

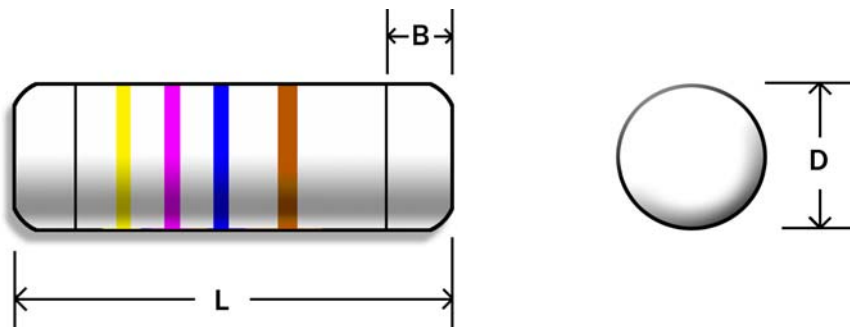
# SM- Stabilized Metal Film MELF Resistor

## Specifications Per

- IEC 60115-1 60115-2
- CECC 40101
- DIN 44061

## Features

- SMD enabled structure
- Conformal coating against humidity
- Excellent solderability termination
- 5% is 3-band coded, 2% and under is 4-band coded



## Dimensions

Type	Body Length (L, mm)	Body Diameter (D, mm)	Soldering spot (B, mm)	Net Weight Per 1000 pcs
SM16	3.45 ± 0.1	1.35 ± 0.1	0.6 Min.	17 grams
SM204	3.45 ± 0.1	1.35 ± 0.1	0.6 Min.	17 grams
SM207	5.9 ± 0.2	2.2 ± 0.1	1.0 Min.	66 grams
SM52	5.9 ± 0.2	2.2 ± 0.1	1.0 Min.	66 grams

## General Specifications

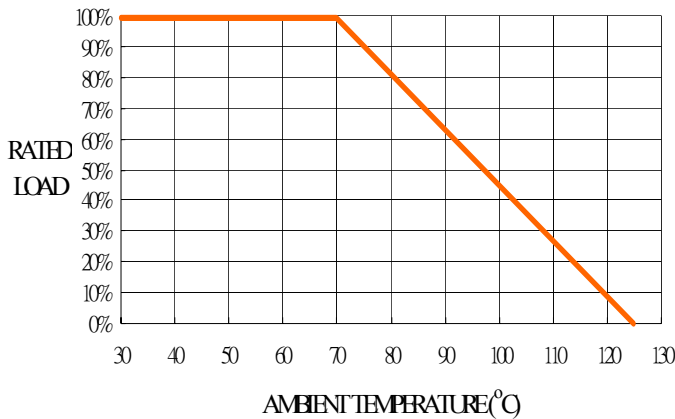
Type	Power Rating (at 70°C)	Max. Working Voltage	Max. Overload Voltage	Resistance Range Min.	Resistance Range Max.	Resistance Tolerance	Standard Resistance Value
SM16	1/6W	200V	400V	0.1	10M	±1%	E-24/E-96
						±2%, 5%	E-24
SM204	1/4W	200V	400V	0.1	10M	±1%	E-24/E-96
						±2%, 5%	E-24
SM207	1/3W	250V	500V	0.1	10M	±1%	E-24/E-96
						±2%, 5%	E-24
SM52	1/2W	250V	500V	0.1	10M	±1%	E-24/E-96
						±2%, 5%	E-24

*For zero ohm jumper, please see ZMM series. For 1m~100mohm, please see CSM series. Special sizes, values, and specifications not listed available on special order.*

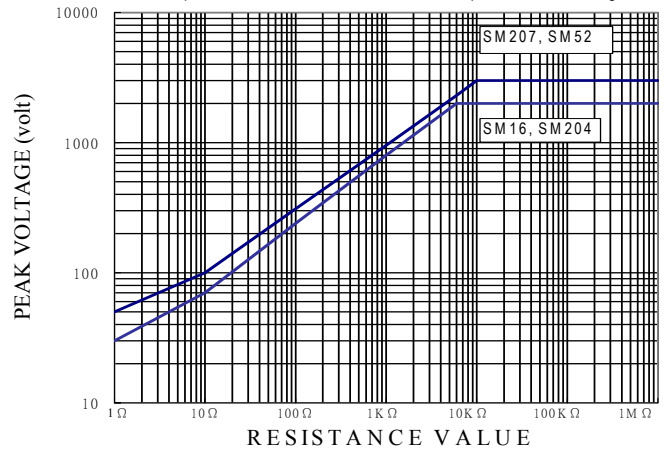
Oct. 28, 2004

# SM- Stabilized Metal Film MELF Resistor

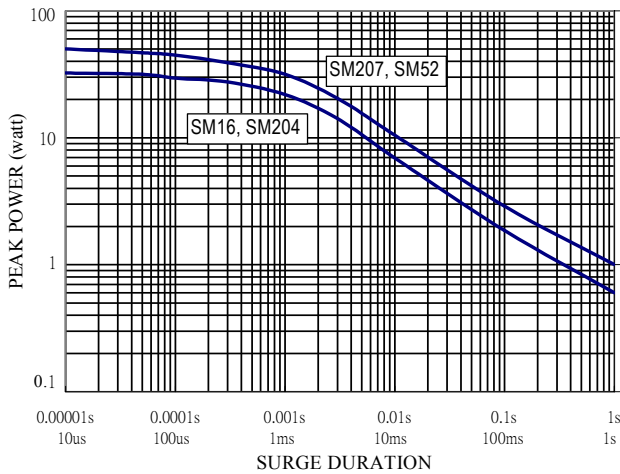
POWER DERATING CURVE



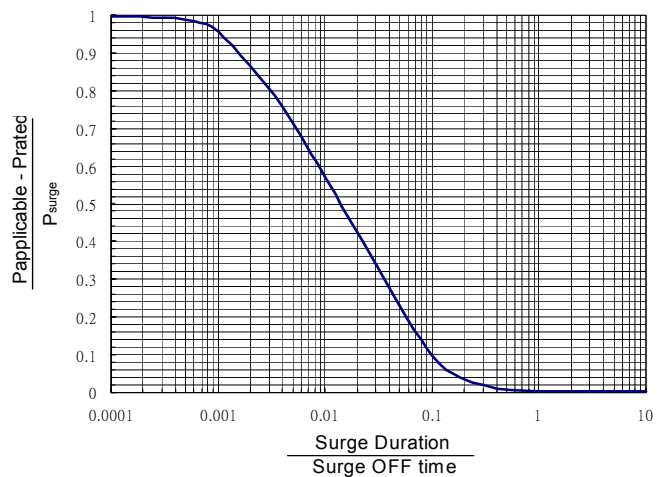
1.2/50us PEAK PULSE  
5 pulses at 12-sec interval for 0.5% permanent change



SINGLE SURGE PERFORMANCE



SURGE POWER DERATING CURVE



**Notes:**

1. Above graph is accurate for NON REPETITIVE applications operating in an ambient temperature of 70°C or less. For temperatures above 70°C, the graph power must be derated further linearly down to zero at 125°C.

2. For applicable surge power in continuous-surge applications please see SURGE POWER DERATING CURVE above.

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## Technical Summary:

Characteristics	Limits			
Dielectric Withstanding Voltage, VAC or DC	SM16, SM204: 200 SM207, SM52: 500			
Temperature Coefficient, PPM / °C	±1%, 2%	±50		
	±5%	±100		
Operating Temperature Range, °C	-55 ~ +125			
Film Temperature, °C	SM16	SM204	SM207	SM52
	125	125	125	140
Insulation Resistance, MΩ	>10 <sup>4</sup>			
Thermal Resistance, K/W	<220			
Failure Rate in Time, pcs / 10 <sup>9</sup> device hours	<1			

## Performance Specifications

Test Characteristics	Test Conditions	Limits
Short Time Overload	IEC 60115-1 4.13 5 seconds 2.5x rated voltage (not over max. overload voltage)	±(0.5%+0.05R)
Load Life In Humidity	IEC 60115-1 4.24 56 days at 40°C and 93% relative humidity	±(1.5%+0.05R)
Load Life 1,000 hours	IEC 60115-1 4.25.1 Rated load 1.5 hours ON, 0.5 hours OFF, at 70°C	±(0.25%+0.05R)
Load Life 8,000 hours		±(0.5%+0.05R)
Load Life 225,000 hours		±(1.5%+0.05R)
Resistance To Soldering Heat	IEC 60115-1 4.18 10 seconds at 260°C solder bath temperature	±(0.5%+0.05R)
Solderability	MIL-STD-202 Method 208 Solder area covered after 230±5°C/5±0.5 seconds w/ flux applied	95% Min.
Vibration	IEC 60115-1 4.22 Six hours in each parallel and axial direction w/ a simple harmonic motion having an amplitude of 0.75mm and 10 to 500 Hz.	±(1%+0.1R)
Thermal Endurance	IEC 60115-1 4.25.3 1000 hours at 125°C without load	±(0.5%+0.05R)
Thermal Shock	IEC 60115-1 4.19 -55°C 30minutes, +125°C 30minutes, 5 cycles	±(0.5%+0.05R)

## Ordering Information

Type	Tolerance	Temperature Coefficient	Resistance Value	Packaging	Special Request (Optional)
SM204	F (1%) G (2%) J (5%)	TK50 TK100	562R 84K5 1M69	B (Bulk) TR (Tape/Reel)	HV (High value)

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