Ultra High Precision Z1-Foil Resistor for Metrology and Laboratory

with TCR of 0.5 ppm/°C Maximum, Tolerance to 0.005% (50 ppm) and Load Life Stability of 0.005% (50 ppm), +70°C for 10 000 h

FEATURES

- Temperature coefficient of resistance (TCR): ±0.5 ppm/°C maximum (+25°C to +125°C)
- Power coefficient of resistance "ΔR due to self heating": ±5 ppm at rated power
- Rated power: 0.6 W at 70°C
  0.3 W at 125°C
- Resistance tolerance: to ±0.005% (50 ppm)
- Load life stability: to ±0.005% (50 ppm) at 70°C, 10 000 h at 0.15 W
- Resistance range: 10 Ω to 100 kΩ
- Electrostatic discharge (ESD) up to 25 000 V

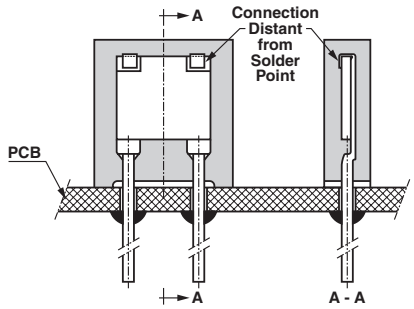
Pb-free Available

RoHS* COMPLIANT

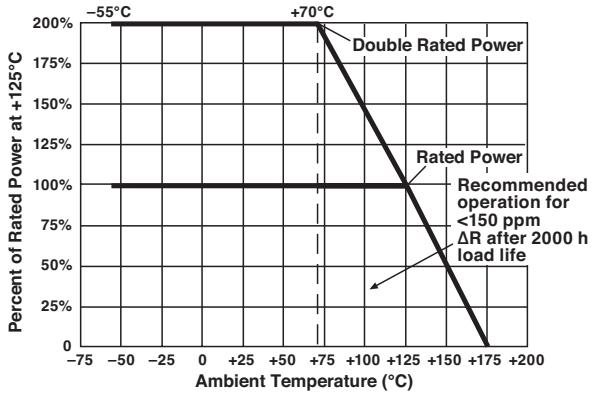
Tolerance and TCR vs. Resistance Value[1]

VALUE	STANDARD TOLERANCE (%)	TYP. TCR AND MAX. SPREAD (ppm/°C) (+25°C to +125°C)	TYP. TCR AND MAX. SPREAD (ppm/°C) (–55°C to +25°C)
100Ω to 100 kΩ	±0.005%	±0.2±0.3	±0.2±1.8
80Ω to <100Ω	±0.005%	±0.2±0.4	±0.2±2.0
50Ω to <80Ω	±0.01%	±0.2±0.6	±0.2±2.3
25Ω to <50Ω	±0.01%	±0.2±0.8	±0.2±2.6
10Ω to <25Ω	±0.02%	±0.2±1.0	±0.2±2.8

Z203 On a PC Board[1]



Power Derating Curve



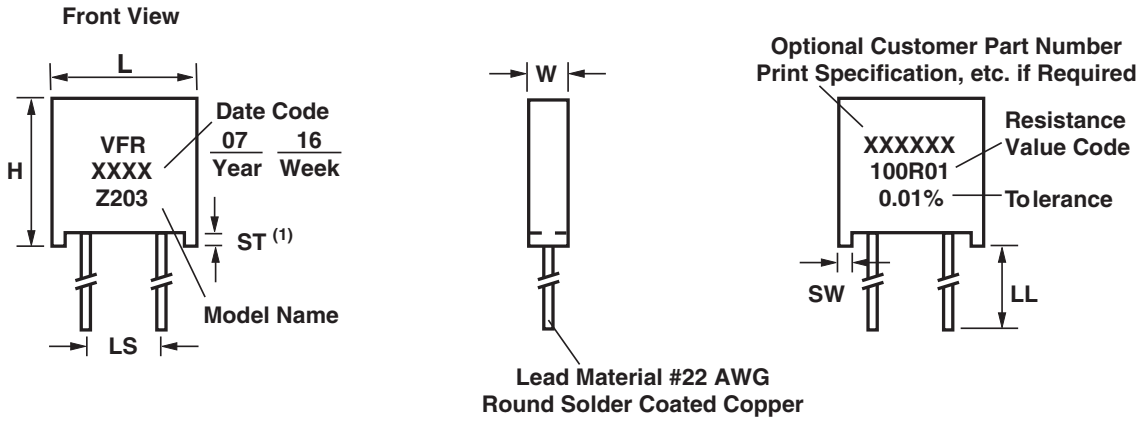
Note

(1) The leads on the Z203 connect to the Bulk Metal® Foil resistive element at the top of the package using solder-free, all welded construction. This high-reliability enhancement protects the terminations from initial board-assembly and subsequent board flexation stresses. The welded construction completely eliminates the possibility of latent failures due to solder reflow and solder-starved internal connections.

Z203 Specifications		
Load Life Stability	**TYPICAL**	**MAXIMUM**
0.3 W at +125°C/0.6 W at +70°C 2000 h 10 000 h	 ±0.005% (50 ppm) ±0.015% (150 ppm)	 ±0.015% (150 ppm) ±0.05% (500 ppm)
0.15 W at +70°C 2000 h 10 000 h	 ±0.002% (20 ppm) ±0.005% (50 ppm)	 ±0.01% (100 ppm) ±0.015% (150 ppm)

Environmental Performance Comparison		
	Z203	
	TYPICAL ΔR	**MAXIMUM ΔR**
Test Group I Thermal Shock, 5 x (–65°C to +150°C) Short Time Overload, 5 s (6.25 × rated power)	 ±0.002% (20 ppm) ±0.003% (30 ppm)	 ±0.01% (100 ppm) ±0.01% (100 ppm)
Test Group II Resistance Temperature Characteristic Low Temperature Storage (25 h at –65°C) Low Temperature Operation (45 min, rated power at –65°C) Terminal Strength	see table 1±0.002% (20 ppm) ±0.002% (20 ppm) ±0.002% (20 ppm)	see table 1±0.01% (100 ppm) ±0.01% (100 ppm) ±0.01% (100 ppm)
Test Group III DWV Resistance to Solder Heat, 20 s at +260°C Moisture Resistance	 ±0.002% (20 ppm) ±0.005% (50 ppm) ±0.01% (100 ppm)	 ±0.01% (100 ppm) ±0.01% (100 ppm) ±0.05% (500 ppm)
Test Group IV Shock Vibration	 ±0.002% (20 ppm) ±0.002% (20 ppm)	 ±0.01% (100 ppm) ±0.01% (100 ppm)
Test Group V Life Test at 0.3 W/+125°C 2000 h 10 000 h	 ±0.005% (50 ppm) ±0.015% (150 ppm)	 ±0.015% (150 ppm) ±0.05% (500 ppm)
Test Group Va Life Test at 0.6 W (2 × Rated Power)/+70°C, 2000 h	±0.005% (50 ppm)	±0.015% (150 ppm)
Test Group VI High Temperature Exposure, 2000 h at +150°C	±0.05% (500 ppm)	±0.1% (1000 ppm)
Test Group VII Voltage Coefficient	<0.00001%/V	<0.00001%/V

Standard Imprinting and Dimensions



		LS	W	L	H	St	SW	LL
Z203	Inches	0.150±0.005	0.105±0.010 2.67±0.25	0.300±0.010 7.62±0.25	0.326±0.010 8.28±0.25	0.010 min 0.254 min	0.035±0.01 1.02±0.13	1.000±0.125 25.4±3.18
	mm	3.81±0.13						
Z203L	Inches	0.200±0.005						
	mm	5.08±0.13						

Note

(1) The standoffs shall be so located as to give a lead clearance of 0.010 in minimum between the resistor body and the printed circuit board when the standoffs are seated on the printed circuit board. This is to allow for proper cleaning of flux and other contaminants from the unit after all soldering processes7351A

Global Part Number Information[1]

NEW GLOBAL PART NUMBER: Y1445250R000V9L (preferred part number format)

DENOTES PRECISION					VALUE							CHARACTERISTICS		
Y					R = Ω K = kΩ							0 = standard 9 = lead (Pb)-free 1 to 999 = custom		
Y	1	4	4	5	2	5	0	R	0	0	0	V	9	L
PRODUCT CODE					RESISTANCE TOLERANCE								PACKAGING	
1445 = Z203 1446 = Z203L					V = ±0.005% T = ±0.01% Q = ±0.02% A = ±0.05% B = ±0.1% C = ±0.25% D = ±0.5% F = ±1.0%								L = bulk	

FOR EXAMPLE: ABOVE GLOBAL ORDER Y1445 250R000 V 9 L:

TYPE: Z203
VALUE: 250.0 Ω
ABSOLUTE TOLERANCE: ±0.005%
TERMINATION: lead (Pb)-free
PACKAGING: bulk

HISTORICAL PART NUMBER: Z203T 250R00 V B (will continue to be used)

Z203	T	250R00	V	B
MODEL	TERMINATION	OHMIC VALUE	ABS. TOLERANCE	PACKAGING
Z203 Z203L	T = lead (Pb)-free None = tin/lead	250.0 Ω	V = ±0.005% T = ±0.01% Q = ±0.02% A = ±0.05% B = ±0.1% C = ±0.25% D = ±0.5% F = ±1.0%	B = bulk

Note
[1] For non-standard requests, please contact application engineering.