

Electrically Isolated A/N Thermal Management Device

Features

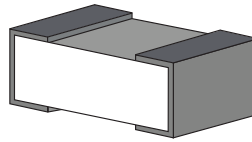
- High thermal conductivity
- Multiple sizes and thicknesses
- Electrically isolated thermal connection
- Optimal control over board temperature
- RoHS PtAg or Solder coated
- PtAg terminals for easy attachment



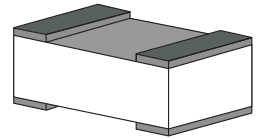
Thermal

Part Number	Length	Width	Height Option 'G'	Height Option 'T'
0505	0.050"	0.050"	0.035" Max	N/A
0510	0.050"	0.100"	0.035" Max	N/A
0603	0.060"	0.030"	0.035" Max	N/A
0805	0.080"	0.050"	0.035" Max	N/A
1005	0.100"	0.050"	0.035" Max	N/A
1206	0.126"	0.063"	0.035" Max	N/A
1010	0.100"	0.100"	0.035" Max	0.050" Max
1020	0.098"	0.197"	0.035" Max	0.050" Max
2010	0.197"	0.098"	0.035" Max	0.050" Max
2512	0.250"	0.120"	0.035" Max	0.050" Max
2525	0.250"	0.250"	0.035" Max	0.050" Max
3725	0.375"	0.250"	0.035" Max	0.050" Max

Terminal Style



WA - Full wraparound



DS - Double sided

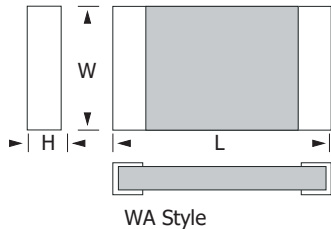
Termination Materials

- ✓ -3 PtAg (platinum silver) for epoxy or solder attachment
- C Sn62 solder coated PtAg for solder attachment
- ✓ -P Sn96 solder coated PtAg for solder attachment

Choose the height option that best suits your thermal conductivity needs (see chart above) and build your Part Number below.

Additional sizes and thicknesses available upon request. Please contact factory. For detailed dimensional information, outline drawings are available from factory.

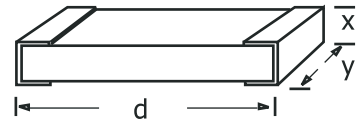
Dimensional Outline



The values are calculated using material constants, the area of each chip face (x•y) and the thickness (d) of each device.

The thermal constant of A/N is: $k \sim 170 \left(\frac{W}{m \cdot ^\circ C} \right)$

Thermal resistance (Θ_R) is calculated as: $\Theta_R = \frac{d}{kA} = \frac{d}{k(x \cdot y)}$



Normalized thermal conductivity is the reciprocal of thermal resistance.

Ordering Information

Example: 1206 Size Therma-Bridge™ on 0.025" substrate with PtAg terminals

	B	G	3	1206	WA
Substrate Thickness					Style
C - 0.010"		G - 0.025"			WA DS
D - 0.015"		T - 0.040" ¹			
Termination Material				Sizes	
3 - PtAg				0505	0605
C - PtAg with Sn62 solder				0510	0805
P - PtAg with Sn96 solder				0603	1005
					1206
					2512 ¹
					2525 ¹
					3725 ¹

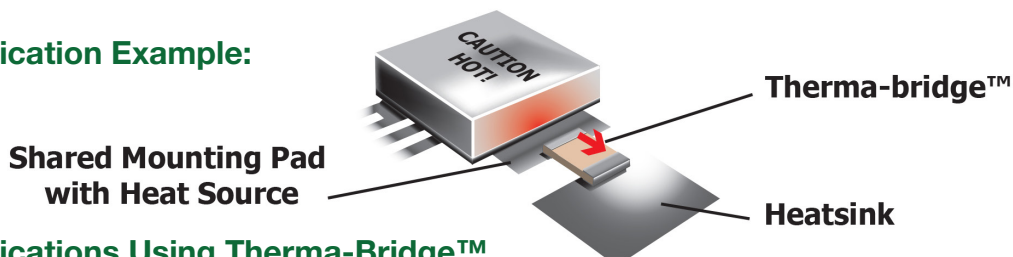
¹ 0.040" Substrate available in size 1010 and larger

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Application Example:

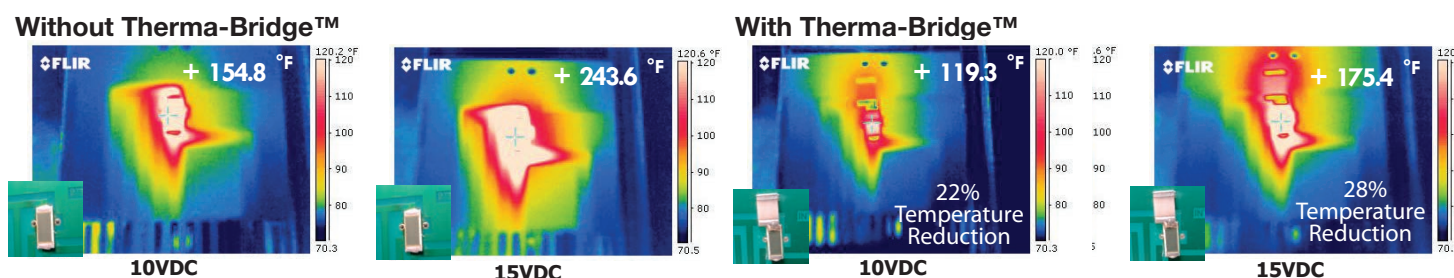


Applications Using Therma-Bridge™

- RF Amplifiers
- Conduction Cooled Computers
- Power Supplies & Converters
- JTRS, MIDS-J, GMR, AMF
- Temperature Controlled Oscillators
- Lighting Ballasts
- Protecting Neighboring Components
- Conduction Cooled Handheld Devices
- P25 Radios, Basestations & Repeaters
- Extracting Heat from Power FETS, LEDs, Pin & Laser Diodes

Thermal Image Heat Transfer Demonstration

Below is an actual test of the Therma-Bridge™ showing a heat generating component mounted on an FR4 board. The images on the right show the temperature of the component being thermally aided by the Therma-Bridge™ connected to a heat sink.



Thermal Conductivity & Electrical Capacitance

The table below lists the thermal resistance (in black) given in degrees C per watt ($^{\circ}\text{C}/\text{W}$), the equivalent thermal conductivity, normalized to chip size, (in red) given in milliwatts per degree C ($\text{mW}/^{\circ}\text{C}$) and the electrical capacitance, (in blue) given in picofarads (pF) for each Therma-Bridge™ size and thickness combination.

These values are based on the nominal thermal resistance of Aluminum Nitride. Values are approximate.

		Nominal Therma-Bridge™ Thickness					
		0.025" Thickness "G"			0.040" Thickness "T"		
Therma-Bridge™ Size	0505	9 $^{\circ}\text{C}/\text{W}$	110 $\text{mW}/^{\circ}\text{C}$	0.15 pF	N/A ¹	N/A ¹	N/A ¹
	0510	4.6	215	0.3	N/A	N/A	N/A
	0603	18	53	0.075	N/A	N/A	N/A
	0605	11	90	0.125	N/A	N/A	N/A
	0805	14	71	0.075	N/A	N/A	N/A
	1005	18	56	0.075	N/A	N/A	N/A
	1206	19	53	0.075	N/A	N/A	N/A
	1010	9	110	0.150	6 $^{\circ}\text{C}/\text{W}$	167 $\text{mW}/^{\circ}\text{C}$	0.24 pF
	1020	4.5	210	0.3	3	330	0.48
	2010	19	53	0.075	12	83	0.12
	2512	19	53	0.075	12	83	0.12
	2525	9	110	0.15	6	167	0.24
	3725	14	71	0.1	9	110	0.16