INTRODUCTION

This short form catalog features Wakefield Thermal Solutions' product offering for BGAs, Super BGAs, PBGAs and FPBGAs. Applications include Network routers and switches, high resolution printers, digital cameras, video games, digital video disk (DVD) and global positioning systems (GPS).

A full line catalog is also available. To receive your copy, please contact your local sales representative, our corporate headquarters, email us at info@wakefield.com, or visit us on the web at www.wakefield.com.

ABOUT WAKEFIELD THERMAL SOLUTIONS

Thermal Management Solutions for Electronics

- *Leadership in design*
- *Applications Engineering and sales support worldwide*
- *Aggressive implementation of world-class manufacturing concepts*

Wakefield is recognized as the worldwide leader in innovative thermal management solutions for a diverse range of commercial, industrial, and military markets.

Nearly half a century of heat transfer design, analysis, manufacture, and fabrication expertise of components, systems, and assemblies is now joined with an aggressive commitment to customer support, product designs, and engineering services.

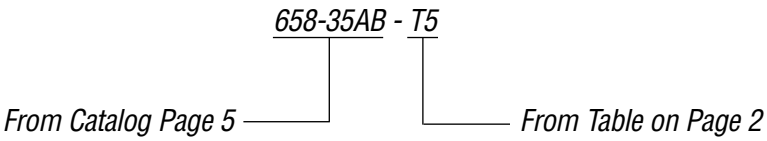
Wakefield Engineering offers components and system level thermal management solutions for utilization in business equipment, computers, consumer electronics, automotive, industrial controls, instrumentation, integrated circuits, medical, laser, power conversion, telecommunications, transportation, and welding applications.

ORDERING INFORMATION

Once you have chosen heat sink and thermal interface material that meets your thermal & mechanical requirements it is easy to designate the part number. Simply add the interface material suffix (from the table on page 3) to the base part number for the heat sink. The base part number already includes information regarding its size and finish.

Example:

To Order the 658 Series heat sink at .350" tall with the T5 thermal interface material, specify part number:



THERMAL INTERFACE MATERIAL PART NUMBER GUIDE

All of the heat sinks shown in this brochure are available with any of the following thermal tape and interface materials, pre-applied at the factory. Use the "T" series, thermally enhanced, pressure sensitive adhesives to attach the heat sink to the electronic package and provide a good thermal link to the heat sink. The "S" series interface materials have adhesives on only one side, for pre-attachment to the heat sink, and provide superior thermal performance. Specify these materials in applications where the heat sink will be fixed to the electronic package by some mechanical means other than a tape. Please note that none of these materials are for use in applications requiring electrical isolation from the electronic device.

Note: To obtain the estimated thermal resistance of the interface material in your application, divide the thermal impedance value by the area of the pad in square inches. For example, a 2" x 2" piece of T4 has a resistance of 1.10 C-in^2/W ÷ 4 in^2=0.275 C/W

"T" SERIES THERMALLY ENHANCED PRESSURE SENSITIVE ADHESIVES

Suffix	Manufacturer Product	Thermal Impedance C-in^2/W	Thickness, Inches	Package Surface, Comments
-T1	Chomerics, T405	0.47	0.006	Metal/ceramic; aluminum carrier
-T2	Adhesives Research, 8223	0.25	0.005	Metal/ceramic; very good thermal performance
-T3	Chomerics, T412	0.25	0.009	Metal/ceramic; very good performance and conformity
-T4	Chomerics, T410	1.10	0.007	Plastic
-T5	Chomerics, T411	1.00	0.011	Plastic; conforms to out-of-flat packages
-T6	3M, 8810	0.88	0.010	Metal/ceramic; very good adhesion and conformity
-T7	Bergquist, BP 108	1.28	0.008	Metal/ceramic; electrically insulating

THERMAL INTERFACE MATERIAL PART NUMBER GUIDE

P/N	T1	T2	T3	T4	T5	T6	T7
602-100AB					▲		
604-40AB					▲		
604-60AB					▲		
605-75AB					▲		
606-77AB							
607-65AB					▲		
609-100AB	See Page 11						
609-50B							
610-35AB					▲		
610-40AB					▲		
611-80AB							▲
612-65AB							▲
613-50AB							▲
614-100AB					▲		
614-30AB					▲		
614-50AB					▲		
615-41AB							
616-80AB					▲		
617-80AB							▲
618-100AB					▲		
618-20AB					▲		
619-95AB							

P/N	T1	T2	T3	T4	T5	T6	T7
620-24AB					▲		
622-80AB							▲
624-25AB	▲	▲	▲	▲			
624-35AB	▲	▲	▲	▲			
624-45AB	▲	▲	▲	▲			
624-60AB	▲	▲	▲	▲			
625-25AB	▲	▲	▲	▲			
625-35AB	▲	▲	▲	▲			
625-45AB	▲	▲	▲	▲			
625-60AB	▲	▲	▲	▲			
628-20AB							
628-25AB							
628-35AB							
628-40AB		▲	▲				
628-65AB	▲						
630-25AB							
630-35AB							
630-45AB							
630-60AB							
642-25AB	▲	▲	▲	▲			
642-35AB	▲	▲	▲	▲			
642-45AB	▲	▲	▲	▲			

P/N	T1	T2	T3	T4	T5	T6	T7
642-60AB	▲	▲	▲	▲			
643-35AB	▲	▲	▲	▲			
655-26AB	▲						
655-53AB							
658-25AB	▲	▲	▲	▲			
658-35AB		▲	▲	▲			
658-45AB	▲	▲		▲			
658-60AB	▲	▲	▲	▲			
659-65AB	▲	▲					
660-29AB							
663-35AB							
698-100AB							
698-40AB							
698-65AB							
698-80AB							
798-100AB	▲						
798-40AB							
798-65AB							
798-80AB							
D10650-40							
D10850-40		▲					
D20850-40			▲				

BGA THERMAL SOLUTIONS MATRIX

The following table represents Wakefield's recommendations for a variety of standard BGA sizes. However, this is by no means a complete list of components that can be used with these heat sinks. To determine suitability for your particular component, request a BGA heat sink evaluation kit.

BGA Sizes (mm)	Heat Sink Footprint (mm)	Heat Sink Height (inches)	Recommended Series #	Attachment Method
17	17 x 17	.40	D10650	Adhesive
19	19 x 19	1.00	602	Adhesive
21	21 x 21	.40	D10850/D20850	Adhesive
21	21 x 21	.25 .35 .45 .60	624	Adhesive
23	22 x 22	.40 .60	604	Adhesive
23	22 x 22	.75	605	Adhesive
25	25 x 25	.25 .35 .45 .60	625	Adhesive
27	28 x 28	.25 .35 .45 .60	658	Adhesive
29	30 x 30	.77	606	Adhesive
31	31 x 28	.65	607	Adhesive
31	31 x 31	.80	611	Adhesive
33	32 x 32	.35 .40	610	Adhesive
35	35 x 35	.65	612	Adhesive
35	35 x 35	.25 .35 .45 .60	642	Adhesive
35	35 x 35	.25 .35 .45 .60	630	Adhesive
37.5	37 x 37	.50	613	Adhesive
37.5	37 x 37	.65	659	Adhesive
45.7 x 35.5	37 x 47	.80	617	Adhesive
40	38 x 38	.30 .50 1.00	614	Adhesive
37.5	38 x 38	.29	660	Adhesive
40	40 x 28	.35	643	Clip
40	40 x 40	.26 .53	655	Adhesive
42.5	41 x 41	.41	615	Adhesive
45	43 x 43	.20 .25 .35 .45 .60	628	Adhesive
45	43 x 43	.15	662	Adhesive
47.5	47 x 47	.80	616	Adhesive
50	50 x 50	.40 .65 .80 1.00	698	Adhesive
50	51 x 51	.20 1.00	618	Adhesive
50	52 x 51	.80	622	Adhesive
50	53 x 47	.40 .65 .80 1.00	798	Adhesive
50	64 x 51	.24	620	Adhesive
up to 45	73 x 50	.50 1.00	609	Clip
up to 45	73 x 50	.95	619	Clip