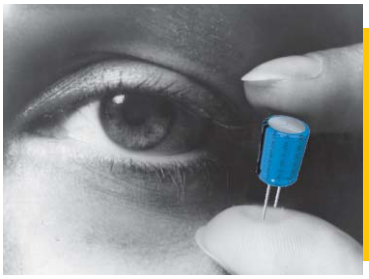

Thick Film Chip Resistor - High Resistance
Type HRR Series

Δ Features

- Small size and lightweight with size range per International standard.
- Highly stable in auto-replacement surface mounting application.
- Compatible with flow and reflow soldering.

Δ Applications

- Power Supply in small size
- Battery Charger
- Automotive Industry
- Medical Equipment
- Telecom Equipment
- Consumer Electronics

Δ Rating

Type	Size	Power Rating at 70 ˚C	Max. RCWV	Max. Overload Voltage	Resistance Tolerance (%)	Temperature Coefficient (TCR; ppm/˚C)	Resistance Range		Standard Resistance Values
							Min.	Max.	
	0603	1/10W	50V	100V	± 5%(J)	± 200	11MΩ	100MΩ	E-12
	0805	1/8W	150V	300V					
	1206	1/4W	200V	400V					

Δ How to Order

Part Number

example	HRR	0603	T	J	506	LF
	Type	Size	Packing	Tolerance	Resistance Value	
	Hrr	0603 0805 1206	T: Tape	J: ±5%	506 = 50x10^6 = 50M Ω	LF = Lead Free

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Thick Film Chip Resistor - High Resistance
Type HRR Series

Δ Features

ITEM	SPECIFICATION	TEST METHOD
DC Resistance	J ± 5%	IEC 60115-1 4.5 / JIS C 5202 5.1 Measure the resistance value.
Short time Overload	J :Δ R≤± 2%	IEC 60115-1 4.13 / JIS C 5202 5.5 2.5 X Rated voltage or Max. Overload Voltage for 5 sec. measure resistance after 30 minutes
Solderability	Over 95% of termination must be covered with solder	IEC 60115-1 4.17 / JIS C 5202 6.5 After immersing flux, dip in the 245 ± 2 ˚C molten solder bath for 3 ± 0.5 sec.
Resistance to Solder Heat	J :Δ R≤± 2%	IEC 60115-1 4.18 / JIS C 5202 6.4 With 260 ± 5˚Cfor 10 ± 1 sec.
Temperature Coefficient of Resistance (TCR)	J : ± 200 ppm/ ˚C	IEC 60115-1 4.8.4.2 / JIS C 5202 5.2 Test temperature : 25 ˚C(T1)→ -55˚C(T2) 25˚C(T1)→ 125˚C(T2) $TCR\ (ppm/^{\circ}C) = \frac{R2-R1}{R1} \times \frac{1}{T2-T1} \times 10^{6}$ T1: 25˚C T2: Test temperature R1: Resistance at reference temperature (T1) R2: Resistance at test temperature (T2)
Load Life Humidity	J :Δ R≤± 5%	IEC 60115-1 4.24.2 / JIS C 5202 7.9 Maintain the temperature of the resistor at 40 ± 2 ˚C and 90~95% R.H. with the rated voltage applied.Cycle ON for 1.5 hours and OFF for 0.5 hour for 1000+48/-0 hours. After 1~4 hour, measure the resistance value.
Load Life	J :Δ R≤± 5%	IEC 60115-1 4.25.1 / JIS C 5202 7.10 Permanent resistance change after 1000+48/-0 hours (1.5 hours ON , 0.5 hour OFF) at RCWV or Max.Keep the resistor at 70 ± 2˚Cambient
Voltage Coefficient of Resistance (VCR)	≤± 300 ppm/Volt	JIS C 5202 5.3.1 Measuring Voltage 10V/100V
Temperature Cycle	J :Δ R≤± 5%	IEC 60115-1 4.19 / JIS C 5202 7.4 Repeat 5 cycles as follows -55˚C(30 min.) ~ + 25 ˚C(2~3 min.) +125˚C(30 min.) ~ + 25 ˚C(2~3 min.)
Insulation Resistance	Between termination and coating must be over 1000M Ω	IEC 60115-1 4.6.1.1 / JIS C 5202 5.6 Test voltage: 100 ± 15V
Bending Strength	J :Δ R≤± 2%	IEC 60115-1 4.33 Resistance change after bended on the 90mm PCB. Bend: 3mm for 0603 ,0805 ,2mm for 1206

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