

BANDO High Thermal Conductive Sheet "HEATEX"

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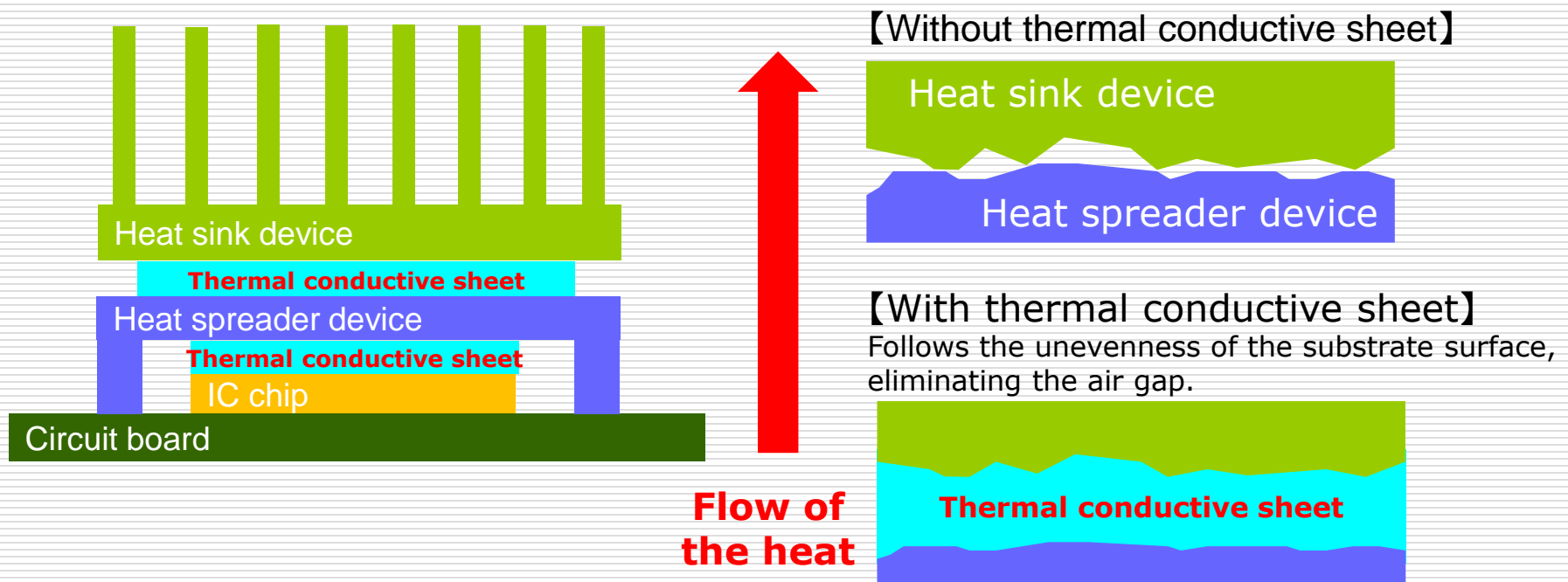
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Manufacturer :  **BANDO** Bando Chemical Industries, Ltd., Kobe, Japan

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What is BANDO High Thermal Conductive Sheet?

BANDO High Thermal Conductive Sheet is a rubber sheet which can transfer a large amount of heat generated from an electronic device quickly to a heat dissipation member.



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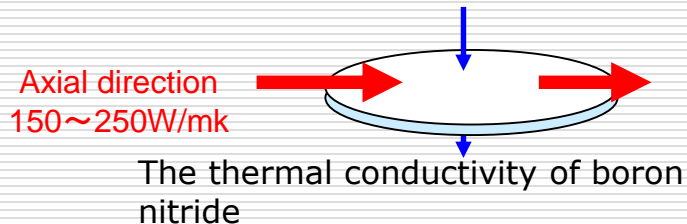
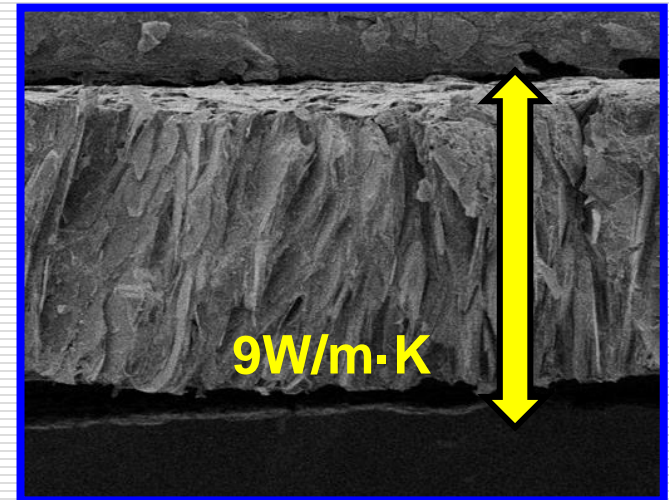
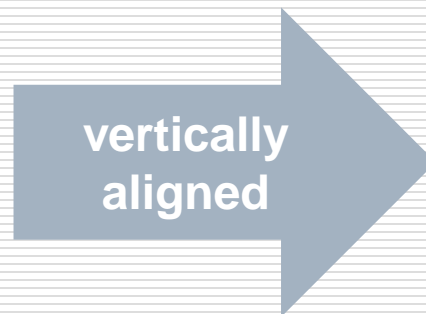
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BANDO High Thermal Conductive Sheet Feature

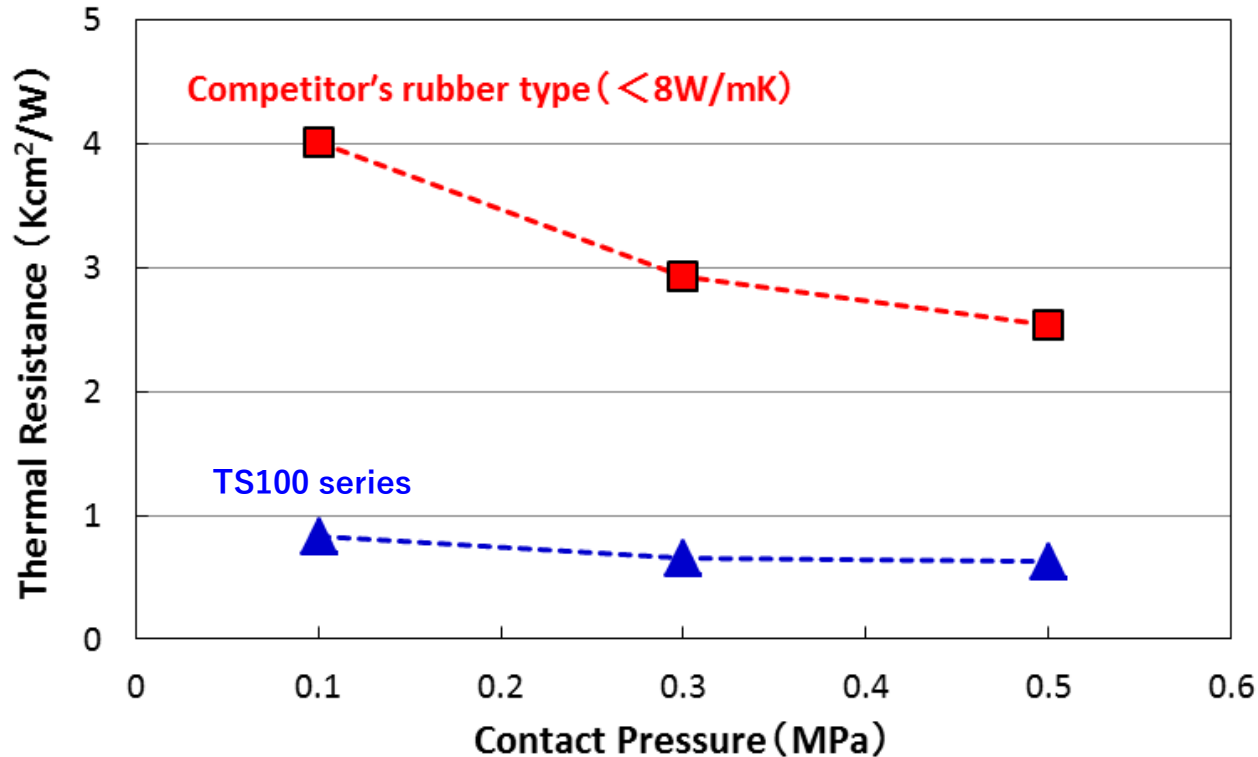
We vertically aligned the heat transfer fillers, which have an anisotropic thermal conductivity in the sheet thickness direction. This allows our products to have the highest thermal conductivity on the market.

Insulation filler



to the Competitor's Products Comparison

Measurement method : Steady state method based on ASTM D5470,
Device : TIM tester (model1300)



Bando High Thermal Conductive Sheet shows lower thermal resistance than the competitor's rubber type.

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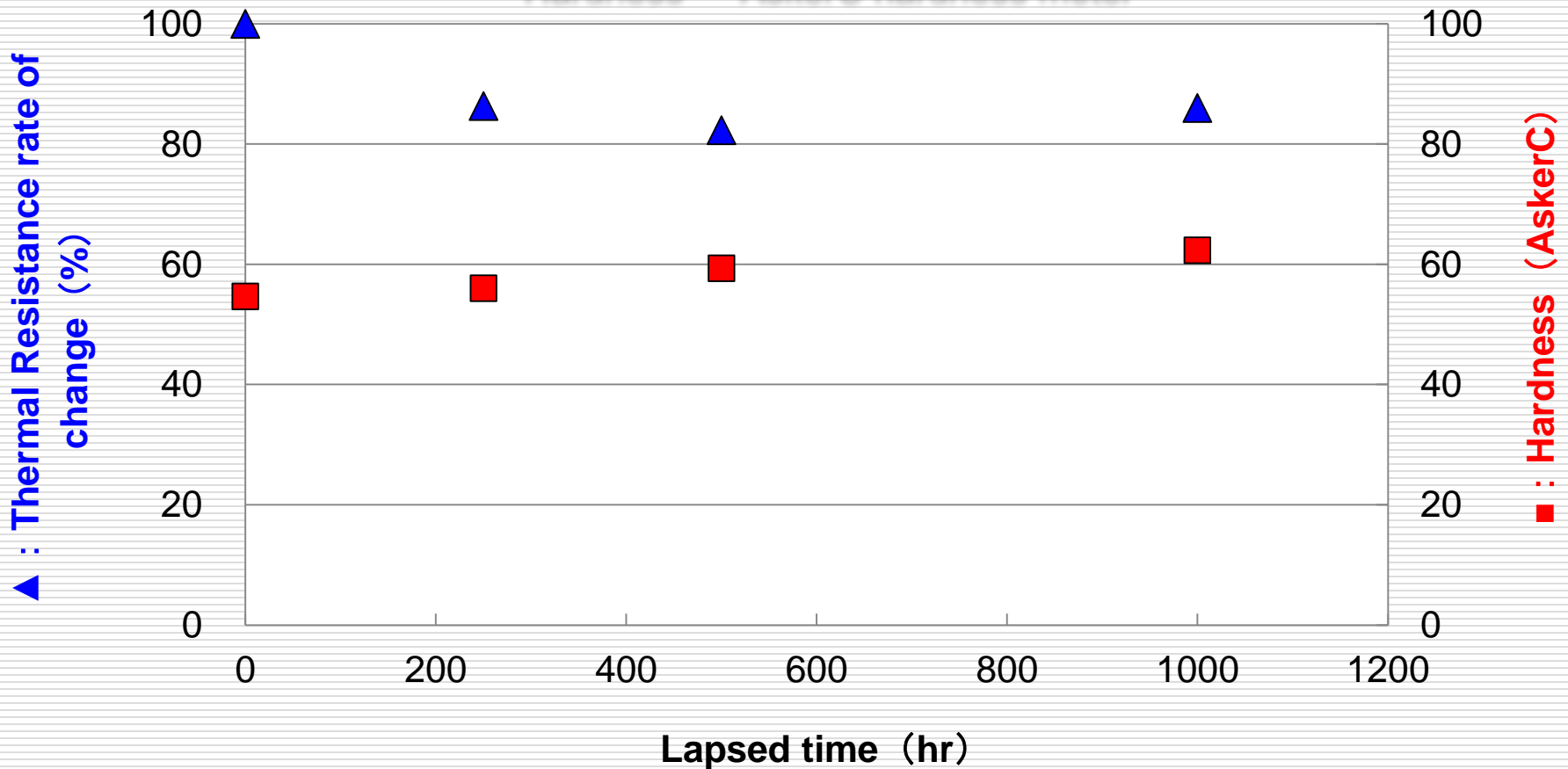
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Heat reliability at 180°C

Thermal Resistance ·· Device : TIM tester (model1300), Contact pressure : 0.5MPa

Hardness ·· AskerC hardness meter



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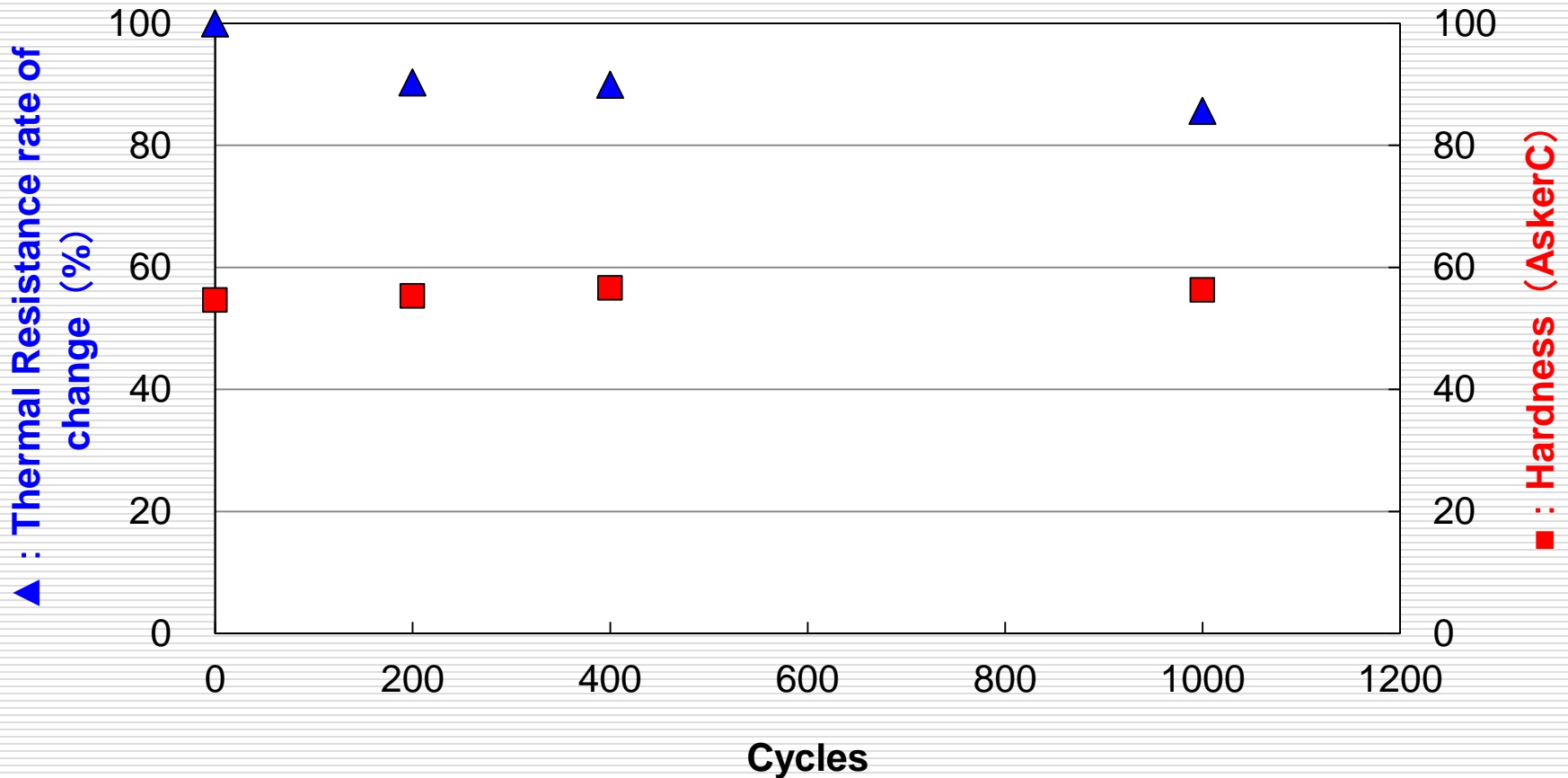
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Heat cycle reliability (-40°C/125°C)

Thermal Resistance ·· Device: TIM tester (model1300), Contact pressure:0.5MPa
Hardness ·· AskerC hardness meter



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BANDO HEATEX – Insulated type

Insulated type	Unit	Standard	TS103			TS107		
General properties								
Color	-	Visual	gray			pink		
Reinforcement layer	-	-	N/A			N/A		
Inherent Surface Tack (1-1/2- sided)	-	-	N/A			N/A		
Thickness	mm	-	0.3	0.5	1	0.3	0.5	1
Density	g/cm ³	JIS K 6220	1.6			1.6		
Hardness	-	AskerC	70			55		
Continuous use temp.	°C	-	-40~150			-40~150		
	°F	-	-40~302			-40~302		
Compression Ratio	%	Test Piece T=1mm Φ33mm	0.3MPa	3		4		
			0.5MPa	5		11		
			1.0MPa	19		35		
Electrical properties								
Volume resistivity	Ω·cm	JIS K 6911	> 10 ¹³			> 10 ¹³		
Dielectric constant(ε _r)	-	JIS C 2138	1MHz	3.5		3.5		
			2MHz					
Dielectric dissipation factor(tanδ)	-	JIS C 2138	1MHz	<0.001		<0.001		
			2MHz					
Dielectric breakdown voltage	kV/mm	Test Piece T=1mm 1kV/s, Air Condition	> 20			> 20		
Thermal properties								
Thermal conductivity	W/m·K	ISO22007-3	-			-		
		ASTM D5470	9			9		
Thermal resistance 77°F/72.5psi	Kcm ² /W	ASTM D5470	0.4	0.6	1.1	0.4	0.6	1.1
Flame retardancy								
Flame retardance	-	UL94	V-0 Equivalent			V-0 Equivalent		
Other properties								
Low-molecular-weight siloxane content	ppm	ΣD4-D10	<300			<300		

**The values in the table are representative values, not product standard values.
Specifications are subject to change without notice.**

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BANDO HEATEX – Conductive type

Conductive type	Unit	Standard	TS211		
General properties					
Color	-	Visual	black		
Reinforcement layer	-	-	N/A		
Inherent Surface Tack (1-/2- sided)	-	-	N/A		
Thickness	mm	-	0.3	0.5	1
Density	g/cm ³	JIS K 6220	1.6		
Hardness	-	TypeE	50		
Continuous use temp.	°C	-	-40~150		
	°F	-	-40~302		
Compression Ratio	%	Test Piece T=1mm Φ33mm	0.3MPa	TBD	
			0.5MPa	TBD	
			1.0MPa	TBD	
Thermal properties					
Thermal conductivity	W/m·K	ISO22007-3	-		
		ASTM D5470	17		
Thermal resistance 77°F/72.5psi	Kcm ² /W	ASTM D5470	0.3	0.4	TBD
Flame retardancy					
Flame retardance	-	UL94	V-1 Equivalent		
Other properties					
Low-molecular-weight siloxane content	ppm	ΣD4-D10	TBD		

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Thank you for your attention

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