HALOGEN

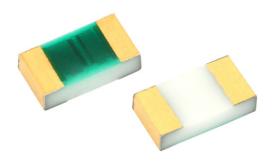
FREE

**GREEN** 

(5-2008)



# Precision Automotive High Temperature (155 °C at Full Rated Power) Thin Film Chip Resistor, AEC-Q200 Qualified



### LINKS TO ADDITIONAL RESOURCES





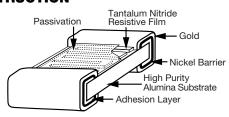






The terminations consist of an adhesion layer, a leach resistant nickel barrier and gold plating compatible with high temperature solder systems.

### CONSTRUCTION





ATTENTION! Observe Precautions for Handling Electrostatic Sensitive Devices!

### **FEATURES**

- Resistance range: 1.0  $\Omega$  to 1 M $\Omega$
- AEC-Q200 qualified, table 7F
- AEC-Q200 qualified, ESD rated class 1C (< 1 kΩ: 1 kV; > 1 kΩ: 2 kV)
- · Laser trimmed to any value
- Intrinsic moisture protected resistor element
- Moisture resistant to MIL-STD-202, method 106
- Tantalum nitride resistor film on alumina substrate
- 100 % visual inspected per MIL-PRF-55342
- Laser-trimmed tolerances to ± 0.1 %
- Load life stability 0.2 % at 1000 h at 155 °C and 100 % rated power
- Very low noise and voltage coefficient (< -30 dB, < 0.1 ppm/V)</li>
- Sulfur resistant (per ASTM B809-95 humid vapor test)
- Material categorization: for definitions of compliance please see <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

### TYPICAL PERFORMANCE

	ABSOLUTE
TCR	25
TOL.	0.1

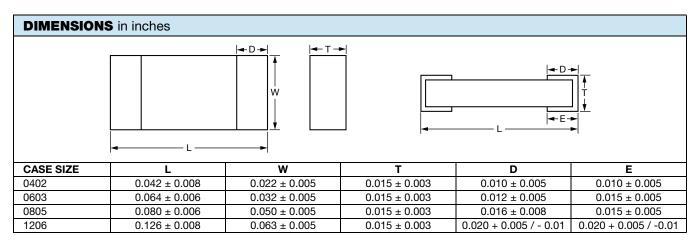
STANDARD ELECTRICAL SPECIFICATIONS			
TEST	SPECIFICATIONS	CONDITIONS	
Material	Tantalum nitride	-	
Resistance Range	1.0 Ω to 1 MΩ	-	
TCR: Absolute	± 25 ppm/°C to ± 100 ppm/°C	-55 °C to +175 °C	
Tolerance: Absolute	± 0.1 % to ± 1.0 %	+25 °C	
Stability: Absolute	± 0.2 %	1000 h at 155 °C and 100 % rated power	
Stability: Ratio	Not applicable	-	
Voltage Coefficient	Less than 0.1 ppm/V	-	
Working Voltage	75 V	-	
Operating Temperature Range	-55 °C to +250 °C	-	
Storage Temperature Range (1)	-55 °C to +250 °C	-	
Noise	< -30 dB	-	
Shelf Life Stability: Absolute	100 ppm	1 year at 25 °C	

### Note

<sup>(1)</sup> Storage temperature rating is for device only

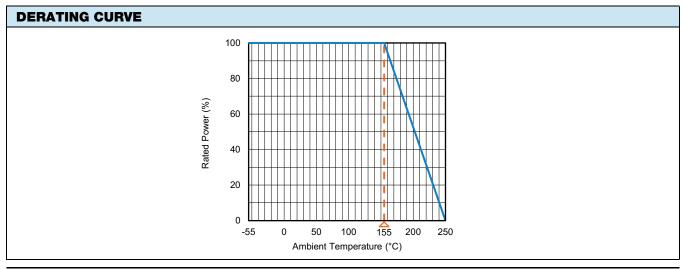
COMPONENT RATINGS			
CASE SIZE	POWER RATING (mW)	WORKING VOLTAGE (V)	RESISTANCE RANGE (Ω)
0402	50	75	1.0 to 51K
0603	150	75	1.0 to 120K
0805	200	100	1.0 to 301K
1206	400	200	1.0 to 1M

# Vishay Dale Thin Film



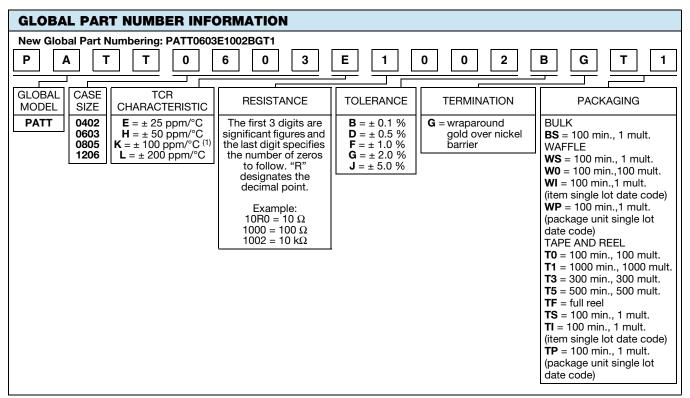
ENVIRONMENTAL TESTS			
ENVIRONMENTAL TEST	CONDITIONS	TYPICAL VISHAY PERFORMANCE	
High temperature storage	MIL-STD-202 method 108, 1000 h at 125 °C	± 0.05 %	
Temperature cycling	JESD22 method JA-104, 1000 cycles, -55 °C to +155 °C	± 0.115 %	
Moisture resistance	MIL-STD-202 method 106	± 0.017 %	
Biased humidity	MIL-STD-202 method 103, 1000 h at 85 °C, 85 % RH, 10 % rated power	± 0.133 %	
Life	MIL-STD-202 method 108, 1000 h at 155 °C	± 0.20 % at 100 % rated power and 155 °C. Effective film temperature is 200 °C.	
Mechanical shock	MIL-STD-202 method 213, condition C	± 0.008 %	
Vibration	MIL-STD-202 method 204, 10 Hz to 2 kHz	± 0.008 %	
Resistance to soldering heat	MIL-STD-202 method 210, condition B	± 0.09 %	
Electrostatic discharge	AEC-Q200-002, human body (< 1 k $\Omega$ : 1 kV; > 1 k $\Omega$ : 2 kV)	± 0.10 % at 2 kV	
Solderability	MIL-STD-883 method 2003 para 2.3.1 and J-STD-002	Pass	
Die shear	MIL-PRF-55342	Pass	
Flame retardance	AEC-Q200-001 para 4.0	Pass	

MECHANICAL SPECIFICATIONS		
Resistive element	Tantalum nitride	
Substrate material	Alumina	
Terminations	Gold (10 μin. min.) over nickel (50 μin. min.)	





## Vishay Dale Thin Film



#### Note

(1) Characteristic TCR - ( $R < 10 \Omega$ )

RESISTANCE	TCR (ppm/°C)	TOLERANCE (%)
10 Ω to 1 MΩ	25, 50, 100, 200	0.1, 0.5, 1, 2, 5
5 Ω to 10 Ω <sup>(1)</sup>	100, 200	1, 2, 5
1.0 Ω to 5 Ω <sup>(1)</sup>	200	1, 2, 5

### Note

(1) Resistance values from 1.0  $\Omega$  to 10  $\Omega$  are undergoing PPAP qualification; results are expected to be similar to PPAP qualified 10  $\Omega$  to 120 k $\Omega$ 



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