ESL ELECTROSCIENCE
CERAMIC TAPES & THICK-FILM MATERIALS
416 EAST CHURCH ROAD
KING OF PRUSSIA, PA 19406-2625, U.S.A
T: 610-272-8000
F: 610-272-6759
www.electroscience.com

CERMET RESISTOR 29XXX Series

HOS Heaters on Steel® • COS Circuits on Steel® • TFOS Thick Film on Steel®

Cadmium, Lead and Nickel-free*

ESL 29XXX Series are low value resistors designed for use as heating elements on stainless steel substrates in combination with ESL's insulating dielectrics. They are available in a range of resistivities and temperature coefficients of resistance (TCR) - see Table 1. Intermediate resistivities may be obtained by blending the two members of a TCR group.

PASTE DATA

Rheology:	Thixotropic, screen-printable paste
Viscosity: (Brookfield RVT, 10 rpm, ABZ spindle, 25.5 ± 0.5 °C)	225 ± 25 Pa.s
Shelf Life (20 - 25 °C):	6 months

PROCESSING

Screen Mesh, Emulsion:		250 S/S, 5 µm
Levelling Time (at 20°C):		10 - 15 min
Drying Time (at 125°C):		15 min
Firing Temperature Range:		850°C in air
	Optimum:	850°C
	Time at peak:	10 min
Total Firing Cycle:		1 hour
Substrate for Calibration:		ESL 4924 on 96% alumina
Thinner:		ESL 401

ESL Affiliates
ESL China • Room#2712, Far East International Plaza, No.317 Xianxia Road, Changning District, Shanghai, China 200051• Tel: +86-21-6237-0336 • Fax: +86-21-6237-0338 • eslchina@eslshanghai.net
ESL Europe • 8 Commercial Road • Reading, Berkshire, England RG2 0QZ • Tel: +44-118-918-2400 • Fax: +44-118-986-7331 • sales@esleurope.co.uk
ESL in Korea • AMT • South Korea • Tel: +82-31-466-0651 • Fax: +82-31-466-0658 • yumikim@esl-amt.co.kr
ESL-Nippon • Sukegawa Bldg 6th floor • 1-3-4 Yanagibashi • Taito-ku • Tokyo, Japan 111-0052 • Tel: +81-3-3864-8521 • Fax: +81-3-3864-9270 • sales@esl-nippon.co.jp
ESL Taiwan • 14F, No. 168, Dunhua N. Road • Sungshan District • Taipei 105, Taiwan • Tel: +886-975-553-612 • dshih@esl-taipei.com
See Caution and Disclaimer on other side.

TYPICAL PROPERTIES

Dried Thickness:
(427 mm x 2.4 mm resistor track with 9695 terminations over 4924 dielectric) 21 ± 1 µm

Approximate Coverage: 80 cm^2 / g

Resistivity & TCR:

Table 1: Resistor Properties

Product Number	29106	29206	29109	29115	29215	29130	29230	29515	291003
Resistivity (mΩ/sq) ± 10%	100	200	100	100	200	100	200	500	1000
Average TCR (ppm/°C) ± 50	600	600	900	1500	1500	3320	3320	1500	350