

## MELF Resistors

### Type SMA Series

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#### Key Features

- Advanced thin film technology
- Excellent overall stability: Class 0.25
- Force fitted steel caps, tin plated on nickel barrier
- Pure Sn termination on Ni barrier layer
- Compatible with lead (Pb)-free and lead containing soldering processes
- Lead (Pb)- free and RoHS compliant

#### Applications

- Military
- Automotive
- Telecommunication
- Medical Equipment
- Avionics
- Space

#### Characteristics - Electrical Standard Electrical Specifications

Type	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Resistance Tolerance (±%)	Resistance Range	TCR (±PPM/°C)
0204	0.25W	-55°C ~ +155°C	200V	1%, 5%	0.1Ω-10MΩ	50, 100
				0.5%, 1%, 5%	1.0Ω-1MΩ	50
				0.1%, 0.25%, 0.5%, 1%	50Ω-200KΩ	10, 15, 25, 50
0207	0.50W	-55°C ~ +155°C	300V	1%, 5%	0.1Ω-10MΩ	50, 100
				0.5%, 1%, 5%	1.0Ω-1MΩ	50
				0.1%, 0.25%, 0.5%, 1%	50Ω-200KΩ	10, 15, 25, 50
				0.1%, 0.25%, 0.5%, 1%	50Ω-300KΩ	15, 25, 50

#### High Power Rating Electrical Specifications

Type	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Resistance Tolerance (±%)	Resistance Range	TCR (±PPM/°C)
0204	0.50W	-55°C ~ +155°C	300V	1%, 5%	0.1Ω-10MΩ	50, 100
				0.5%, 1%, 5%	1.0Ω-1MΩ	50
				0.1%, 0.25%, 0.5%, 1%	50Ω-200KΩ	10, 15, 25, 50
0207	1.00W	-55°C ~ +155°C	500V	1%, 5%	0.1Ω-10MΩ	50, 100
				0.5%, 1%, 5%	1.0Ω-1MΩ	50
				0.1%, 0.25%, 0.5%, 1%	50Ω-200KΩ	10, 15, 25, 50
				0.1%, 0.25%, 0.5%, 1%	50Ω-300KΩ	15, 25, 50

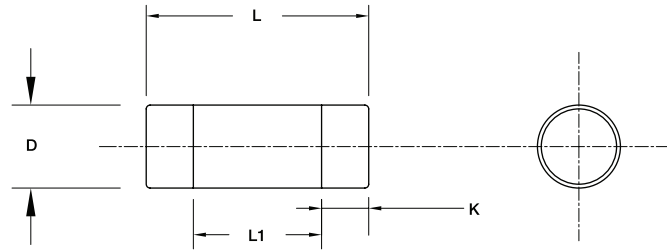
#### Characteristics - Environmental

Test Item	Requirements Permissible Change (ΔR)			Test Method	
	0.25%	0.5%	0.5%		
Stability for product types	SMA0204 SMA0207	50Ω - 220KΩ 50Ω - 1MΩ	10Ω - <50Ω 10Ω - <50Ω	>220KΩ >1MΩ	
Temperature Coefficient of Resistance	As Spec			MIL-STD-202F Method 304 +25/-55/+25/+125/+25°C	
Short Time Overload	ΔR ±0.1% No Visible Damage			JIS-C-5202-5.5 RCWV*2.5 or Max Overloading Voltage 5 seconds	
Thermal Shock	ΔR±0.1%	ΔR±0.25%	ΔR±0.1%	MIL-STD-202F Method 107G -55°C - 150°C, 100 cycles	
Load Life	ΔR±0.25%	ΔR±0.25%	ΔR±0.5%	MIL-STD-202F Method 108A RCWV, 70°C, 1.5 hours ON, 0.5 hours OFF, total 1000-1048 hours	
Humidity (Steady State)	ΔR±0.25%	ΔR±0.25%	ΔR±0.5%	MIL-STD-202F Method 103B 40°C, 90-95%RH, RCWV 1.5 hours ON, 0.5 hours OFF, total 1000-1048 hours	
Resistance to Dry Heat	ΔR±0.5%	ΔR±1.00%	ΔR±1%	JIS-C-5202-7.2 96 hours @ +155°C without load	
Low Temp Operation	ΔR±0.25%	ΔR±0.50%	ΔR±0.5%	JIS-C-5202-7.1 1 hour, -65°C, followed by 45 mins of RCWV	
Solderability	95% min coverage			MIL-STD-202F Method 208H 245°C±5%, 2±0.5 (sec)	
Resistance to Soldering Heat	ΔR±0.1%	ΔR±0.25%	ΔR±0.1%	MIL-STD-202F Method 210E 260°C±5%, 10±1 seconds	

\* Storage Temperature: 25±3°C; Humidity <80%RH

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### Dimensions



Codes	L	øD	K	L1 Min	Packaging (180mm/7")
<b>0204</b>	3.45±0.1	1.35±0.1	0.6±0.1	2.00	3000 Pcs
<b>0207</b>	5.90±0.1	2.20±0.1	1.0±0.1	3.40	2000 Pcs

### How to Order

SMA	0204	F	T	D	U	R100
Common Part	Dimensions	Resistance Tolerance	Packaging	TCR	Power Rating	Resistance Codes
SMA - MELF Resistor	0204 - 3.45x1.35mm 0207 - 5.9x2.2mm	Q - ±0.02% A - ±0.05% B - ±0.1% C - ±0.25% D - ±0.5% F - ±1% J - ±5%	T - Taping Reel B - Bulk	B - ±10ppm/°C N - ±15ppm/°C C - ±25ppm/°C D - ±50ppm/°C E - ±100ppm/°C	T - 1W U - 0.5W V - 0.25W	R100-0.1 ohm 0100-10 ohms 2201-2200 ohms (2K2) 1002-10000 ohms (10K) 4992-49900 ohms (49K) 1003-100000 ohms (100K) 1004-1000000 ohms (1M0)