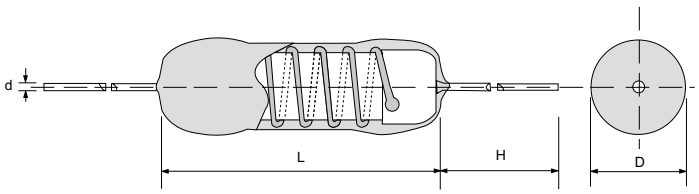
SWA – Anti-Surge Wire Wound Resistors

Quality • Reliability
Cost-Down via Innovation



[*structure pending patent approval]
Taiwan patent number: M530462
Japan patent number: 3208923
China patent number: 6433867
Korean patent number: 20-0486309
United States patent number: US9978483B2

Specifications Per

• IEC 60115-1, 60115-4

Features

• Flameproof multi-layer coating equivalent to UL 94 V-0
• Flameproof feature equivalent to overload test UL 1412
• Enhanced weld spot is reliable against surge
• Special tin-plated electrolytic copper lead wire
• Products meet RoHS requirements and do not contain substances of very high concern identified by European Chemicals Agency
• SWA series is applied in high surge applications such as high rush current protection for power capacitor, motor start-up protection, car & motorcycle engine ignition, etc. to absorb harmful surge energy, so to prevent hazard of circuit damage caused by surge energy

DIMENSIONS

Type	Body Length (L, mm)	Body Diameter (D, mm)	Lead Wire Length (H, mm)	Lead Wire Diameter (d, mm)
SWA01	11.0 ± 1.0	4.5 ± 0.5	28 ± 3.0	0.7 ± 0.03
SWA02	13.5 ± 1.0	5.0 ± 0.5	30 ± 3.0	0.8 ± 0.03
SWA03	15.5 ± 1.0	5.5 ± 0.5	30 ± 3.0	0.8 ± 0.03

GENERAL SPECIFICATIONS

Type	Power Rating (at 70°C)	Maximum Working Voltage	Maximum Overload Voltage	Maximum Permissible Surge Voltage	Minimum Resistance	Maximum Resistance	Resistance Tolerance	Available Resistance Values
SWA01	1W	350V	600V	9KV	0.1 Ω	1.2KΩ	± 5%	E-24
SWA02	2W	350V	700V	10KV	0.1 Ω	1.2KΩ	± 5%	E-24
SWA03	3W	350V	700V	12KV	0.1 Ω	1.2KΩ	± 5%	E-24

Special sizes, values, and specifications not listed available on special order.

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Revision: 23-MAY-2019

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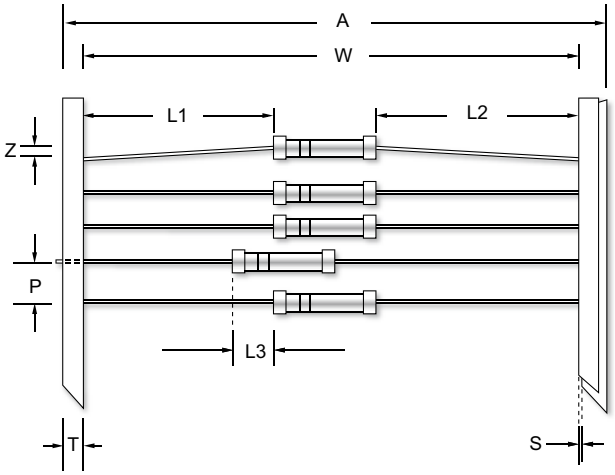
TAPING/PACKING SPECIFICATIONS



Unit (mm)

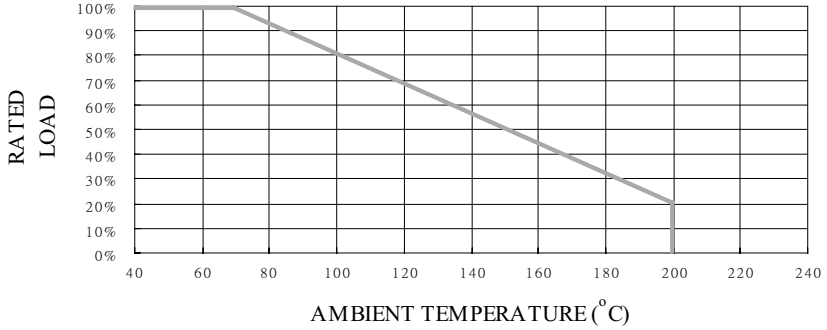
Type	A (Max.)	L1-L2 (Max.)	L3 (Max.)	P ±0.5	S (Max.)	T ±0.5	W ±1.5	Z (Max.)
SWA01	65	±1.0	0.5	5.0	0.8	6.0	52.5	1.2
SWA02	76	±1.5	1.0	10.0	0.8	6.0	63.5	1.2
SWA03	76	±1.5	1.0	10.0	0.8	6.0	63.5	1.2

TECHNICAL SPECIFICATIONS

Characteristics	Limits	
Dielectric Withstanding Voltage, VAC or DC	SWA01 / SWA02	600
	SWA03	1000
Temperature Coefficient, PPM / °C*	±100, ±300	
Operating Temperature Range, °C	-55~+200	
Insulation Resistance, MΩ	10^4	

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

POWER DERATING CURVE



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PART NUMBER

Example: SWA01J100RTKZTB1K0

SWA01	J	100R	TKZ	TB1K0
Type	Tolerance	Resistance	TCR	Packaging
	J (5%)	100Ω **4-character code** containing - 3 significant digits 1 letter multiplier OHM MULTIPLIER R = 1 K = 10^3 M = 10^6 G = 10^9	**3-character code** TKZ = Default Product Temperature Coefficient. Information of typical product temperature coefficient can be found in the Technical Summary section of the datasheet.*	**5-character code** TB = Tape Box (pieces per box) SWA01 1K0 = 1,000 SWA02/SWA03 500 = 500

*** For the availabilities of non-default temperature coefficient, please check with us. Reference for TCR letter codes can be found in section (4) of Part Number Construction in the Appendices.**

PERFORMANCE SPECIFICATIONS

Characteristics	Test Conditions	Limits
Short Time Over Load	**IEC 60115-1 4.13** 5 seconds 2.5x rated voltage (not over max. overload voltage)	±2%
Load Life In Humidity	**IEC 60115-1 4.24** 56 days rated (not over max. working voltage) load at (40±2)°C and (93±3)% relative humidity	±5%
Load Life	**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±2)°C	±5%
Resistance To Soldering Heat	**IEC 60115-1 4.18.2** Leads immersed till 3mm from the body in (260±5)°C solder for 10±1 seconds	±1%
Solderability	**IEC 60115-1 4.17.2** Solder area covered after (235±3)°C/(2±0.2) seconds with flux applied	95% min. coverage
Vibration	**IEC 60115 4.22** Six hours in each parallel and axial direction with a simple harmonic motion having an amplitude of 0.75mm and 10 to 500 Hz.	±1%
Thermal Endurance	**IEC 60115-1 4.25.3** 1000 hours at 200°C without load	±1%
Thermal Shock	**IEC 60115-1 4.19** -55°C 30minutes, +155°C 30minutes, 5 cycles	±3%
Surge Test	**Surge voltage = $\sqrt{(12{,}000\ PR)}$ DC** P is power rating, R is resistance value, surge voltage is not more than listed at right. Surge spec = 1.2/50μs Period = 60 sec Number of surges = 100	±5%

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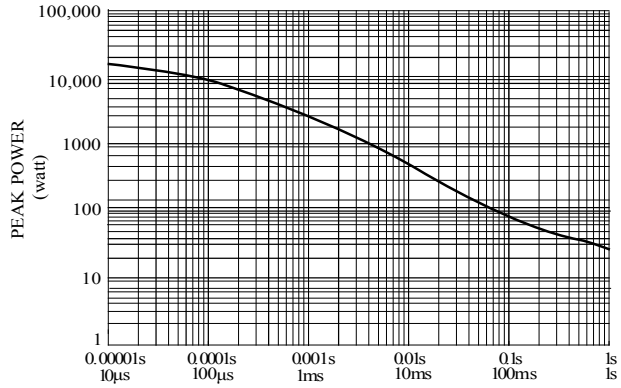
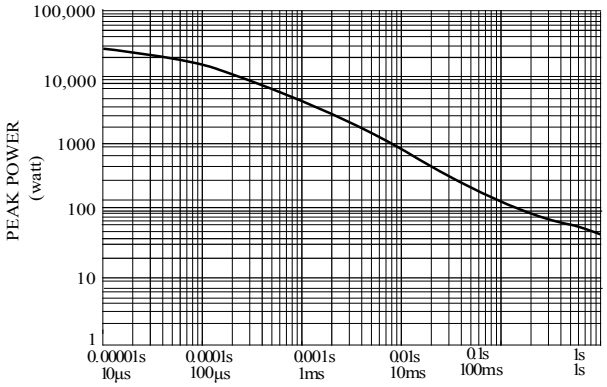
SINGLE SURGE PERFORMANCE

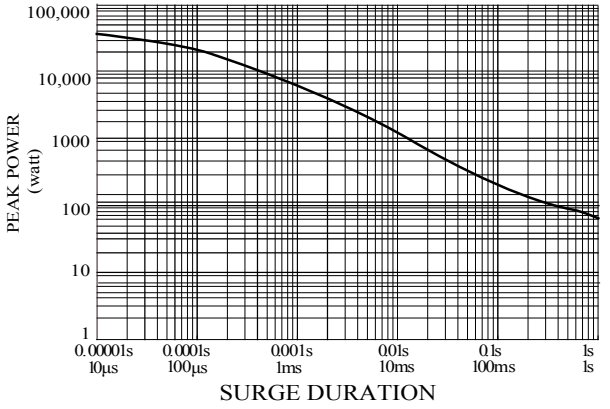
SWA01



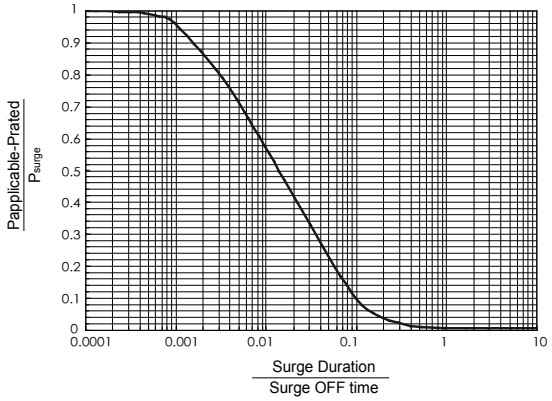
SWA02



SWA03



SURGE POWER DERATING CURVE



Notes:

- SINGLE SURGE PERFORMANCE graph is good 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 150 °C.
- To determine applicable surge power in continuous-surge applications:

1. Identify allowable duration and peak power P_{surge} of single surge;
2. Determine ratio of surge duration/surge OFF time in application;
3. Calculate $P_{applicable}$ backwardly according to Y-axis of SURGE POWER DERATING CURVE.