Vishay Dale Thin Film

ThermaWick[®] Thermal Jumper Surface Mount Chip



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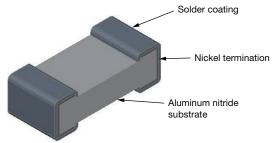
LINKS TO ADDITIONAL RESOURCES





THJP surface-mount chips are designed to provide an electrically isolated thermal conductive pathway to a ground plane or heat sink while maintaining the electrical isolation of the device. The devices are constructed with aluminum nitride substrates in both SnPb and Pb-free wraparound termination styles. The low capacitance of the device makes them an excellent choice for high frequency and thermal ladder applications. Custom sizes available.

CONSTRUCTION



FEATURES

- Electrically isolated thermal conductor
- High thermal conductivity AIN substrate (170 W/mK)
- Electrically isolated terminations (> 999 MΩ)
- Low capacitance
- Available with SnPb or lead (Pb)-free wrap terminations
- AEC-Q200 gualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

- · Power supplies and converters
- RF amplifiers
- Synthesizers
- Switch mode power supplies
- Pin and laser diodes
- Filters

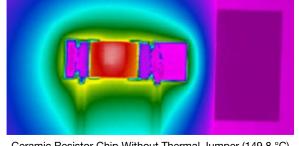
FUNCTIONAL APPLICATIONS / CONNECTION OPTIONS

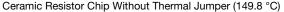
- Component to heat sink
- · Component to case
- · Component to ground plane
- Pad to pad
- Pad to via
- Pad to trace

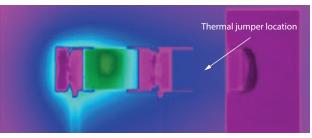
HEAT TRANSFER DEMONSTRATION

Chip surface temperature was measured using a FLIR SC645 thermal imaging system under ambient conditions. The devices were mounted to an FR4 test card designed with a 25 mm x 19 mm copper heat sink. Power was supplied to device to cause the surface temperature to stabilize at 150 °C. The device was then retested at the same power level with the thermal jumper connecting the device to the heat sink.

Example THJP 1206 Thermal Jumper Showing 54.3 °C Surface Temperature Reduction







Ceramic Chip Resistor With Thermal Jumper (95.5 °C)

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1 For technical questions, contact: thinfilm@vishay.com Document Number: 60157

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HALOGEN FREE

GREEN

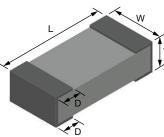
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THJP

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DIMENSIONS in inches



		. 2			
CASE SIZE	L	W	Т	D	WEIGHT (g)
0603	0.061 ± 0.005	0.033 ± 0.005	0.030 ± 0.005	0.015 ± 0.005	0.003
0612	0.063 ± 0.005	0.126 ± 0.005	0.030 ± 0.005	0.015 ± 0.005	0.013
0805	0.079 ± 0.005	0.047 ± 0.005	0.030 ± 0.005	0.020 ± 0.005	0.006
1206	0.126 ± 0.005	0.063 ± 0.005	0.030 ± 0.005	0.020 ± 0.005	0.013
1225	0.126 ± 0.005	0.252 ± 0.005	0.030 ± 0.005	0.020 ± 0.005	0.052
2512	0.252 ± 0.005	0.126 ± 0.005	0.030 ± 0.005	0.020 ± 0.005	0.052

TYPICAL CHARACTERISTICS						
CASE SIZE	0603	0612	0805	1206	1225	2512
Thermal resistance (°C/W), T _R	14	4	13	15	4	15
Thermal conductance (mW/°C), T _C	70	259	77	65	259	65
Capacitance (pF)	0.07	0.26	0.15	0.07	0.26	0.07
Dielectric withstanding voltage kV _{AC} , RMS (60 Hz)	> 1.5	> 1.5	> 1.5	> 2.5	> 1.5	> 3.5

Note

• $T_R = \frac{L}{k (T \bullet W)}$

where k is the thermal conductivity of AIN, 170 W/mK

$$T_{C} = \frac{1}{T_{R}}$$

STANDARD ELECTRICAL SPECIFICATIONS				
TEST	SPECIFICATIONS			
Operating temperature range	-65 °C to +150 °C			
Storage temperature range	-65 °C to +150 °C			

STANDARD MATERIAL SPECIFICATIONS				
Substrate material	Aluminum nitride (170 W/mK)			
Termination (tin / lead)	Electroplate tin / lead over electroplate nickel			
Termination (lead (Pb)-free)	Electroplate tin (e3) over electroplate nickel			

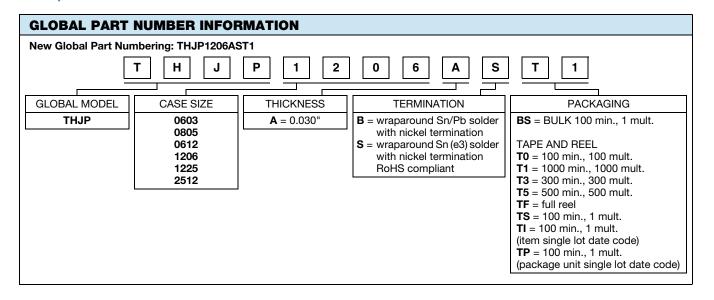
ENVIRONMENTAL TESTS (Vishay Performance vs. MIL-PRF-55342 / AEC-Q200 Requirements)						
ENVIRONMENTAL TEST		CONDITIONS	LIMITS	TYPICAL VISHAY PERFORMANCE		
Solderability Visu	ıal	J-STD-002, method B and B1	95 %	Acceptable		
Solder mounting integrity Visu	ıal	MIL-PRF-55342, method par. 4.8.13.1	Pass / fail	Pass		
Board flex Visu	ıal	AEC-Q200, method 005	Pass / fail	Pass		

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