

Resistors

9000

0.1 ohm/sq to 20G ohm/sq Resistor Paste

Description:

Series 9000 Resistor System provides excellent stability, low firing sensitivity and low TCR's. The 9000 Series is designed to be fired in air at an optimum temperature of 850°C. All ranges exhibit excellent compatibility with various conductor and dielectric systems.

● **Key Benefits:**

- TCR's of 50 ppm 10Ω through 1 MΩ
- Blendable System
- Excellent post laser trim stability
- Minimal sensitivity to processing variations and resistor geometries
- Extremely tight as-fired resistance distribution

● **Typical Properties:**

9000 Series ¹ :	9000.1	9001	9011	9014	9114	9121	9131	9135
Viscosity, Kcps @ 25°C Brookfield HBT, Spindle SC4-14, 10rpm	150-250	150-250	150-250	150-250	150-250	150-250	150-250	150-250
Resistivity ² (ohms/sq.):	0.1	1	10	40	40	100	1K	5K
Tolerance %	±20	±20	±10	±10	±10	±10	±10	±10
TCR ² (ppm/°C):	250	150	50	50	50	50	50	50
Short term overload voltage ³ (V/mm):	0.39	1.8	7	13.5	14	27	70	200
Standard working voltage ⁴ (V/mm):	0.15	0.7	2.8	5.4	5.6	10.8	28	80
Quan tech noise ⁵ (db):	---	-27	-29	-22	-31	-29	-18	-13
ESD ⁶ (2000V/mm):	---	---	0.9%	0.9%	0.10%	0.10%	0.2%	0.50%
Blendable Series	A	A	A	A	B	B	B	B

TEST CONDITIONS

1. Resistor properties based on laboratory tests using recommended processing conditions; termination- 3504 Palladium Silver Conductor pre-fired at 850°C; substrate-96% alumina; printing-280 mesh stainless screen 12µm emulsion thickness to a dried thickness of 20-22µm; firing-30 minute cycle to peak temperature of 850°C for 10 minutes.
2. Shipping specifications: Resistor geometry 5mm x 1mm for 9000.1 and 9001; 1mm x 1mm for remaining values. Temperature coefficient of resistance -55°C to +25°C and +25°C to +125°C.
3. Short Term overload voltage. Voltage required (5 second duration) to induce a resistance change to 0.1% in a 1mm x 1mm resistor at 25°C.
4. Standard working voltage = 0.4 x short term overload voltage.
5. Resistor geometry 5mm x 1mm.
6. Electrostatic Discharge. Resistance change after two 2000 volt pulses on a 1mm x 1mm resistor.

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● **Typical Properties Continued:**

9000 Series ¹ :	9141	9151	9161	9171	9181	9191	91920
Viscosity, Kcps @ 25°C Brookfield HBT, Spindle SC4-14, 10rpm	150-250	150-250	150-250	150-250	150-250	150-250	150-250
Resistivity ² (ohms/sq.):	10K	100K	1M	10M	100M	1G	20G
Tolerance %	±10	±10	±10	±10	±20	±20	±20
TCR ² (ppm/°C):	50	50	50	100	100	---	---
Short term overload voltage ³ (V/mm):	200	520	1000	1000	1600	---	---
Standard working voltage ⁴ (V/mm):	80	208	400	400	640	---	---
Quan tech noise ⁵ (db):	-13	-6	-1	---	---	---	---
ESD ⁶ (2000V/mm):	0.5%	0.2%	0.10%	0.10%	---	---	---
Blendable Series	B	B	B	B	B	B	B

TEST CONDITIONS

1. Resistor properties based on laboratory tests using recommended processing conditions; termination- 3504 Palladium Silver Conductor prefired at 850°C; substrate-96% alumina; printing-280 mesh stainless screen 12µm emulsion thickness to a dried thickness of 20-22µm; firing-30 minute cycle to peak temperature of 850°C for 10 minutes.
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4. Standard working voltage = 0.4 x short term overload voltage.
5. Resistor geometry 5mm x 1mm.
6. Electrostatic Discharge. Resistance change after two 2000 volt pulses on a 1mm x 1mm resistor.

Thinner:

RV-372 (Terpineol)

Warranty:

Material guaranteed to meet specifications for 6 months from date of shipment.

Storage:

Store in a dry location at 5°C -25°C.

DO NOT REFRIGERATE.

Allow paste to come to room temperature prior to opening.

Spatulate well before using.

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The descriptions and engineering data shown here have been compiled by Heraeus using commonly-accepted procedures, in conjunction with modern testing equipment, and have been compiled as according to the latest factual knowledge in our possession. The information was up-to date on the date this document was printed (latest versions can always be supplied upon request). Although the data is considered accurate, we cannot guarantee accuracy, the results obtained from its use, or any patent infringement resulting from its use (unless this is contractually and explicitly agreed in writing, in advance). The data is supplied on the condition that the user shall conduct tests to determine materials suitability for a particular application.

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