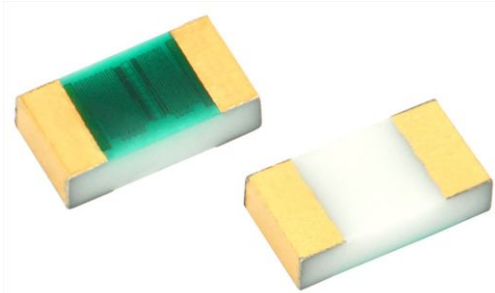


Precision Automotive High Temperature (155 °C at full rated power) Thin Film Chip Resistor, AEC-Q200 Qualified



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

CONSTRUCTION



FEATURES

- Resistance range: 2.75 Ω to 120 k Ω
- AEC-Q200 qualified, table 7F
- AEC-Q200 qualified, ESD rated class 1C (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)
- Sulfur resistant (per ASTM B809-95 humid vapor test)
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

TYPICAL PERFORMANCE

	ABSOLUTE
TCR	25
TOL.	0.1

STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
Material	Tantalum nitride	-
Resistance Range	2.75 Ω to 120 k Ω	-
TCR: Absolute	± 25 ppm/ $^{\circ}$ C to ± 100 ppm/ $^{\circ}$ C	-55 $^{\circ}$ C to +175 $^{\circ}$ C
Tolerance: Absolute	± 0.1 % to ± 1.0 %	+25 $^{\circ}$ C
Stability: Absolute	± 0.05 %	0.2 % at 1000 h at 155 $^{\circ}$ 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 $^{\circ}$ C to +250 $^{\circ}$ C	-
Storage Temperature Range ⁽¹⁾	-55 $^{\circ}$ C to +250 $^{\circ}$ C	-
Noise	< -30 dB	-
Shelf Life Stability: Absolute	100 ppm	1 year at 25 $^{\circ}$ C

Note

⁽¹⁾ Storage temperature rating is for device only.

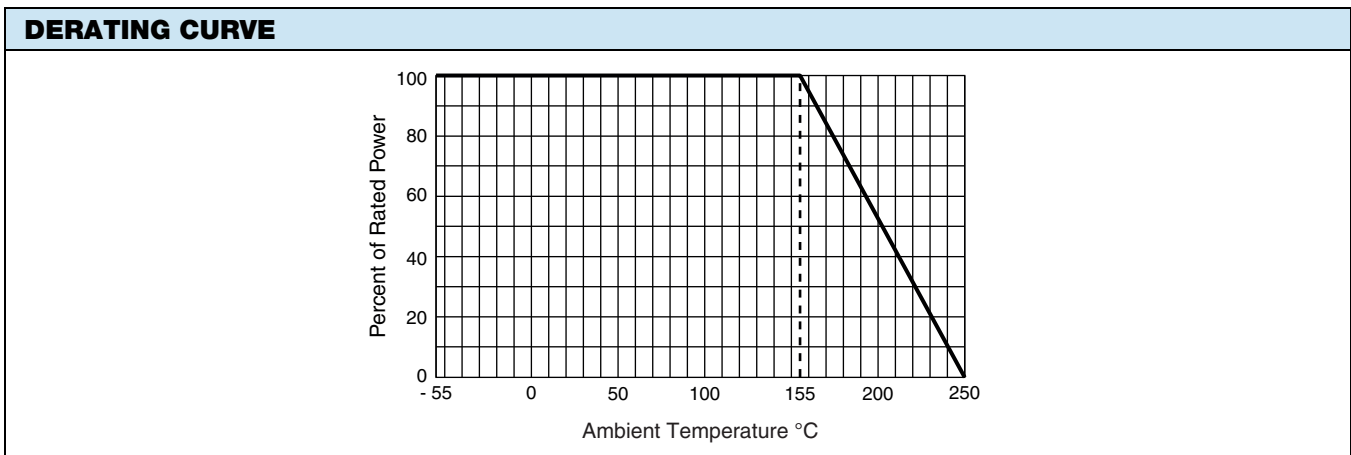
COMPONENT RATINGS

CASE SIZE	POWER RATING (mW)	WORKING VOLTAGE (V)	RESISTANCE RANGE (Ω)
0603	150	75	2.75 to 120K

DIMENSIONS in inches					
CASE SIZE	L	W	T	D	E
0603	0.064 ± 0.006	0.032 ± 0.005	0.015 ± 0.003	0.012 ± 0.005	0.015 ± 0.005

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 + 125 °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 at 2 kV, human body	± 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, 0.5 kg for 30 s	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.)





GLOBAL PART NUMBER INFORMATION																
New Global Part Numbering: PATT0603E1002BG1																
P	A	T	T	0	6	0	3	E	1	0	0	2	B	G	T	1
GLOBAL MODEL	CASE SIZE	TCR CHARACTERISTIC		RESISTANCE				TOLERANCE		TERMINATION		PACKAGING				
PATT	0603	E = ± 25 ppm/°C H = ± 50 ppm/°C K = ± 100 ppm/°C ⁽¹⁾ L = ± 200 ppm/°C		The first 3 digits are significant figures and the last digit specifies the number of zeros to follow. "R" designates the decimal point. Example: 10R0 = 10 Ω 1000 = 100 Ω 1002 = 10 kΩ				B = ± 0.1 % D = ± 0.5 % F = ± 1.0 % G = ± 2.0 % J = ± 5.0 %		G = Wraparound gold over nickel barrier		TAPE AND REEL T1 = 1000 min., 1000 mult ⁽²⁾ TF = Full reel TS = 100 min., 1 mult				

Notes

- (1) Characteristic TCR - (R < 10 Ω)
- (2) Preferred packaging code

RESISTANCE	TCR (ppm/°C)	TOLERANCE (%)
10 Ω to 120 kΩ	25, 50, 100, 200	0.1, 0.5, 1, 2, 5
5 Ω to 10 Ω ⁽²⁾	100, 200	1, 2, 5
2.75 Ω to 5 Ω ⁽²⁾	200	1, 2, 5

Note

- (3) Resistance values from 2.75 Ω to 10 Ω are undergoing PPAP qualification; results are expected to be similar to PPAP qualified 10 Ω to 120 kΩ.



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