

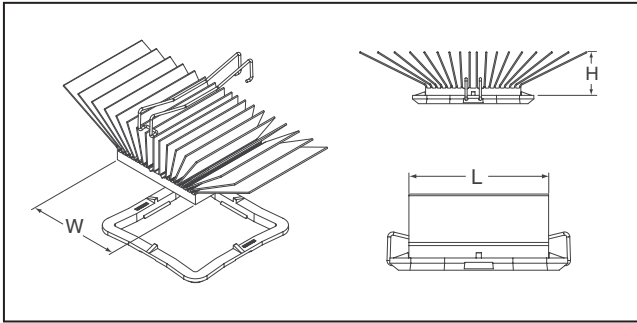
ATS maxiFLOW™ Heat Sinks have a low profile, spread fin array to maximize surface area for more effective convection (air) cooling. Their extruded aluminum fabrication minimizes thermal resistance and weight. Testing at an air flow rate of just 100 lfm shows that device junction temperatures (Tj) can be reduced by more than 40 percent below the temperatures achieved using other heat sinks.

The maxiGRIP™ Heat Sink Attachment System features a plastic frame clip that snaps securely around a component's perimeter. A stainless steel spring clip runs through the heat sink's fin field, fastens securely to the plastic frame and applies steady, even pressure to the component. The system allows easy sink detachment and reattachment with no damage to the component.

There is no over or under tightening of the sink to the processor. Component/heat sink assemblies using maxiGRIP meet Telcordia GR-63-Core Office Vibration; ETSI 300 019 Transportation Vibration; and MIL-STD-810 Shock Testing and Unpackaged Drop Testing standards.

BGA Cooling Solutions

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maxiFLOW Standard Height Heat Sink with maxiGRIP attachment. Designed for component heights from 3 to 4.5mm, Blue Anodized, Phase Change Material

Component height is defined as the distance from the top of the PCB to the top of the component.

Dimensions (mm)			Thermal Resistance		Digi-Key Part No.	Price Each		
L	W	H	Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10	100
17	17	7.5	18.2	13.9	ATS1000-ND†	7.38	5.62	4.82
19	19	7.5	16.5	12.9	ATS1001-ND†	7.45	5.67	4.86
21	21	7.5	11.9	8.8	ATS1002-ND†	7.53	5.73	4.92
23	23	7.5	10.9	8.3	ATS1003-ND†	7.60	5.79	4.96
25	25	7.5	8.6	6.1	ATS1004-ND†	7.68	5.85	5.01
27	27	7.5	7.9	5.8	ATS1005-ND†	7.75	5.90	5.06
29	29	7.5	7.4	5.6	ATS1006-ND†	7.83	5.96	5.11
30	30	7.5	7.1	5.4	ATS1007-ND†	7.91	6.03	5.17
31	31	7.5	6.9	5.3	ATS1008-ND†	7.98	6.08	5.21
32.5	32.5	7.5	5.9	4.2	ATS1009-ND†	8.07	6.14	5.26
33	33	7.5	5.8	4.2	ATS1010-ND†	8.10	6.17	5.29
35	35	7.5	5.3	3.4	ATS1011-ND†	8.15	6.20	5.32
37.5	37.5	7.5	4.9	3.3	ATS1012-ND†	8.23	6.27	5.37
40	40	7.5	4.5	3.2	ATS1013-ND†	8.31	6.33	5.43
42.5	42.5	7.5	4.3	3.0	ATS1014-ND†	8.22	6.32	5.30
45	45	7.5	4.0	2.6	ATS1015-ND†	8.30	6.38	5.35
17	17	12.5	11.1	9.0	ATS1016-ND†	7.98	6.08	5.21
19	19	12.5	10.2	8.4	ATS1017-ND†	8.07	6.14	5.26
21	21	12.5	7.2	5.7	ATS1018-ND†	8.15	6.20	5.32
23	23	12.5	6.7	5.4	ATS1019-ND†	8.23	6.27	5.37
25	25	12.5	5.2	4.0	ATS1020-ND†	8.31	6.33	5.43
27	27	12.5	4.8	3.8	ATS1021-ND†	8.22	6.32	5.30
29	29	12.5	4.5	3.7	ATS1022-ND†	8.30	6.38	5.35
30	30	12.5	4.4	3.6	ATS1023-ND†	8.38	6.45	5.41
31	31	12.5	4.3	3.5	ATS1024-ND†	8.47	6.51	5.46
32.5	32.5	12.5	3.5	2.8	ATS1025-ND†	8.56	6.59	5.52
33	33	12.5	3.5	2.7	ATS1026-ND†	8.60	6.61	5.54
35	35	12.5	3.0	2.2	ATS1027-ND†	8.64	6.65	5.57
37.5	37.5	12.5	2.8	2.1	ATS1028-ND†	8.73	6.71	5.63
40	40	12.5	2.6	2.0	ATS1029-ND†	8.81	6.77	5.68
42.5	42.5	12.5	2.4	2.0	ATS1030-ND†	8.90	6.85	5.74
45	45	12.5	2.1	1.6	ATS1031-ND†	8.99	6.91	5.79
17	17	17.5	8.3	6.8	ATS1032-ND†	8.48	6.52	5.47
19	19	17.5	7.7	6.4	ATS1033-ND†	8.57	6.60	5.53
21	21	17.5	5.4	4.3	ATS1034-ND†	8.66	6.66	5.58
23	23	17.5	5.1	4.1	ATS1035-ND†	8.74	6.72	5.64
25	25	17.5	3.9	3.0	ATS1036-ND†	8.84	6.80	5.70
27	27	17.5	3.7	2.9	ATS1037-ND†	8.92	6.86	5.75

Dimensions (mm)			Thermal Resistance		Digi-Key Part No.	Price Each		
L	W	H	Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10	100
29	29	17.5	3.5	2.8	ATS1038-ND†	9.02	6.94	5.82
30	30	17.5	3.4	2.7	ATS1039-ND†	9.10	7.00	5.87
31	31	17.5	3.3	2.7	ATS1040-ND†	9.20	7.08	5.93
32.5	32.5	17.5	2.7	2.1	ATS1041-ND†	9.28	7.14	5.98
33	33	17.5	2.7	2.1	ATS1042-ND†	9.33	7.18	6.02
35	35	17.5	2.3	1.7	ATS1043-ND†	9.38	7.21	6.05
37.5	37.5	17.5	2.1	1.6	ATS1044-ND†	9.47	7.29	6.11
40	40	17.5	2.0	1.6	ATS1045-ND†	9.58	7.36	6.17
42.5	42.5	17.5	1.9	1.5	ATS1046-ND†	9.66	7.43	6.23
45	45	17.5	1.6	1.3	ATS1047-ND†	9.75	7.50	6.29

maxiFLOW Low Profile Heat Sink with maxiGRIP attachment. Designed for component heights from 1.5 to 2.99mm, Black Anodized, Phase Change Material

Component height is defined as the distance from the top of the PCB to the top of the component.

Dimensions (mm)			Thermal Resistance		Digi-Key Part No.	Price Each		
L	W	H	Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10	100
17	17	9.5	18.5	12.6	ATS1048-ND†	7.58	5.77	4.95
19	19	9.5	16.7	11.6	ATS1049-ND†	7.70	5.86	5.03
21	21	9.5	12.0	8.0	ATS1050-ND†	7.81	5.95	5.10
23	23	9.5	11.0	7.5	ATS1051-ND†	7.94	6.04	5.18
25	25	9.5	8.6	5.5	ATS1052-ND†	8.05	6.13	5.25
27	27	9.5	8.0	5.3	ATS1053-ND†	8.18	6.23	5.34
29	29	9.5	7.4	5.0	ATS1054-ND†	8.30	6.32	5.42
30	30	9.5	7.2	4.9	ATS1055-ND†	8.20	6.31	5.29
31	31	9.5	7.0	4.8	ATS1056-ND†	8.27	6.36	5.33
32.5	32.5	9.5	6.0	3.8	ATS1057-ND†	8.35	6.42	5.38
33	33	9.5	5.9	3.8	ATS1058-ND†	8.38	6.45	5.41
35	35	9.5	5.3	3.1	ATS1059-ND†	8.41	6.47	5.43
37.5	37.5	9.5	4.9	3.0	ATS1060-ND†	8.49	6.54	5.48
40	40	9.5	4.5	2.8	ATS1061-ND†	8.57	6.60	5.53
42.5	42.5	9.5	4.3	2.7	ATS1062-ND†	8.64	6.65	5.57
45	45	9.5	4.0	2.3	ATS1063-ND†	8.73	6.71	5.63
17	17	14.5	10.9	8.5	ATS1064-ND†	8.22	6.26	5.36
19	19	14.5	10.1	7.9	ATS1065-ND†	8.33	6.34	5.44
21	21	14.5	7.2	5.4	ATS1066-ND†	8.28	6.37	5.34
23	23	14.5	6.6	5.1	ATS1067-ND†	8.41	6.47	5.43
25	25	14.5	5.1	3.8	ATS1068-ND†	8.55	6.57	5.51
27	27	14.5	4.8	3.6	ATS1069-ND†	8.68	6.67	5.59
29	29	14.5	4.5	3.4	ATS1070-ND†	8.81	6.77	5.68
30	30	14.5	4.3	3.4	ATS1071-ND†	8.89	6.84	5.73
31	31	14.5	4.2	3.3	ATS1072-ND†	8.95	6.89	5.77
32.5	32.5	14.5	3.5	2.6	ATS1073-ND†	9.03	6.95	5.83
33	33	14.5	3.4	2.6	ATS1074-ND†	9.08	6.99	5.86
35	35	14.5	2.9	2.1	ATS1075-ND†	9.12	7.01	5.88
37.5	37.5	14.5	2.7	2.0	ATS1076-ND†	9.20	7.08	5.93
40	40	14.5	2.5	1.9	ATS1077-ND†	9.28	7.14	5.98
42.5	42.5	14.5	2.4	1.8	ATS1078-ND†	9.38	7.21	6.05
45	45	14.5	2.1	1.5	ATS1079-ND†	9.46	7.28	6.10
17	17	19.5	8.1	6.5	ATS1080-ND†	8.73	6.71	5.63
19	19	19.5	7.5	6.1	ATS1081-ND†	8.86	6.81	5.71
21	21	19.5	5.3	4.2	ATS1082-ND†	8.99	6.91	5.79
23	23	19.5	5.0	4.0	ATS1083-ND†	9.13	7.03	5.89
25	25	19.5	3.8	2.9	ATS1084-ND†	9.26	7.13	5.97
27	27	19.5	3.6	2.8	ATS1085-ND†	9.41	7.24	6.07
29	29	19.5	3.4	2.7	ATS1086-ND†	9.55	7.35	6.16
30	30	19.5	3.3	2.6	ATS1087-ND†	9.64	7.41	6.22
31	31	19.5	3.2	2.6	ATS1088-ND†	9.72	7.48	6.27
32.5	32.5	19.5	2.7	2.0	ATS1089-ND†	9.60	7.55	6.33
33	33	19.5	2.6	2.0	ATS1090-ND†	9.63	7.58	6.35
35	35	19.5	2.2	1.6	ATS1091-ND†	9.68	7.62	6.38
37.5	37.5	19.5	2.1	1.6	ATS1092-ND†	9.76	7.68	6.44
40	40	19.5	2.0	1.5	ATS1093-ND†	9.85	7.75	6.50
42.5	42.5	19.5	1.9	1.5	ATS1094-ND†	9.95	7.83	6.56
45	45	19.5	1.6	1.2	ATS1095-ND†	10.03	7.89	6.62

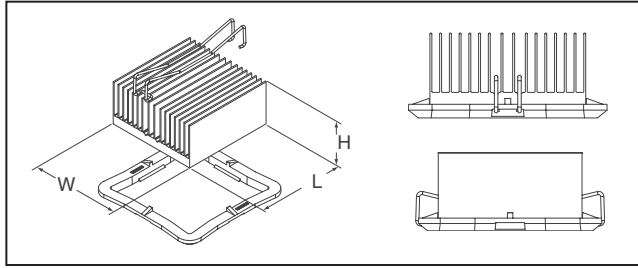
Thermal Management Design Kit

The Thermal Management Design Kit contains maxiFLOW™ heat sinks and maxiGRIP™ sink attachment systems (1 each of 96 parts denoted).

† ATS1397-ND (ATS-TMDK-96)	631.62
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maxiGRIP™ Heat Sink Attachment Assembly with Straight-Fin Heat Sink, Black Anodized, Thermal Tape



Dimensions (mm)			Thermal Resistance		Digi-Key Part No.	Price Each		
L	W	H	Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10	100
17	17	9.5	24.3	12.3	ATS1147-ND	7.05	5.37	4.60
19	19	9.5	22.0	11.6	ATS1148-ND	7.11	5.42	4.64
21	21	9.5	20.2	10.9	ATS1149-ND	7.18	5.47	4.69
23	23	9.5	16.8	7.6	ATS1150-ND	7.27	5.53	4.74
25	25	9.5	15.3	7.3	ATS1151-ND	7.33	5.58	4.79
27	27	9.5	14.1	7.0	ATS1152-ND	7.41	5.65	4.84
29	29	9.5	13.1	6.7	ATS1153-ND	7.48	5.70	4.88
30	30	9.5	12.7	6.6	ATS1154-ND	7.55	5.75	4.93
31	31	9.5	12.0	5.1	ATS1155-ND	7.63	5.81	4.98
32.5	32.5	9.5	11.3	5.0	ATS1156-ND	7.72	5.87	5.04
33	33	9.5	11.1	5.0	ATS1157-ND	7.73	5.89	5.05
35	35	9.5	10.3	4.8	ATS1158-ND	7.78	5.93	5.08
37.5	37.5	9.5	10.0	3.8	ATS1159-ND	7.86	5.99	5.13
40	40	9.5	9.1	3.7	ATS1160-ND	7.95	6.05	5.19
42.5	42.5	9.5	8.4	3.6	ATS1161-ND	8.02	6.10	5.23
45	45	9.5	8.4	2.9	ATS1162-ND	8.10	6.17	5.29
17	17	14.5	13.1	7.8	ATS1163-ND	7.60	5.79	4.96
19	19	14.5	12.0	7.4	ATS1164-ND	7.67	5.84	5.00
21	21	14.5	11.1	7.1	ATS1165-ND	7.75	5.90	5.06
23	23	14.5	8.8	4.9	ATS1166-ND	7.83	5.96	5.11
25	25	14.5	8.1	4.7	ATS1167-ND	7.90	6.01	5.16
27	27	14.5	7.6	4.5	ATS1168-ND	7.98	6.08	5.21
29	29	14.5	7.1	4.4	ATS1169-ND	8.07	6.14	5.26
30	30	14.5	6.9	4.3	ATS1170-ND	8.15	6.20	5.32
31	31	14.5	6.2	3.3	ATS1171-ND	8.23	6.27	5.37
32.5	32.5	14.5	5.9	3.2	ATS1172-ND	8.31	6.33	5.43
33	33	14.5	5.8	3.2	ATS1173-ND	8.35	6.36	5.45
35	35	14.5	5.4	3.1	ATS1174-ND	8.22	6.32	5.30
37.5	37.5	14.5	5.0	2.4	ATS1175-ND	8.30	6.38	5.35
40	40	14.5	4.6	2.4	ATS1176-ND	8.38	6.45	5.41
42.5	42.5	14.5	4.3	2.3	ATS1177-ND	8.47	6.51	5.46
45	45	14.5	4.1	1.9	ATS1178-ND	8.55	6.57	5.51
17	17	19.5	9.3	5.6	ATS1179-ND	7.94	6.04	5.18
19	19	19.5	8.4	5.3	ATS1180-ND	8.00	6.09	5.22
21	21	19.5	7.8	5.1	ATS1181-ND	8.08	6.15	5.28
23	23	19.5	7.3	4.9	ATS1182-ND	8.17	6.22	5.33
25	25	19.5	5.7	3.4	ATS1183-ND	8.25	6.28	5.38
27	27	19.5	5.3	3.3	ATS1184-ND	8.33	6.34	5.44
29	29	19.5	5.0	3.2	ATS1185-ND	8.23	6.33	5.31
30	30	19.5	4.8	3.1	ATS1186-ND	8.31	6.40	5.36
31	31	19.5	4.7	3.1	ATS1187-ND	8.40	6.46	5.42
32.5	32.5	19.5	4.1	2.3	ATS1188-ND	8.48	6.52	5.47
33	33	19.5	4.1	2.3	ATS1189-ND	8.51	6.55	5.49
35	35	19.5	3.8	2.2	ATS1190-ND	8.56	6.59	5.52
37.5	37.5	19.5	3.5	2.2	ATS1191-ND	8.66	6.66	5.58
40	40	19.5	3.2	1.7	ATS1192-ND	8.74	6.72	5.64
42.5	42.5	19.5	3.0	1.7	ATS1193-ND	8.82	6.79	5.69
45	45	19.5	2.8	1.6	ATS1194-ND	8.92	6.86	5.75

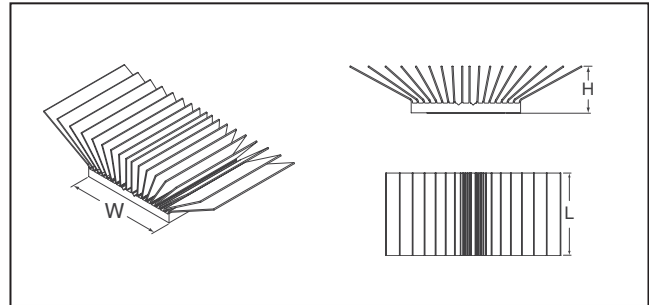
maxiGRIP™ Installation and Removal Tools

Heat Sink Size is referring to maxiGRIP Heat Sink Attachment Assemblies compatible with tools.

Heat Sink Size (mm)		Digi-Key Part No.	Price Each	ATS Part No.
L	W			
19	19	ATS1382-ND	52.21	MGT190
21	21	ATS1383-ND	52.21	MGT210
23	23	ATS1384-ND	52.21	MGT230
25	25	ATS1385-ND	52.21	MGT250
27	27	ATS1386-ND	52.21	MGT270
29	29	ATS1387-ND	52.21	MGT290
30	30	ATS1388-ND	52.21	MGT300
31	31	ATS1389-ND	52.21	MGT310
32.5	32.5	ATS1390-ND	52.21	MGT325
33	33	ATS1391-ND	52.21	MGT330
35	35	ATS1392-ND	52.21	MGT350
37.5	37.5	ATS1393-ND	52.21	MGT375
40	40	ATS1394-ND	52.21	MGT400
42.5	42.5	ATS1395-ND	52.21	MGT425
45	45	ATS1396-ND	52.21	MGT450

BGA Cooling Solutions

maxiFLOW™ Heat Sink Using Thermal Tape Attachment, Blue Anodized



Dimensions (mm)			Thermal Resistance		Digi-Key Part No.	Price Each		
L	W	H	Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10	100
15	15	7.5	19.7	14.6	ATS1096-ND	5.34	3.95	3.27
17	17	7.5	18.2	13.9	ATS1097-ND	5.39	3.99	3.30
19	19	7.5	16.5	12.9	ATS1098-ND	5.45	4.03	3.34
21	21	7.5	11.9	8.8	ATS1099-ND	5.50	3.96	3.30
23	23	7.5	10.9	8.3	ATS1100-ND	5.55	4.00	3.34
25	25	7.5	8.6	6.1	ATS1101-ND	5.61	4.04	3.37
27	27	7.5	7.9	5.8	ATS1102-ND	5.66	4.08	3.40
29	29	7.5	7.4	5.6	ATS1103-ND	5.72	4.12	3.44
30	30	7.5	7.1	5.4	ATS1104-ND	5.77	4.16	3.47
31	31	7.5	6.9	5.3	ATS1105-ND	5.83	4.20	3.50
32.5	32.5	7.5	5.9	4.2	ATS1106-ND	5.90	4.25	3.54
33	33	7.5	5.8	4.2	ATS1107-ND	5.68	4.26	3.56
35	35	7.5	5.3	3.4	ATS1108-ND	5.71	4.29	3.58
37.5	37.5	7.5	4.9	3.3	ATS1109-ND	5.76	4.33	3.61
40	40	7.5	4.5	3.2	ATS1110-ND	5.82	4.37	3.64
42.5	42.5	7.5	4.3	3.0	ATS1111-ND	5.89	4.42	3.69
45	45	7.5	4.0	2.6	ATS1112-ND	5.94	4.46	3.72
15	15	12.5	11.7	9.4	ATS1113-ND	6.06	4.55	3.79
17	17	12.5	11.1	9.0	ATS1114-ND	6.13	4.60	3.84
19	19	12.5	10.2	8.4	ATS1115-ND	6.19	4.64	3.87
21	21	12.5	7.2	5.7	ATS1116-ND	6.26	4.70	3.91
23	23	12.5	6.7	5.4	ATS1117-ND	6.32	4.75	3.96
25	25	12.5	5.2	4.0	ATS1118-ND	6.37	4.79	3.99
27	27	12.5	4.8	3.8	ATS1119-ND	6.45	4.84	4.03
29	29	12.5	4.5	3.7	ATS1120-ND	6.52	4.89	4.08
30	30	12.5	4.4	3.6	ATS1121-ND	6.58	4.94	4.12
31	31	12.5	4.3	3.5	ATS1122-ND	6.64	4.98	4.15
32.5	32.5	12.5	3.5	2.8	ATS1123-ND	6.71	5.04	4.20
33	33	12.5	3.5	2.7	ATS1124-ND	6.74	5.06	4.22
35	35	12.5	3.0	2.2	ATS1125-ND	6.78	5.09	4.24
37.5	37.5	12.5	2.8	2.1	ATS1126-ND	6.85	5.14	4.28
40	40	12.5	2.6	2.0	ATS1127-ND	6.92	5.19	4.33
42.5	42.5	12.5	2.4	2.0	ATS1128-ND	6.98	5.10	4.37
45	45	12.5	2.1	1.6	ATS1129-ND	7.06	5.15	4.42
15	15	17.5	8.7	7.1	ATS1130-ND	7.13	5.20	4.46
17	17	17.5	8.3	6.8	ATS1131-ND	7.19	5.25	4.50
19	19	17.5	7.7	6.4	ATS1132-ND	7.27	5.30	4.55
21	21	17.5	5.4	4.3	ATS1133-ND	7.05	5.37	4.60
23	23	17.5	5.1	4.1	ATS1134-ND	7.11	5.42	4.64
25	25	17.5	3.9	3.0	ATS1135-ND	7.18	5.47	4.69
27	27	17.5	3.7	2.9	ATS1136-ND	7.27	5.53	4.74
29	29	17.5	3.5	2.8	ATS1137-ND	7.33	5.58	4.79
30	30	17.5	3.4	2.7	ATS1138-ND	7.40	5.63	4.83
31	31	17.5	3.3	2.7	ATS1139-ND	7.48	5.70	4.88
32.5	32.5	17.5	2.7	2.1	ATS1140-ND	7.55	5.75	4.93
33	33	17.5	2.7	2.1	ATS1141-ND	7.58	5.77	4.95
35	35	17.5	2.3	1.7	ATS1142-ND	7.63	5.81	4.98
37.5	37.5	17.5	2.1	1.6	ATS1143-ND	7.70	5.86	5.03
40	40	17.5	2.0	1.6	ATS1144-ND	7.78	5.93	5.08
42.5	42.5	17.5	1.9	1.5	ATS1145-ND	7.86	5.99	5.13
45	45	17.5	1.6	1.3	ATS1146-ND	7.94	6.04	5.18

(Continued)

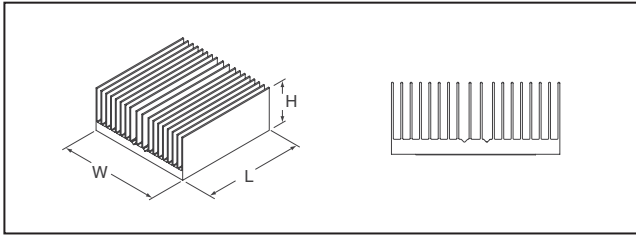
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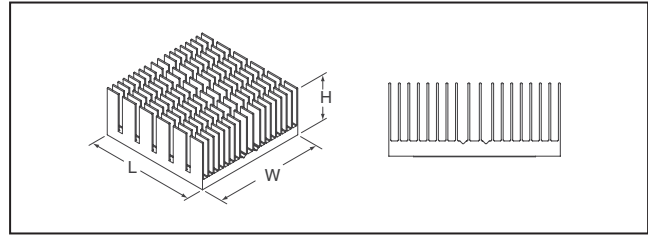
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High Aspect Ratio Extrusion

Straight Fin Heat Sink with Thermal Tape Attachment, Black Anodized



Cross-Cut Heat Sink with Thermal Tape Attachment, Black Anodized



C

Dimensions (mm)			Thermal Resistance		Digi-Key Part No.	Price Each		
L	W	H	Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10	100
15	15	9.5	26.2	12.7	ATS1195-ND	4.57	3.39	2.80
17	17	9.5	24.3	12.3	ATS1196-ND	4.61	3.42	2.83
19	19	9.5	22.0	11.6	ATS1197-ND	4.67	3.46	2.86
21	21	9.5	20.2	10.9	ATS1198-ND	4.70	3.48	2.88
23	23	9.5	16.8	7.6	ATS1199-ND	4.76	3.52	2.92
25	25	9.5	15.3	7.3	ATS1200-ND	4.81	3.56	2.95
27	27	9.5	14.1	7.0	ATS1201-ND	4.85	3.59	2.97
29	29	9.5	13.1	6.7	ATS1202-ND	4.90	3.63	3.00
30	30	9.5	12.7	6.6	ATS1203-ND	4.96	3.67	3.04
31	31	9.5	12.0	5.1	ATS1204-ND	4.99	3.70	3.06
32.5	32.5	9.5	11.3	5.0	ATS1205-ND	5.05	3.74	3.09
33	33	9.5	11.1	5.0	ATS1206-ND	5.07	3.75	3.10
35	35	9.5	10.3	4.8	ATS1207-ND	5.10	3.78	3.13
37.5	37.5	9.5	10.0	3.8	ATS1208-ND	5.15	3.82	3.16
40	40	9.5	9.1	3.7	ATS1209-ND	5.21	3.86	3.19
42.5	42.5	9.5	8.4	3.6	ATS1210-ND	5.25	3.89	3.22
45	45	9.5	8.4	2.9	ATS1211-ND	5.30	3.93	3.25
15	15	14.5	19.1	12.9	ATS1212-ND	5.41	4.01	3.32
17	17	14.5	13.1	7.8	ATS1213-ND	5.47	3.94	3.28
19	19	14.5	12.0	7.4	ATS1214-ND	5.52	3.98	3.32
21	21	14.5	11.1	7.1	ATS1215-ND	5.58	4.02	3.35
23	23	14.5	8.8	4.9	ATS1216-ND	5.63	4.06	3.38
25	25	14.5	8.1	4.7	ATS1217-ND	5.70	4.11	3.42
27	27	14.5	7.6	4.5	ATS1218-ND	5.76	4.15	3.46
29	29	14.5	7.1	4.4	ATS1219-ND	5.81	4.19	3.49
30	30	14.5	6.9	4.3	ATS1220-ND	5.87	4.23	3.52
31	31	14.5	6.2	3.3	ATS1221-ND	5.68	4.26	3.56
32.5	32.5	14.5	5.9	3.2	ATS1222-ND	5.75	4.32	3.60
33	33	14.5	5.8	3.2	ATS1223-ND	5.76	4.33	3.61
35	35	14.5	5.4	3.1	ATS1224-ND	5.80	4.36	3.63
37.5	37.5	14.5	5.0	2.4	ATS1225-ND	5.85	4.40	3.66
40	40	14.5	4.6	2.4	ATS1226-ND	5.92	4.45	3.71
42.5	42.5	14.5	4.3	2.3	ATS1227-ND	5.97	4.49	3.74
45	45	14.5	4.1	1.9	ATS1228-ND	6.05	4.54	3.78
15	15	19.5	13.4	9.5	ATS1229-ND	5.68	4.26	3.56
17	17	19.5	9.3	5.6	ATS1230-ND	5.75	4.32	3.60
19	19	19.5	8.4	5.3	ATS1231-ND	5.80	4.36	3.63
21	21	19.5	7.8	5.1	ATS1232-ND	5.85	4.40	3.66
23	23	19.5	7.3	4.9	ATS1233-ND	5.92	4.45	3.71
25	25	19.5	5.7	3.4	ATS1234-ND	5.97	4.49	3.74
27	27	19.5	5.3	3.3	ATS1235-ND	6.05	4.54	3.78
29	29	19.5	5.0	3.2	ATS1236-ND	6.10	4.58	3.82
30	30	19.5	4.8	3.1	ATS1237-ND	6.17	4.63	3.86
31	31	19.5	4.7	3.1	ATS1238-ND	6.22	4.67	3.89
32.5	32.5	19.5	4.1	2.3	ATS1239-ND	6.29	4.72	3.94
33	33	19.5	4.1	2.3	ATS1240-ND	6.31	4.74	3.95
35	35	19.5	3.8	2.2	ATS1241-ND	6.35	4.76	3.97
37.5	37.5	19.5	3.5	2.2	ATS1242-ND	6.41	4.81	4.01
40	40	19.5	3.2	1.7	ATS1243-ND	6.48	4.87	4.06
42.5	42.5	19.5	3.0	1.7	ATS1244-ND	6.53	4.91	4.09
45	45	19.5	2.8	1.6	ATS1245-ND	6.61	4.96	4.13
15	15	24.5	10.5	7.7	ATS1246-ND	6.58	4.94	4.12
17	17	24.5	7.1	4.5	ATS1247-ND	6.66	5.00	4.16
19	19	24.5	6.5	4.3	ATS1248-ND	6.72	5.05	4.21
21	21	24.5	6.0	3.8	ATS1249-ND	6.80	5.10	4.25
23	23	24.5	5.6	4.0	ATS1250-ND	6.87	5.15	4.30
25	25	24.5	4.4	2.7	ATS1251-ND	6.93	5.21	4.34
27	27	24.5	4.0	2.6	ATS1252-ND	7.01	5.11	4.38
29	29	24.5	3.8	2.6	ATS1253-ND	7.07	5.16	4.43
30	30	24.5	3.7	2.5	ATS1254-ND	7.14	5.21	4.47
31	31	24.5	3.6	2.5	ATS1255-ND	7.22	5.26	4.51
32.5	32.5	24.5	3.1	1.9	ATS1256-ND	7.28	5.32	4.56
33	33	24.5	3.1	1.9	ATS1257-ND	7.32	5.34	4.58
35	35	24.5	2.9	1.8	ATS1258-ND	7.05	5.37	4.60
37.5	37.5	24.5	2.7	1.8	ATS1259-ND	7.13	5.43	4.65
40	40	24.5	2.4	1.4	ATS1260-ND	7.19	5.48	4.70
42.5	42.5	24.5	2.2	1.3	ATS1261-ND	7.27	5.53	4.74
45	45	24.5	2.1	1.3	ATS1262-ND	7.35	5.59	4.80

Dimensions (mm)			Thermal Resistance Unducted Flow @ 200 LFM (1m/sec.)	Digi-Key Part No.	Price Each		
L	W	H			1	10	100
15	15	9.5	29.5	ATS1263-ND	4.63	3.43	2.84
17	17	9.5	28.0	ATS1264-ND	4.70	3.48	2.88
19	19	9.5	24.0	ATS1265-ND	4.78	3.54	2.93
21	21	9.5	21.9	ATS1266-ND	4.85	3.59	2.97
23	23	9.5	18.0	ATS1267-ND	4.92	3.64	3.02
25	25	9.5	16.5	ATS1268-ND	4.99	3.70	3.06
27	27	9.5	15.5	ATS1269-ND	5.07	3.75	3.10
29	29	9.5	14.5	ATS1270-ND	5.15	3.82	3.16
30	30	9.5	14.0	ATS1271-ND	5.19	3.85	3.18
31	31	9.5	13.5	ATS1272-ND	5.25	3.89	3.22
32.5	32.5	9.5	12.5	ATS1273-ND	5.29	3.91	3.24
33	33	9.5	12.3	ATS1274-ND	5.30	3.93	3.25
35	35	9.5	11.3	ATS1275-ND	5.34	3.95	3.27
37.5	37.5	9.5	11.1	ATS1276-ND	5.37	3.98	3.29
40	40	9.5	10.0	ATS1277-ND	5.43	4.02	3.33
42.5	42.5	9.5	9.2	ATS1278-ND	5.48	3.95	3.29
45	45	9.5	9.2	ATS1279-ND	5.54	3.99	3.33
15	15	14.5	21.4	ATS1280-ND	5.48	3.95	3.29
17	17	14.5	15.5	ATS1281-ND	5.58	4.02	3.35
19	19	14.5	13.1	ATS1282-ND	5.66	4.08	3.40
21	21	14.5	12.0	ATS1283-ND	5.74	4.13	3.45
23	23	14.5	9.5	ATS1284-ND	5.83	4.20	3.50
25	25	14.5	8.8	ATS1285-ND	5.68	4.26	3.56
27	27	14.5	8.3	ATS1286-ND	5.76	4.33	3.61
29	29	14.5	7.8	ATS1287-ND	5.85	4.40	3.66
30	30	14.5	7.6	ATS1288-ND	5.91	4.43	3.70
31	31	14.5	7.0	ATS1289-ND	5.96	4.47	3.73
32.5	32.5	14.5	6.5	ATS1290-ND	6.01	4.51	3.76
33	33	14.5	6.4	ATS1291-ND	6.05	4.54	3.78
35	35	14.5	5.9	ATS1292-ND	6.06	4.55	3.79
37.5	37.5	14.5	5.6	ATS1293-ND	6.11	4.59	3.83
40	40	14.5	5.1	ATS1294-ND	6.19	4.64	3.87
42.5	42.5	14.5	4.7	ATS1295-ND	6.24	4.68	3.90
45	45	14.5	4.5	ATS1296-ND	6.29	4.72	3.94
15	15	19.5	15.1	ATS1297-ND	5.76	4.33	3.61
17	17	19.5	11.3	ATS1298-ND	5.85	4.40	3.66
19	19	19.5	9.2	ATS1299-ND	5.94	4.46	3.72
21	21	19.5	8.4	ATS1300-ND	6.03	4.53	3.77
23	23	19.5	7.8	ATS1301-ND	6.11	4.59	3.83
25	25	19.5	6.2	ATS1302-ND	6.22	4.67	3.89
27	27	19.5	5.8	ATS1303-ND	6.31	4.74	3.95
29	29	19.5	5.5	ATS1304-ND	6.41	4.81	4.01
30	30	19.5	5.3	ATS1305-ND	6.46	4.85	4.05
31	31	19.5	5.3	ATS1306-ND	6.52	4.89	4.08
32.5	32.5	19.5	4.6	ATS1307-ND	6.58	4.94	4.12
33	33	19.5	4.5	ATS1308-ND	6.61	4.96	4.13
35	35	19.5	4.2	ATS1309-ND	6.64	4.98	4.15
37.5	37.5	19.5	3.9	ATS1310-ND	6.69	5.02	4.19
40	40	19.5	3.6	ATS1311-ND	6.76	5.07	4.23
42.5	42.5	19.5	3.3	ATS1312-ND	6.81	5.11	4.26
45	45	19.5	3.0	ATS1313-ND	6.88	5.17	4.31
15	15	24.5	11.7	ATS1314-ND	6.69	5.02	4.19
17	17	24.5	8.6	ATS1315-ND	6.78	5.09	4.24
19	19	24.5	7.1	ATS1316-ND	6.88	5.17	4.31
21	21	24.5	6.5	ATS1317-ND	6.98	5.10	4.37
23	23	24.5	6.0	ATS1318-ND	7.09	5.18	4.44
25	25	24.5	4.7	ATS1319-ND	7.22	5.26	4.51
27	27	24.5	4.5	ATS1320-ND	7.32	5.34	4.58
29	29	24.5	4.2	ATS1321-ND	7.11	5.42	4.64
30	30	24.5	4.1	ATS1322-ND	7.18	5.47	4.69
31	31	24.5	4.0	ATS1323-ND	7.25	5.52	4.73
32.5	32.5	24.5	3.5	ATS1324-ND	7.31	5.57	4.77
33	33	24.5	3.4	ATS1325-ND	7.35	5.59	4.80
35	35	24.5	3.1	ATS1326-ND	7.38	5.62	4.82
37.5	37.5	24.5	3.0	ATS1327-ND	7.45	5.67	4.86
40	40	24.5	2.6	ATS1328-ND	7.51	5.72	4.91
42.5	42.5	24.5	2.4	ATS1329-ND	7.58	5.77	4.95
45	45	24.5	2.3	ATS1330-ND	7.64	5.82	4.99

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ASIC Cooling Solutions

Custom maxiFLOW™ Heat Sinks, Black Anodized

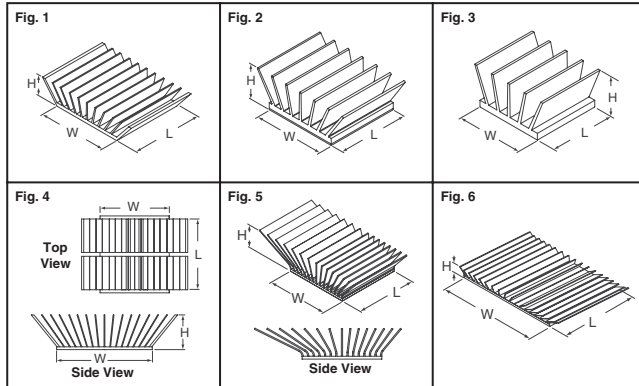


Fig.	Dimensions (mm)			Thermal Resistance		Digi-Key Part No.	Price Each		
	L	W	H	Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10	100
With Tape									
1	30	30	9	4.0	2.2	ATS1331-ND	8.08	6.15	5.28
	40	30	5	7.9	4.8	ATS1335-ND	9.60	7.39	6.19
	50	45	15	2.8	1.65	ATS1336-ND	12.54	9.69	8.13
	50	45	12.5	3.9	1.7	ATS1337-ND	12.58	10.19	8.54
	45	45	15	2.4	1.7	ATS1338-ND	12.73	10.31	8.64
	50	45	16.5	2.1	1.3	ATS1339-ND	13.39	10.84	9.09
	50	45	8.5	4.0	2.3	ATS1341-ND	9.68	7.45	6.25
2	57.5	57.5	12.5	2.3	1.1	ATS1342-ND	16.48	13.44	11.54
	19	19	9	5.3	3.3	ATS1332-ND†	4.62	3.38	2.76
3	25	25	4	9.0	5.2	ATS1333-ND	6.90	5.18	4.32
	15	15	9	12.0	9.0	ATS1334-ND	9.36	7.20	6.04
4	58	30	9	4.8	2.4	ATS1340-ND	9.54	7.34	6.15
	42	42	16	2.8	1.4	ATS1343-NDΔ	14.93	11.73	10.13
5	42	42	16	2.2	1.2	ATS1344-NDΔ	15.65	12.76	10.96
	Without Tape								
1	30	30	9	4.0	2.2	ATS1345-ND	7.75	5.90	5.06
	40	30	5	7.9	4.8	ATS1349-ND	9.33	7.18	6.02
	50	45	15	2.8	1.65	ATS1350-ND	12.27	9.48	7.95
	50	45	12	3.9	1.7	ATS1351-ND	12.32	9.98	8.36
	45	45	15	2.4	1.7	ATS1352-ND	12.47	10.10	8.47
	57.5	57.5	12.5	2.3	1.1	ATS1356-ND	16.23	13.23	11.37
	19	19	9	5.3	3.3	ATS1346-ND†	4.25	3.11	2.54
2	25	25	4	9.0	5.2	ATS1347-ND	6.55	4.92	4.10
	15	15	9	12.0	8.0	ATS1348-ND	9.03	6.95	5.83
4	50	45	8.5	4.0	2.3	ATS1355-ND	9.41	7.24	6.07
	50	45	16	2.1	1.3	ATS1353-ND	13.28	10.44	9.02
6	58	30	9	4.8	2.4	ATS1354-ND	9.26	7.13	5.97

† Red Anodized Δ Gold Anodized

LGA Cooling Solutions (For Freescale MPC 8641D)

Black Anodized, Includes Mounting Hardware

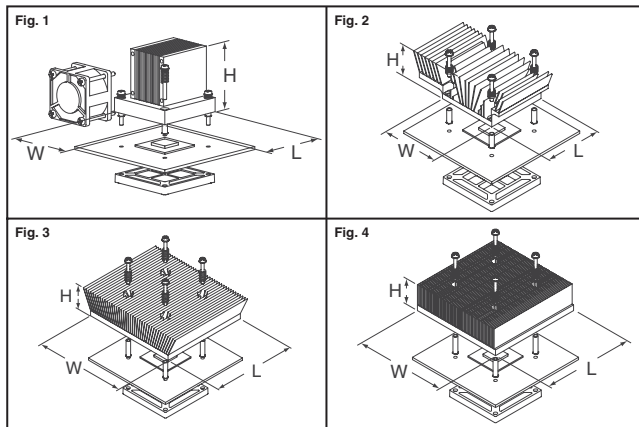


Fig.	Dimensions (mm)			Thermal Resistance		Digi-Key Part No.	Price Each		
	L	W	H	Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10	100
1	56	56	52	—	0.51	ATS1357-ND	52.73	45.20	39.93
2	56	56	31	1.01	0.6	ATS1358-ND	21.59	17.60	15.12
3	94	101	27	1.00	0.5	ATS1359-ND	43.57	36.31	32.68
4	94	94	27	1.38	0.8	ATS1360-ND	38.06	31.48	27.78

Custom Cooling Solutions

Using maxiGRIP™ Attachment For Flip-Chip Processors (such as Freescale MPCs) — Black Anodized, Phase Change Material

Not to be used with maxiGRIP Installation and Removal Tools

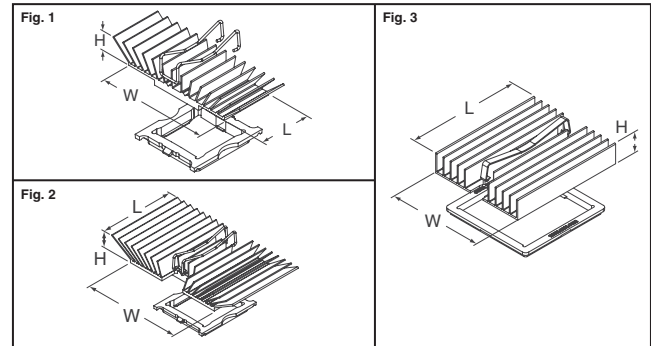
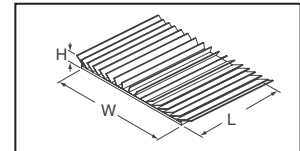


Fig.	Dimensions (mm)			Component Size (mm)	Thermal Resistance		Digi-Key Part No.	Price Each	
	L	W	H		Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10
1	21	45	9	21 x 21	6.1	4.2	ATS1365-ND	19.92	16.24
	28	45	11	21 x 21	4.5	3.0	ATS1366-ND	21.13	17.22
	25	32	13	25 x 25	6.5	3.8	ATS1367-ND	19.56	15.94
2	32	50	12	25 x 25	3.8	2.4	ATS1368-ND	13.74	10.80
	32	50	12	25 x 25	3.2	1.9	ATS1369-ND	13.89	10.92
	29	37	10	29 x 29	6.2	3.8	ATS1370-ND	15.22	11.96
	29	37	11	29 x 29	6.2	3.8	ATS1371-ND	14.59	11.90
	35	46	16.75	35 x 35	2.42	1.6	ATS1372-ND	12.23	9.46
3	35	46	16.75	35 x 35	2.42	1.6	ATS1373-ND	12.27	9.48
	62	52	13	42.5 x 42.5	3.2	1.8	ATS1374-ND†	15.22	11.96
3	62	52	13	42.5 x 42.5	3.2	1.8	ATS1375-ND	14.88	12.13

† High Conductivity Thermal Tape

Blue Ice — Low Profile

Custom maxiFLOW™ Heat Sinks BGA Cooling Solutions with Thermal Tape — Blue Anodized



Dimensions (mm)	Thermal Resistance		Digi-Key Part No.	Price Each				
	Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10	100		
25.2	25.2	4	14.8	7.8	ATS1376-ND	7.56	5.76	4.94
37.6	37.6	4	7.8	3.8	ATS1377-ND	8.87	6.82	5.72
61	58.2	5.5	4.0	2.3	ATS1378-ND†	9.42	7.25	6.08
61	58.2	7	2.2	1.4	ATS1379-ND	9.75	7.50	6.29
61	58.2	6.1	3.6	2.2	ATS1380-NDΔ	9.59	7.38	6.18

† Gold Anodized Δ Black Anodized

LED Heat Sinks

For LED Lighting Modules, Black Anodized

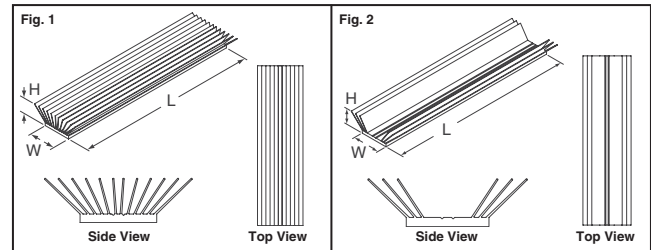


Fig.	Dimensions (mm)			Thermal Resistance		Digi-Key Part No.	Price Each		
	L	W	H	Unducted Flow @ 200 LFM (1m/sec.)	Ducted Flow @ 200 LFM (1m/sec.)		1	10	100
1	330	45	26	1.2	0.6	ATS1361-ND	21.05	17.16	14.74
	305	45	26	1.3	0.6	ATS1362-ND	19.60	15.98	13.73
2	305	45	26	0.6	0.6	ATS1363-ND	16.70	13.61	11.69
	305	45	26	0.6	0.6	ATS1364-ND†	19.60	15.98	13.73

† Thermal Tape

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