

BOYD

CORPORATION



THERMAL MANAGEMENT

One Company, Many Solutions

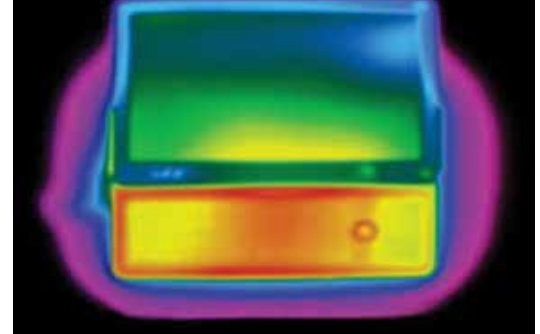
Precision Components Fabricated Solutions Global Presence

As electronics become an ever increasing part of our daily lives, so too OEMs' challenges associated with the advancing complexities and miniaturization of technologies they produce with attendant power consumption, heat and thermal management-related challenges.

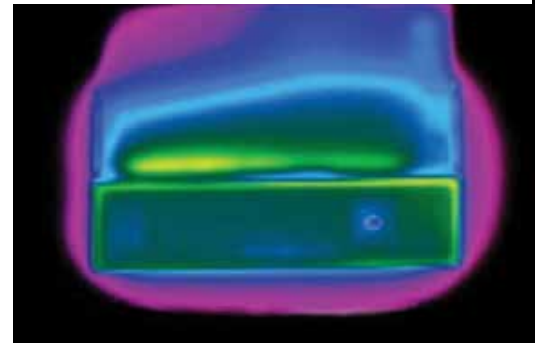
For more than a decade, Boyd has provided thermal management solutions for market segments and applications including:

- Automotive: ECU (Electronic Control Unit) featuring thermally conductive adhesives, heat spreaders and TIMs
- LED TV Displays: backlights cooled with graphite and power modules cooled with TIMs
- Mobile Computing: CPU, power amplifiers and displays featuring heat spreaders made of graphite, copper and aluminum
- Enterprise Electronics: CPU, chips and heat sinks featuring TIMs for heat transfer
- Lighting: thermally conductive adhesives and TIMs used in LED chips and heat sinks
- Hybrid or Electric Vehicles: TIMs for battery temperature management

Before **TRANSTHERM™**
Thermal Management Products by **BOYD**
CORPORATION



After **TRANSTHERM™**
Thermal Management Products by **BOYD**
CORPORATION



With a fully equipped and capable thermal analysis lab to support customer product evaluations, Boyd utilizes excellent analysis tools and market experience to provide an unmatched ability to assist its OEM customers, EMS partners and suppliers in designing solutions that solve thermal management challenges.



Boyd provides best-cost, engineered, specialty material-based energy management and sealing solutions through comprehensive technical materials and design expertise, world-class manufacturing quality, service reliability, and unparalleled supply chain management. Use Boyd's years of experience and engineering support in concert with your engineering / technical expertise to ensure your thermal challenges are solved in a cost effective, leading edge way.

Properties	Units	Product type: Silicone Thermal Pad				Test Method
		BOYD Part Number				
		BCTIM-210-1001	BCTIM-210-1002	BCTIM-210-1003	BCTIM-210-1004	
Color		Standard : Pink				Visual
Reinforce Layer		Fiberglass				
Surface Tack (0, 1 or 2 sided)		0				
Thermal Conductivity	W/m-K	1	1	1.5	1.5	ASTM D5470
Hardness	Shore A	80				ASTM D2240
Thickness	mm	0.15	0.2	0.15	0.2	ASTM D374
Volume Resistivity	Ω-cm	10 ¹³				ASTM D257
Breakdown Voltage	KV/mm	10				ASTM D149
Continuous Usage Temperature	°C	-50~200				
Flame Rating		V-0				UL 94
Note		General Thermal Pad , reinforced , no tackiness				

Properties	Units	Product type: Silicone Thermal Pad				Test Method
		BOYD Part Number				
		BCTIM-210-1005	BCTIM-210-1006	BCTIM-210-1062	BCTIM-210-1007	
Color		Standard : Pink			Standard : Gray	Visual
Reinforce Layer		Fiberglass			PI film	
Surface Tack (0, 1 or 2 sided)		0				
Thermal Conductivity	W/m-K	2	2	1.5	1.3	ASTM D5470
Hardness	Shore A	80	80	80	80	ASTM D2240
Thickness	mm	0.15	0.2	0.23	0.15	ASTM D374
Volume Resistivity	Ω-cm	10 ¹³				ASTM D257
Breakdown Voltage	KV/mm	6	6	10	10	ASTM D149
Continuous Usage Temperature	°C	-50~200				
Flame Rating		V-0				UL 94
Note		General Thermal Pad , reinforced , no tackiness				

Properties	Units	Product type: Silicone Thermal Pad				Test Method
		BOYD Part Number				
		BCTIM-210-1008	BCTIM-210-1009	BCTIM-210-1010	BCTIM-210-1011	
Color		Standard : Gray	Pink			Visual
Reinforce Layer		PI film	Fiberglass			
Surface Tack (0, 1 or 2 sided)		0				
Thermal Conductivity	W/m-K	1.3	1.6	1.5	1.5	ASTM D5470
Hardness	Shore A	80	89	86	86	ASTM D2240
Thickness	mm	0.2	0.23	0.19	0.23	ASTM D374
Volume Resistivity	Ω-cm	10 ¹³	10 ¹²	10 ¹²	10 ¹²	ASTM D257
Breakdown Voltage	KV/mm	10	6	6	6	ASTM D149
Continuous Usage Temperature	°C	-50~200	-60~180			
Flame Rating		V-0				UL 94
Note		General Thermal Pad , reinforced , no tackiness				

Properties	Units	Product type: Silicone Thermal Pad		Test Method
		BOYD Part Number		
		BCTIM-210-1012	BCTIM-210-1013	
Color		Pink	Beige	Visual
Reinforce Layer		PI film		
Surface Tack (0, 1 or 2 sided)		0		
Thermal Conductivity	W/m-K	1	1.3	ASTM D5470
Hardness	Shore A	90	89	ASTM D2240
Thickness	mm	0.15		ASTM D374
Volume Resistivity	Ω -cm	10^{12}		ASTM D257
Breakdown Voltage	KV/mm	6		ASTM D149
Continuous Usage Temperature	°C	-60~180		
Flame Rating		V-0		UL 94
Note		General Thermal Pad , reinforced , no tackiness		

Properties	Units	Product type: Silicone Thermal Gap Filler				Test Method
		BOYD Part Number				
		BCTIM-211-1014	BCTIM-211-1015	BCTIM-211-1016	BCTIM-211-1017	
Color		Standard : Gray				Visual
Reinforce Layer		NO				
Surface Tack (0, 1 or 2 sided)		2				
Thermal Conductivity	W/m-K	1	2	3	4	ASTM D5470
Hardness	Shore OO	55		60		ASTM D2240
Thickness	mm	0.5 ~ 25				ASTM D374
Volume Resistivity	Ω -cm	10^{13}		10^{12}		ASTM D257
Breakdown Voltage	KV/mm	10	6			ASTM D149
Continuous Usage Temperature	°C	-50~200				
Flame Rating		V-0				UL 94
Note		General Thermal Gap Filler , no fiberglass , 2 side tacky				

Properties	Units	Product type: Silicone Thermal Gap Filler		Test Method
		BOYD Part Number		
		BCTIM-211-1018	BCTIM-211-1019	
Color		Standard : Gray		Visual
Reinforce Layer		NO		
Surface Tack (0, 1 or 2 sided)		2		
Thermal Conductivity	W/m-K	5	6	ASTM D5470
Hardness	Shore OO	60		ASTM D2240
Thickness	mm	0.5 ~ 25		ASTM D374
Volume Resistivity	Ω -cm	10^{12}		ASTM D257
Breakdown Voltage	KV/mm	6		ASTM D149
Continuous Usage Temperature	°C	-50~200		
Flame Rating		V-0		UL 94
Note		General Thermal Gap Filler , no fiberglass , 2 side tacky		

TRANSTHERM™

Thermal Management Products by **BOYD CORPORATION**

Properties	Units	Product type: Silicone Thermal Gap Filler				Test Method
		BOYD Part Number				
		BCTIM-212-1020	BCTIM-212-1021	BCTIM-212-1022	BCTIM-212-1018P	
Color		Standard : Gray			Standard : Gray	Visual
Reinforce Layer		NO			Yes (top)	
Surface Tack (0, 1 or 2 sided)		2				
Thermal Conductivity	W/m-K	1	2	3	5	ASTM D5470
Hardness	Shore OO	20		30	60	ASTM D2240
Thickness	mm	0.5 ~ 6			0.5 ~ 25	ASTM D374
Volume Resistivity	Ω-cm	10 ¹³		10 ¹²		ASTM D257
Breakdown Voltage	KV/mm	10	6			ASTM D149
Continuous Usage Temperature	°C	-50~200				
Flame Rating		V-0				UL 94
Note		Ultra soft Thermal Gap Filler , no fiberglass , 2 side tacky			Ultra soft Thermal Gap Filler , no fiberglass , 1 side tacky	

Properties	Units	Product type: Silicone Thermal Gap Filler				Test Method
		BOYD Part Number				
		BCTIM-213-1023	BCTIM-213-1024	BCTIM-213-1025	BCTIM-213-1026	
Color		Standard : Pink / White				Visual
Reinforce Layer		Fiberglass				
Surface Tack (0, 1 or 2 sided)		1				
Thermal Conductivity	W/m-K	1	2	3	4	ASTM D5470
Hardness	Shore OO	55				ASTM D2240
Thickness	mm	0.5 ~ 6				ASTM D374
Volume Resistivity	Ω-cm	10 ¹³		10 ¹²		ASTM D257
Breakdown Voltage	KV/mm	10	6			ASTM D149
Continuous Usage Temperature	°C	-50~200				
Flame Rating		V-0				UL 94
Note		Soft Thermal Gap Filler , with fiberglass , 1 side tacky				

Properties	Units	Product type: Silicone Thermal Gap Filler		Test Method
		BOYD Part Number		
		BCTIM-213-1027	BCTIM-213-1066	
Color		Standard : Pink / White		Visual
Reinforce Layer		Fiberglass		
Surface Tack (0, 1 or 2 sided)		1		
Thermal Conductivity	W/m-K	5	1	ASTM D5470
Hardness	Shore OO	55	40	ASTM D2240
Thickness	mm	0.5 ~ 6		ASTM D374
Volume Resistivity	Ω-cm	10 ¹²	10 ¹³	ASTM D257
Breakdown Voltage	KV/mm	6	10	ASTM D149
Continuous Usage Temperature	°C	-50~200		
Flame Rating		V-0		UL 94
Note		Soft Thermal Gap Filler , with fiberglass , 1 side tacky		

Properties	Units	Product type: Silicone Thermal Gap Filler				Test Method
		BOYD Part Number				
		BCTIM-214-1028	BCTIM-214-1029	BCTIM-214-1030	BCTIM-214-1065	
Color		Standard : Pink / White				Visual
Reinforce Layer		Fiberglass				
Surface Tack (0, 1 or 2 sided)		1				
Thermal Conductivity	W/m-K	1	2	3	1.2	ASTM D5470
Hardness	Shore OO	5	5	5	5	ASTM D2240
Thickness	mm	0.5 ~ 6				ASTM D374
Volume Resistivity	Ω-cm	10 ¹³		10 ¹²	10 ¹³	ASTM D257
Breakdown Voltage	KV/mm	10	6		10	ASTM D149
Continuous Usage Temperature	°C	-50~200				
Flame Rating		V-0				UL 94
Note		Ultra Soft Thermal Gap Filler , with fiberglass ,1 side tacky				

Properties	Units	Product type: Silicone Thermal Gap Filler				Test Method
		BOYD Part Number				
		BCTIM-215-1031	BCTIM-215-1032	BCTIM-215-1033	BCTIM-215-1034	
Color		Standard : Gray			Blue	Visual
Reinforce Layer		Fiberglass				
Surface Tack (0, 1 or 2 sided)		2				
Thermal Conductivity	W/m-K	1	2	3	2.5	ASTM D5470
Hardness	Shore OO	25	40	40	75	ASTM D2240
Thickness	mm	0.25 ~0.75				ASTM D374
Volume Resistivity	Ω-cm	10 ¹³	10 ¹³	10 ¹²	9.6x10 ¹²	ASTM D257
Breakdown Voltage	KV/mm	10			6	ASTM D149
Continuous Usage Temperature	°C	-50~200			-45~200	
Flame Rating		V-0				UL 94
Note		Thin Thermal Gap Filler , with fiberglass , 2 side tacky				

Properties	Units	Product type: Silicone Thermal Gap Filler				Test Method
		BOYD Part Number				
		BCTIM-215-1057	BCTIM-215-1058	BCTIM-215-1059	BCTIM-215-1061	
Color		Blue			White	Visual
Reinforce Layer		Fiberglass				
Surface Tack (0, 1 or 2 sided)		2				
Thermal Conductivity	W/m-K	3		5	3	ASTM D5470
Hardness	Shore OO	15	30	35	5	ASTM D2240
Thickness	mm	0.25 ~6			0.5 ~ 3	ASTM D374
Volume Resistivity	Ω-cm	10 ¹³				ASTM D257
Breakdown Voltage	KV/mm	10			11	ASTM D149
Continuous Usage Temperature	°C	-50~200				
Flame Rating		V-0				UL 94
Note		Thin Thermal Gap Filler , with fiberglass , 2 side tacky				

Properties	Units	Product type: Silicone Thermal Gap Filler		Test Method
		BOYD Part Number		
		BCTIM-215-1063	BCTIM-215-1064	
Color		Gray	Green	Visual
Reinforce Layer		Fiberglass		
Surface Tack (0, 1 or 2 sided)		2		
Thermal Conductivity	W/m-K	4	2	ASTM D5470
Hardness	Shore OO	40	60	ASTM D2240
Thickness	mm	0.25~6		ASTM D374
Volume Resistivity	Ω-cm	10 ¹³		ASTM D257
Breakdown Voltage	KV/mm	10	6	ASTM D149
Continuous Usage Temperature	°C	-50~200		
Flame Rating		V-0		UL 94
Note		Thin Thermal Gap Filler , with fiberglass , 2 side tacky		

Properties	Units	Product type: Silicone Thermal Gap Filler				Test Method
		BOYD Part Number				
		BCTIM-216-1035	BCTIM-216-1036	BCTIM-216-1037	BCTIM-216-1038	
Color		Standard : Gray				Visual
Reinforce Layer		NO				
Surface Tack (0, 1 or 2 sided)		2				
Thermal Conductivity	W/m-K	7	11		13	ASTM D5470
Hardness	Shore OO	70		40	75	ASTM D2240
Thickness	mm	0.5 ~ 6			0.5 ~ 7	ASTM D374
Volume Resistivity	Ω-cm	10 ¹²			11 ¹²	ASTM D257
Breakdown Voltage	KV/mm	6				ASTM D149
Continuous Usage Temperature	°C	-50~200				
Flame Rating		V-0				UL 94
Note		High Performance Thermal Gap Filler , no fiberglass , 2 side tacky				

Properties	Units	Product type: Silicone Thermal Gap Filler		Test Method
		BOYD Part Number		
		BCTIM-216-1039	BCTIM-216-1040	
Color		Standard : Gray	Blue	Visual
Reinforce Layer		NO		
Surface Tack (0, 1 or 2 sided)		2		
Thermal Conductivity	W/m-K	17	6.5	ASTM D5470
Hardness	Shore OO	80	75	ASTM D2240
Thickness	mm	0.5 ~ 8	0.25~0.75	ASTM D374
Volume Resistivity	Ω-cm	12 ¹²	9.6*10 ¹²	ASTM D257
Breakdown Voltage	KV/mm	6		ASTM D149
Continuous Usage Temperature	°C	-50~200	-45~200	
Flame Rating		V-0		UL 94
Note		High Performance Thermal Gap Filler , no fiberglass , 2 side tacky		

Properties	Units	Product type: Non Silicone Thermal Gap Filler				Test Method
		BOYD Part Number				
		BCTIM-217-1041	BCTIM-217-1042	BCTIM-217-1043	BCTIM-217-1060	
Color		White	White / Ivory		White	Visual
Reinforce Layer		Yes				
Surface Tack (0, 1 or 2 sided)		1				
Thermal Conductivity	W/m-K	2	1.5	3		ASTM D5470
Hardness	Shore OO	50	38, <10(Asker C)	57, <30 (Asker C)	60	ASTM D2240
Thickness	mm	0.25 ~ 2	0.5~ 2	0.3~ 2	0.25 ~ 2	ASTM D374
Volume Resistivity	Ω-cm	10 ¹²		>10 ¹⁴	10 ¹²	ASTM D257
Breakdown Voltage	KV/mm	21	-	10	21	ASTM D149
Continuous Usage Temperature	°C	-20~120	-40~125		-20~120	
Flame Rating		V-0	V2	V-0		UL 94
Note		Non Silicone Thermal Gap Pad (Binder : Acrylic)				

Properties	Units	Product type: Thermal Gap Filler - Putty Type				Test Method
		BOYD Part Number				
		BCTIM-218-1044	BCTIM-218-1045	BCTIM-218-1046	BCTIM-218-1047	
Color		Standard : Gray				Visual
Reinforce Layer		No	Yes	No	No	
Surface Tack (0, 1 or 2 sided)		2				
Thermal Conductivity	W/m-K	6	6	11	17	ASTM D5470
Hardness	Shore OO	NA				ASTM D2240
Thickness	mm	1.5 / 2.0	0.2 ~ 0.7	1.5 / 2.0	0.2~0.5	ASTM D374
Volume Resistivity	Ω-cm	10 ⁹	10 ⁹	10 ⁷	10 ⁹	ASTM D257
Breakdown Voltage	KV/mm	6				ASTM D149
Continuous Usage Temperature	°C	V-0				
Flame Rating		-55~200				UL 94
Note		High Performance Thermal Gap Filler , Putty type , 2 side tacky				

Properties	Units	Product type: Thermal Adhesive Tape				Test Method
		BOYD Part Number				
		BCTIM-219-1048	BCTIM-219-1049	BCTIM-219-1050	BCTIM-219-1051	
Color		White				Visual
Reinforce Layer		No				
Surface Tack (0, 1 or 2 sided)		2				
Thermal Conductivity	W/m-K	1.2				ASTM D5470
Hardness	Shore OO	55				ASTM D2240
Thickness	mm	0.125	0.25	0.375	0.5	ASTM D374
Volume Resistivity	Ω-cm	10 ¹²				ASTM D257
Breakdown Voltage	KV/mm	16				ASTM D149
Continuous Usage Temperature	°C	-20~120				
Flame Rating		V-0				UL 94
Note		Non Silicone Thermal Adhesive Tape (Binder : Acrylic)				

Properties	Units	Product type: Thermal Adhesive Tape			Test Method
		BOYD Part Number			
		BC-TIM-219-1052	BCTIM-219-1053	BCTIM-219-1056	
Color		White			Visual
Reinforce Layer		Fiberglass		No	
Surface Tack (0, 1 or 2 sided)		2		2	
Thermal Conductivity	W/m-K	0.82		0.6	ASTM D5470
Hardness	Shore OO	NA		-	ASTM D2240
Thickness	mm	0.15	0.25	0.05	ASTM D374
Volume Resistivity	Ω-cm	-			ASTM D257
Breakdown Voltage	KV/mm	13	20	30	ASTM D149
Continuous Usage Temperature	°C	-10~80		-20~120	
Flame Rating		-			UL 94
Note		Non Silicone Thermal Adhesive Tape (Binder : Acrylic)			

Properties	Units	Product Type: Phase Change		Test Method
		BOYD Part Number		
		BCTIM-220-1054	BCTIM-220-1055	
Color		Gray		Visual
Reinforce Layer		-		
Surface Tack (0, 1 or 2 sided)		2		
Thermal Conductivity	W/m-K	4.4		ASTM D5470
Hardness	Shore OO	-		ASTM D2240
Thickness	mm	0.2	0.25	ASTM D374
Volume Resistivity	Ω-cm	10 ¹²		ASTM D257
Breakdown Voltage	KV/mm	N/A		ASTM D149
Continuous Usage Temperature	°C	-40~125		
Phase Change Temperature	°C	50	45	
Flame Rating		-		UL 94
Note		Phase Change Material		

Standard Thickness Tolerance

Thickness(mm)	Standard Tolerance (mm)
~0.25	±10%
~0.5	±0.05
~1.0	±0.1
~5.0	±10%
5.0~	±0.5