100	8	3	7.3	S	Distilled H <sub>2</sub> O	30-120	3.5	50	70	62.5	56	75	47
ATS-HP-F6L150S60W-021	150	8	3	11.3	S	Distilled H <sub>2</sub> O	30-120	3.7	75	49	106.3	35	125	29
ATS-HP-F6L200S50W-022	200	8	3	14.9	S	Distilled H <sub>2</sub> O	30-120	3.8	100	38	125	30	150	25
ATS-HP-F6L250S50W-023	250	8	3	18.3	S	Distilled H <sub>2</sub> O	30-120	9.4	125	75	150	62	200	47
ATS-HP-F5L100S45W-024	100	8.2	2.5	7	S	Distilled H <sub>2</sub> O	30-120	2.2	50	44	62.5	35	75	29
ATS-HP-F5L150S40W-025	150	8.2	2.5	10.2	S	Distilled H <sub>2</sub> O	30-120	7.4	75	98	106.3	69	125	59
ATS-HP-F5L200S35W-026	200	8.2	2.5	13.5	S	Distilled H <sub>2</sub> O	30-120	1.7	100	17	125	13	150	11
ATS-HP-F5L250S35W-027	250	8.2	2.5	16.7	S	Distilled H <sub>2</sub> O	30-120	2.7	125	21	150	18	200	13
ATS-HP-F6L100S40W-028	100	8	3	7.2	S	Distilled H <sub>2</sub> O	30-120	2.4	50	48	62.5	38	75	32
ATS-HP-F6L150S30W-029	150	8	3	11.4	S	Distilled H <sub>2</sub> O	30-120	2.2	75	29	106.3	21	125	18
ATS-HP-F6L200S30W-030	200	8	3	14.9	S	Distilled H <sub>2</sub> O	30-120	2.9	100	29	125	23	150	20
ATS-HP-F5L100S30W-031	100	8.2	2.5	6.8	S	Distilled H <sub>2</sub> O	30-120	3.5	50	70	62.5	56	75	46
ATS-HP-F5L150S25W-032	150	8.2	2.5	10.4	S	Distilled H <sub>2</sub> O	30-120	2.6	75	34	106.3	24	125	21
ATS-HP-F5L200S25W-033	200	8.2	2.5	14.2	S	Distilled H <sub>2</sub> O	30-120	3.9	100	39	125	31	150	26

### 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.

