



ESL ELECTROSCIENCE

CERAMIC TAPES &
THICK-FILM MATERIALS

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CERMET RESISTOR SYSTEM

3900-J SERIES

Cadmium-Free Resistor Material

The 3900-J Resistor Series are ruthenium based resistor pastes designed for use in thick film hybrid microelectronic circuits and discrete components. They combine high performance, low cost, with ease of processing.

PASTE DATA

RHEOLOGY:	Thixotropic screen printable paste
VISCOSITY: (Brookfield RVT, ABZ spindle, 10 RPM, 25.5°C±0.5°C)	225±25 Pa·s
SHELF LIFE:	6 months

PROCESSING

SCREEN MESH/EMULSION:	200/12.5 µm
LEVELING TIME: (25°C)	5-10 minutes
DRYING TIME: (125°C)	10-15 minutes
FIRING TEMPERATURE:	850°C
TIME AT PEAK:	10-12 minutes
TOTAL CYCLE:	45 minutes
TERMINATIONS:	9635-B
THINNER:	ESL 401
SUBSTRATE OF CALIBRATION:	96% alumina

ESL Europe (KOP) 3900-J 0206-A

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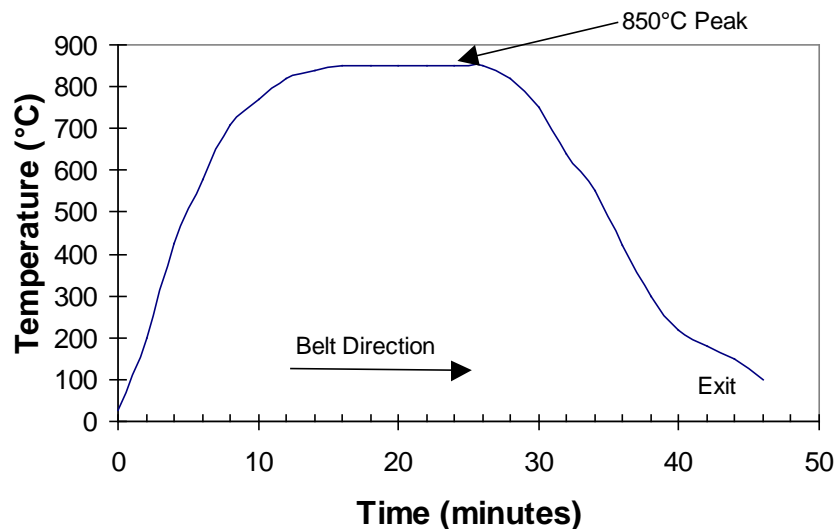
See Caution and Disclaimer on other side.

3900-J RESISTOR SERIES – TYPICAL PROPERTIES

PROPERTIES	3910-J	3911-J	3912-J
Viscosity (Pa·s)	225±25		
Resistivity ($\Omega/\text{sq.}$)	1	10	100
Tolerance(%)	±30%	±10%	±10%
Coefficient of Variation (%)	≤8	≤8	≤8
Dried Thickness	22.5±2.5 μm		
Average TCR (ppm/°C)	0±100	0±100	0±50
CRV, % (Max)	±1.0%	±1.0%	±1.0%
Wear, % (Max)	±1.0%	±1.0%	±1.0%

- a. CRV per ESL standard test procedure TM3-18. Resistor size = 1.25mm square.
b. Wear per ESL standard test procedure TM3-18. Resistor size = 2mm x 20mm.

Typical 850°C Firing Profile



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CAUTION: Proper industrial safety precautions should be exercised in using these products. Use with adequate ventilation. Avoid prolonged contact with skin or inhalation of any vapours emitted during use or heating of these compositions. The use of safety eye goggles, gloves or hand protection creams is recommended. Wash hands or skin thoroughly with soap and water after using these products. Do not eat or smoke in areas where these materials are used. Refer to appropriate MSDS sheet.

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