

■ **General Purpose Chip Resistors (1Ω~10MΩ)**

■ **Feature**

1. High reliability and stability
2. Reduced size of final equipment
3. Lower assembly costs
4. Higher component and equipment reliability
5. RoHs compliant and lead free products

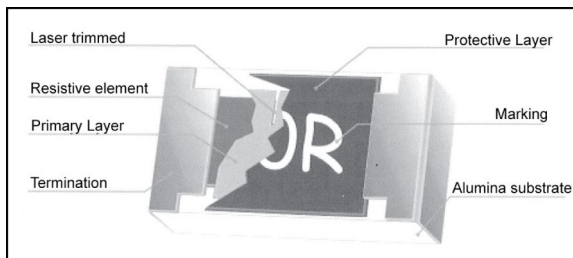
■ **Application**

1. Consumer electrical equipment, PDA Digital Camcorder, ...
2. EDP, Computer application
3. Mobile phone, Telecom
4. Power supply, Battery charger, DC-DC power converter
5. Digital meter
6. Automotives

■ **Description**

The resistors are constructed in a high grade ceramic body (aluminum oxide). Internal metal electrodes are added at each end and connected by a resistive paste that is applied to the top surface of the substrate. The composition of the paste is adjusted to give the approximate resistance required and the value is trimmed by laser cutting of this resistive layer.

The resistive layer is covered with a protective coat. Finally, the two external end terminations are added. For ease of soldering the outer layer of these end terminations is Tin solder (Pb free) alloy.



■ **Quick Reference Data**

Series No.	WR25X	WR20X	WR18X	WR10X	WR12X	WR08X	WR06X	WR04X	WR02X	WR01X
Size code	2512 (6432)	2010 (5025)	1218(3248)	1210 (3225)	1206 (3216)	0805(2012)	0603(1608)	0402(1005)	0201(0603)	01005(0402)
Resistance Range	±5% (E24): 1Ω~10MΩ; Jumper									
±5% Tolerance (E24)	±1% (E2+E964): 1Ω~10MΩ									
±1% Tolerance (E24+E96)										
TCR (ppm/°C)	≤ ±200		≤ ±200		≤ ±100			≤ ±200		≤ ±200
R>1MΩ	≤ ±100		≤ ±100		≤ ±100			≤ ±300		≤ ±300
1MΩ ≥ R > 10Ω	≤ ±200		≤ ±200		-200 ~ +400					
R ≤ 10Ω										
Max. dissipation @ Tamb=70°C	1.0 W	3/4 W	1.0 W	1/3 W	1/4 W	1/8 W	1/10 W	1/16 W	1/20 W	1/32 W
Max. Operation Voltage (DC or RMS)	250V	200V	200V	200V	200V	150V	75V	50V	25V	20V
Operating Temperature	-55 ~ +155°C								-55 ~ +125°C	
Basic Specification	JIS C 5201-1 / IEC 60115-1									

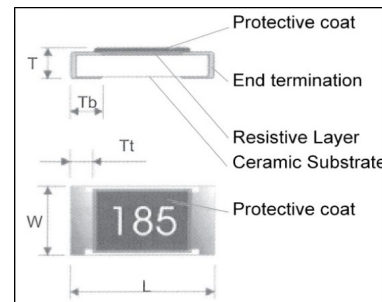
Note:

1. This is the maximum voltage that may be continuously supplied to the resistor element, see "IEC publication 60115-8".
2. Max. Operation Voltage: So called RCWW (Rated Continuous Working Voltage) is determined by $RCWV = \sqrt{\text{Rated Power} \times \text{Resistance Value}}$ or Max. RCWV listed above, whichever is lower.
3. Detailed TCR please refer to specific specification.

■ **Quick Reference Data**

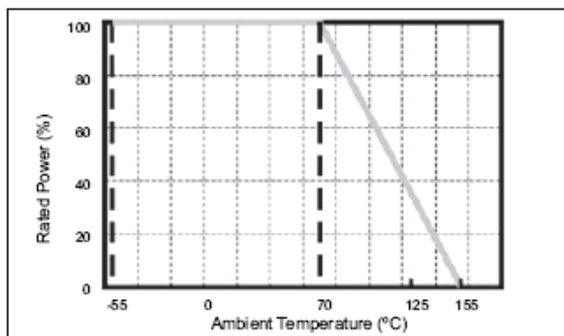
Unit: mm

Size	2512 (6432)	2010 (5025)	1218 (3248)	1210 (3225)	1206 (3216)	0805 (2012)	0603 (1608)	0402 (1005)	0201 (0603)	01005 (0402)
L	6.40±0.20	5.00±0.20	3.05±0.15	3.10±0.10	3.10±0.10	2.00±0.10	1.60±0.10	1.00±0.05	0.60±0.03	0.40±0.02
W	3.20±0.20	2.50±0.20	4.60±0.20	2.60±0.10	1.60±0.10	1.25±0.10	0.80±0.10	0.50±0.05	0.30±0.03	0.20±0.02
T	0.60±0.10	0.55±0.10	0.55±0.10	0.55±0.10	0.60±0.15	0.50±0.15	0.45±0.15	0.35±0.05	0.23±0.03	0.13±0.02
Tb	0.90±0.25	0.60±0.25	0.50±0.25	0.50±0.20	0.45±0.20	0.40±0.20	0.30±0.15	0.25±0.10	0.15±0.05	0.10±0.03
Tt	0.65±0.25	0.65±0.25	0.45±0.25	0.50±0.20	0.50±0.20	0.40±0.20	0.30±0.10	0.20±0.10	0.10±0.05	0.08±0.03

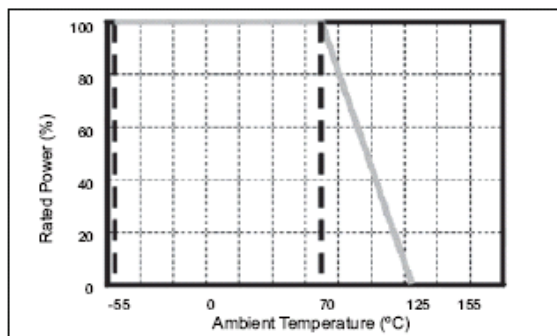


■ **Power Deration Curve**

For resistors operated in ambient temperature over 70°C, power rating should be derated in accordance with the following figures.



For Climatic category (IEC 60068) 55/155/56



For Climatic category (IEC 60068) 55/125/56 (for 0201 type)