

Special Request

SRM201T – Surge Resistant MELF Resistor

Specifications per

- IEC 600115-1
- AEC-Q200 Rev.D

Features

- AEC-Q200 Compliant
- Anti-sulfuration test qualified
- Excellent in heat dissipation than chip resistor
- Stronger mechanical structure to endure vibration and thermal shock
- MELF packaging yet capable of high power handling
- Special conductive film enhances anti-surge capability
- Absorbs harmful surge which damages precious devices or components
- SMD-enabled alternative to carbon composition resistors
- RoHS and REACH compliant



DIMENSION

Туре	Body Length	Cap Diameter	Body Diameter	Soldering spot	Net Weight
	(L , mm)	(D1 , mm)	(D2, mm)	(B, mm)	Per 1,000 pcs
SRM201T	8.50 ± 0.50	3.00 ± 0.2	D1+0.05/ -0.35	1.3 Min.	186 grams

GENERAL SPECIFICATIONS

Туре	Power Rating (at 70°C)	Maximum Working Voltage*	Maximum Permissible Surge Voltage*	Minimum Resistance	Maximum Resistance	Resistance Tolerance	Available Resistance Value
SRM201T	2W	\sqrt{PxR}	9,000V	0.1Ω	10ΜΩ	±1%~ ±5%	E-24/ E-96

* Rated Continuous Working Voltage (RCWV) should be determined from

 $RCWV = \sqrt{Power Rating \times Resistance Values}$

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RELIABILITY COST-DOW



PART NUMBER



TECHNICAL SUMMARY

Characteristics	Ranges & Limits
Dielectric Withstanding Voltage, VAC or DC	500
Temperature Coefficient, PPM /°C*	±200, ±400, ±800, ±1200
Operating Temperature Range,°C	-55 ~ +150
Insulation Resistance, MΩ	>104
Tin Whisker (JESD201 Temperature Cycling & High Temp. /Humidity Storage), μm	<5
Failure Rate in Time, pcs / 10 ⁹ device hours	<1.2

* Not applicable to all resistance values. Please check with us regarding the PPM of specific resistance value(s).

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QUALITY RELIABILITY COST-DOWN



PERFORMANCE SPECIFICATIONS

Characteristics	Test Conditions	Limits
High Temperature Exposure	AEC-Q200 REV D. Stress NO.3 (refer to IEC 60115-1 4.25.3/ MIL-STD-202 Method 108) 1,000 hours at 150°C without load	±2.5%
Temperature Cycling	AEC-Q200 REV D. Stress NO.4 (refer to IEC 60115-1 4.19/ JESD22 Method JA-104) -55°C 30minutes, +125°C 30minutes, 1,000 cycles	±2%
	Proprietary test specification FRC-AECQ-180702 -20°C 30minutes, +120°C 30minutes, 1,000 cycles (Recommended solder paste composition : 96.5% Sn, 3% Ag, 0.5% Cu)	Force of 1kg for 10 secs and without distinct looseness of terminals
Biased Humidity	AEC-Q200 REV D. Stress NO.7 (refer to IEC 60115-1 4.37/ MIL-STD-202 Method 103) 1,000 hours at 85°C and 85% relative humidity with 10% operating power(not over 100V)	±5%
	IEC 60115-1 4.25.1 Rated load (not over max. working voltage) 1,000 hours with 1.5 hours ON, 0.5 hours OFF, at 70℃	±5%
Load Life	AEC-Q200 REV D. Stress NO.8 (refer to MIL-STD-202 Method 108) 1,000 hours at 125°C with de-rated continuous working voltage	±5%
Resistance to Solvents	AEC-Q200 REV D. Stress NO.12 (refer to MIL-STD-202 Method 215) Add Aqueous wash chemical-OKEM Clean or equivalent. Do not use banned solvents.	No visible damage on appearance and marking
Mechanical Shock	AEC-Q200 REV D. Stress NO.13 (refer to MIL-STD-202 Method 213 Condition C) Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen. Peak value: 100 g`s, Duration: 6 ms, Velocity change: 12.3 ft/s, Wavefrom: Half sine	±0.25%
Vibration	AEC-Q200 REV D. Stress NO.14 (refer to MIL-STD-202 Method 204) 5 g`s for 20 min., 12 cycles each of 3 orientations, Test from 10 - 2,000 Hz.	±0.25%
Resistance to Soldering Heat	AEC-Q200 REV D. Stress NO.15 (refer to IEC 60115-1 4.18.2/ MIL-STD-202 Method 210) Dip the resistor into a solder bath measured (260±5)°C and hold it for a 10±1 seconds	±1%
ESD	AEC-Q200 REV D. Stress NO.17 (refer to AEC-Q200-002/ ISO/DIS 10605) (150pF/ 2,000Ohm discharge network) Human body model, 1 positive & 1 negative discharges with 2KV source	±0.5%
Solderability	AEC-Q200 REV D. Stress NO.18 (refer to J-STD-002 or IEC 60115-1 4.17) Solder area covered after (235±3)°C/(2±0.2) seconds with flux applied	95% Min. covered

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Flammability	AEC-Q200 REV D. Stress NO.20 (refer to UL-94) V-0 or V-1 are acceptable. Electrical test not required.	NO flaming	
Board Flex	AEC-Q200 REV D. Stress NO.21 (refer to AEC-Q200-005) 60 sec minimum holding time.	±0.25%	
Terminal Strength	AEC-Q200 REV D. Stress NO.22 ±0.25% (refer to AEC-Q200-006) ±0.25% Force of 1.8kg for 60 seconds ±0.25%		
Short Time Overload	IEC 60115-1 4.13 2 seconds 2.5x rated voltage (not over max. working voltage)	±2	%
Climatic test	IEC 60115-1 4.23 4.23.2 - dry heat: 16 hours 150°C 4.23.3 - damp heat: 24 hours 55°C with 95% relative humidity 4.23.4 - cold: 2 hours -55°C 4.23.5 - negative air pressure: 2 hour 8.5KPa at (25±10)°C 4.23.6 - damp heat cyclic: 5 days 55°C with 95% relative humidity 4.23.7 - DC load: rated voltage at -55°C and 150°C each 1 Min.	±2	%
Load Life In Humidity	IEC 60115-1 4.24 56 days rated load (not over max. working voltage) at (40±2)℃ and (93±3)% relative humidity	±5	%
Single pulse high voltage overload	IEC 60115-1 4.27 10 pulses of 10/700µs at 10x rated voltage (not over 2x max. working voltage) with interval of 60 sec.	±1	%
Periodic Electric Overload	IEC 60115-1 4.39 3.9x rated voltage (not over 2X max. working voltage) with 0.1s ON, 2.5s OFF for 1,000 cycles	±1	%
Surge Test	Proprietary test specification FRC-TR-010113 = $\sqrt{(6000 \ x \ P \ x \ R)}$ DC P is power rating, R is resistance value, surge voltage is not more than listed at right Surge spec = 1.2/50µs Period = 12 sec Number of surges = 5	9KV	±10%
		±1%	±1%
Anti-sulfuration test	EIA-977 (Conditions B) 750 hours at (105±2)°C without load		±2%
		±5%	±5%

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SUGGESTED PAD LAYOUT



Туре	Soldering mode	Pad Length (L, mm, min.)	Pad Spacing (P, mm)	Pad Width (W, mm, min.)	
SRM201T	Reflow	3.0	4.9 ± 0.3	3.7	
	Wave	3.5	4.8 ± 0.3	4.0	

For better heat dissipation / lower heat resistance, increase W & L.

■ COVER TAPE PEELING SPECIFICATION

Recommended peeling force: SRM201T: 70±10gf

