



# SMCA-SERIES

## PRECISION MELF RESISTOR

### Automotive

PRECISION RESISTIVE PRODUCTS, INC.  
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- Thin Film Technology
- Wide Ohmic Range 0.1R – 10M
- Precision Tolerances  $\pm 0.1\%$  to  $\pm 5\%$
- Standard EIA Values E-24, E-96 & E-192
- Multi-Layer Conformal Coating
- Tin Plated Termination
- AEC-Q200 Compliance

- Standard Metric Sizes 0102, 0204 & 0207
- Applications: Medical & Industrial, Test and Measurement, Military, Automotive, Telecommunication
- Lead Free & RoHS Compliant
- TCR  $\pm 10$  to  $\pm 100$  ppm/ $^{\circ}\text{C}$
- Packaging is Tape & Reel  
 3000 pcs – SMC0102, SMC0204  
 2000 pcs – SMC0207

### Specifications

Style	Power Rating @ 70°C		Working Voltage (max.)	Resistance Range	Resistance Tolerance @ 25°C	T.C.R. PPM/ $^{\circ}\text{C}$
SMCA0102	.125W	W	150	40 $\Omega$ – 1M $\Omega$	1%, 5%	100
				8.2 $\Omega$ – 1M $\Omega$	0.5%, 1%, 5%	50
				49.9 $\Omega$ – 390K $\Omega$	1%	25
				49.9 $\Omega$ – 200K $\Omega$	0.5%	
				100 $\Omega$ – 82K $\Omega$	0.1%, 0.25%	
				100 $\Omega$ – 56K $\Omega$	0.1%, 0.25%, 0.5%, 1%	15
	.2W	P	200	40 $\Omega$ – 1M $\Omega$	1%, 5%	100
				8.2 $\Omega$ – 1M $\Omega$	0.5%, 1%, 5%	50
				49.9 $\Omega$ – 390K $\Omega$	1%	25
				49.9 $\Omega$ – 200K $\Omega$	0.5%	
				100 $\Omega$ – 82K $\Omega$	0.25%	
				.3W	O	
	Jumper 2A			0 $\Omega$ (<15m $\Omega$ )	–	–
SMCA0204	.25W	V	200V	0.1 $\Omega$ – 1M $\Omega$	1%, 5%	100
				0.2 $\Omega$ – 3.4M $\Omega$	1%, 5%	50
				1 $\Omega$ – 3.4M $\Omega$	0.5%	
				1 $\Omega$ – 1M $\Omega$	0.25%	
				10 $\Omega$ – 1M $\Omega$	0.1%	25
				4.02 $\Omega$ – 3.4M $\Omega$	1%, 5%	
				10 $\Omega$ – 3.4M $\Omega$	0.5%	
				10 $\Omega$ – 1M $\Omega$	0.1%, 0.25%	15
				10 $\Omega$ – 300K $\Omega$	0.1%, 0.25%, 0.5%, 1%, 5%	10
	.4W	G	200V	0.1 $\Omega$ – 1M $\Omega$	1%, 5%	100
				0.2 $\Omega$ – 3.4M $\Omega$	1%, 5%	50
				1 $\Omega$ – 3.4M $\Omega$	0.5%	
				1 $\Omega$ – 1M $\Omega$	0.25%	
				10 $\Omega$ – 1M $\Omega$	0.1%	25
				4.02 $\Omega$ – 3.4M $\Omega$	1%, 5%	
				10 $\Omega$ – 3.4M $\Omega$	0.5%	
				10 $\Omega$ – 1M $\Omega$	0.1%, 0.25%	15
				10 $\Omega$ – 300K $\Omega$	0.1%, 0.25%, 0.5%, 1%, 5%	–
	Jumper: 2A			0 $\Omega$ (<15m $\Omega$ )	–	–
SMCA0207	.5W	U	300V	49.9 $\Omega$ – 20K $\Omega$	0.1%, 0.25%, 0.5%, 1%, 5%	10
				0.1 $\Omega$ – 1M $\Omega$	1%, 5%	100
	.5W	U	300V	0.2 $\Omega$ – 3.4M $\Omega$	1%, 5%	50
				1 $\Omega$ – 3.4M $\Omega$	0.5%	
				1 $\Omega$ – 1M $\Omega$	0.25%	
				10 $\Omega$ – 1M $\Omega$	0.1%	
	1W	T	350V	4.02 $\Omega$ – 3.4M $\Omega$	1%, 5%	25
				10 $\Omega$ – 3.4M $\Omega$	0.5%	
				10 $\Omega$ – 1M $\Omega$	0.1%, 0.25%	
				10 $\Omega$ – 300K $\Omega$	0.1%, 0.25%, 0.5%, 1%, 5%	15
				Jumper: 4A		

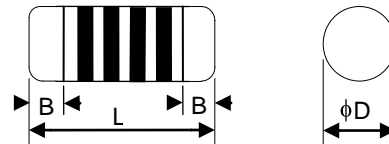
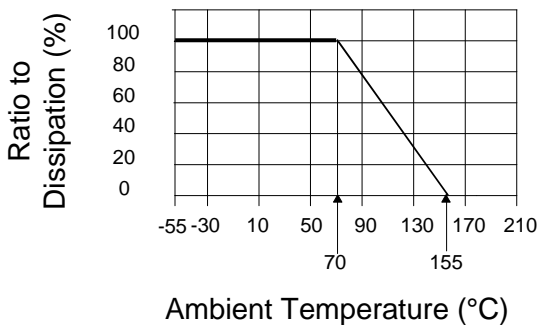
Operating Temperature Range  $-55^{\circ}\text{C}$  to  $+155^{\circ}\text{C}$

# Performance Specifications

Requirements	Performance	Test Method
Short Time Overload	10Ω-270KΩ: ±(0.1%+0.05Ω) <10Ω >270KΩ: ±(0.15%+0.05Ω) 0102: ±(0.15%+0.05Ω)	<b>JIS-C-5201-1 4.13</b> <b>IEC-6015-1 4.13</b> RCWV*2.5 or Max Overload Voltage, whichever is lower for 5sec.
Temperature Cycle	10Ω-270KΩ: ±(0.25%+0.05Ω) <10Ω >270KΩ: ±(0.5%+0.05Ω) 0102: ±(1%+0.05Ω)	<b>JESD22 Method JA-104</b> -55°C~125°C, 1000 cycles
Load Life	10Ω-270KΩ: ±(0.25%+0.05Ω) <10Ω >270KΩ: ±(0.5%+0.05Ω) 0102: ±(0.5%+0.05Ω)	<b>JIS-C-5201-1 4.25</b> <b>IEC-60115-1 4.25.1</b> <b>MIL-STD-202F Method 108A</b> RCWV, 70±2°C, 1.5 hours ON, 0.5 hours OFF, total 1000 hours
Humidity	10Ω-270KΩ: ±(0.5%+0.05Ω) <10Ω >270KΩ: ±(1%+0.05Ω) 0102: ±(2%+0.05Ω)	<b>MIL-STD-202F Method 103B</b> 1000 hrs 85°C/85%RH 10% of operating power
Resistance to Dry Heat	10Ω-270KΩ: ±(0.25%+0.05Ω) <10Ω >270KΩ: ±(1%+0.05Ω) 0102: ±(1%+0.05Ω)	<b>MIL-STD-202F Method 108</b> 1000 hours @ +155°C without load
Solderability	95% minimum coverage	<b>JIS-C-5201-1 4.17</b> <b>IEC-60115-1 4.17</b> <b>J-STD-002</b> 245°C ±5°C, 3 sec.
Resistance to Soldering Heat	10Ω-270KΩ: ±(0.1%+0.05Ω) <10Ω >270KΩ: ±(0.25%+0.05Ω) 0102: ±(0.25%+0.05Ω)	<b>MIL-STD-202F Method 210</b> 260°C ±5°C, 10 sec.
Board Flex	10Ω-270KΩ: ±(0.1%+0.05Ω) <10Ω >270KΩ: ±(0.5%+0.05Ω) 0102: ±(0.5%+0.05Ω)	<b>AEC-Q200-005</b> Bending once for 60 seconds with 2mm
Mechanical Shock	±(0.25%+0.05Ω)	<b>MIL-STD-202 Method 213</b> Wave Form: Tolerance for half sine shock pulse. Peak value 100g's. Normal duration (D) is 6
Vibration	±(0.5%+0.05Ω)	<b>MIL-STD-202 Method 204</b> 5 g's for 20 min., 12 cycles each of 3 orientations, 10-2000 Hz
ESD	±(0.5%+0.05Ω)	<b>AEC-Q200-002</b> Human body, 2KV
Terminal Strength	No broken	<b>AEC-Q200-006</b> Force of 1.8kg for 60 seconds.

## Derating Curve

For resistors operated in ambient above 70°C, power dissipation must be derated in accordance with curve in the below chart.



### Dimensions (mm)

Style	L	φ D	B (min)
SMCA0102	2.20 ±0.10	1.10 ±0.10	0.45 ±0.05
SMCA0204	3.50 ±0.20	1.40 ±0.15	0.8 ±0.1
SMCA0207	5.90 ±0.20	2.20 ±0.20	1.3 ±0.1



DEDICATION TO EXCELLENCE

## How to Order

Sample Part Number

**SMCA0204 TC25 10K 1% U**

Power Rating  
Resistance Tolerance  
Resistance Value  
Temperature Coefficient  
Style