

ASR

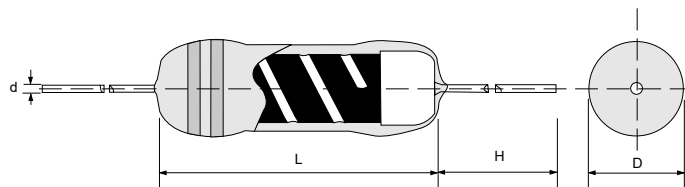
Introduction

Designed to replace carbon or ceramic composition resistor, ASR series is applied in high-surge applications such as fuel ignition systems, power charging/discharging circuits, TV sets, etc, to absorb harmful surge energy, so to prevent hazard of fire and circuit damage caused by surge energy with a flame-proof coating.

Features

1. Power rating: 1/4W, 1/1W, 1/1W, 2W, 3W, 4W, 5W
2. Resistance tolerance: $\pm 5\%$

Dimensions and Structure



Style	Dimensions				Net Weight Per 1000pcs
	Body Length L (mm)	Body Diameter D (mm)	Lead Wire Length H (mm)	Lead Wire Diameter d (mm)	
ASR-1/4	6.50 \pm 1.0	2.6 \pm 0.3	26 \pm 3.0	0.55 \pm 0.02	300 grams
ASR-1/2	9.00 \pm 1.0	3.2 \pm 0.2	26 \pm 3.0	0.60 \pm 0.03	340 grams
ASR-1	11.0 \pm 1.0	4.0 \pm 0.5	28 \pm 3.0	0.70 \pm 0.03	500 grams
ASR-2	15.5 \pm 1.0	5.0 \pm 0.5	30 \pm 3.0	0.80 \pm 0.03	1150 grams
ASR-3	15.5 \pm 1.0	5.5 \pm 0.5	30 \pm 3.0	0.80 \pm 0.03	1200 grams
ASR-4	19.0 \pm 1.0	6.0 \pm 0.5	30 \pm 3.0	0.80 \pm 0.03	1600 grams
ASR-5	24.0 \pm 1.0	8.0 \pm 0.5	30 \pm 3.0	0.80 \pm 0.30	3700 grams

Electrical Specifications

Style	Power Rating at 70°C	Max. Working Voltage	Max. Permissible Surge Voltage	Minimum Resistance	Maximum Resistance	Resistance Tolerance	Available Resistance Values
ASR-1/4	1/4W	250V	10KV	10 Ω	180K Ω	$\pm 5\%$	E-24
ASR-1/2	1/2W	300V	15KV	10 Ω	220K Ω	$\pm 5\%$	E-24
ASR-1	1W	350V	20KV	10 Ω	220K Ω	$\pm 5\%$	E-24
ASR-2	2W	400V	22.5KV	10 Ω	240K Ω	$\pm 5\%$	E-24
ASR-3	3W	400V	25KV	10 Ω	240K Ω	$\pm 5\%$	E-24
ASR-4	4W	500V	30KV	10 Ω	270K Ω	$\pm 5\%$	E-24
ASR-5	5W	600V	35KV	10 Ω	330K Ω	$\pm 5\%$	E-24

Part Numbering System

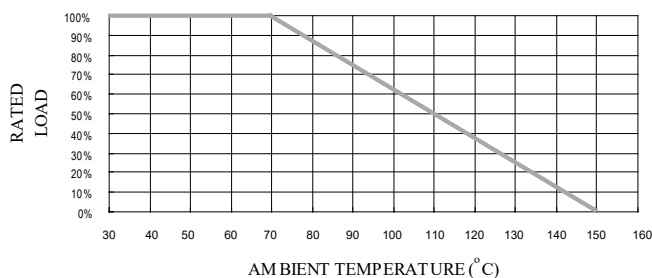
ASR		1/4		5%		22R		TR	
Type		Code	Power Rating	Code	Tolerance	Code	Nominal Resistance	Code	Packaging
ASR				5%	±5%			TR	Tape & Reel
		1/4	1/4W			22R	22 Ohms	TB	Tape & Box
		1/2	1/2W			2K2	2.2 x 10 ³ Ohms		
		1	1W			10K	10 x 10 ³ Ohms		
		2	2W						
		3	3W						
		4	4W						
		5	5W						

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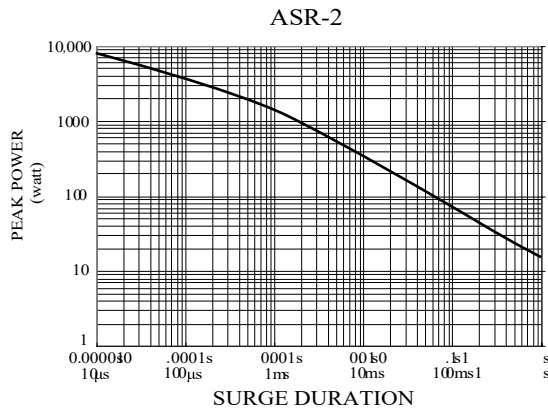
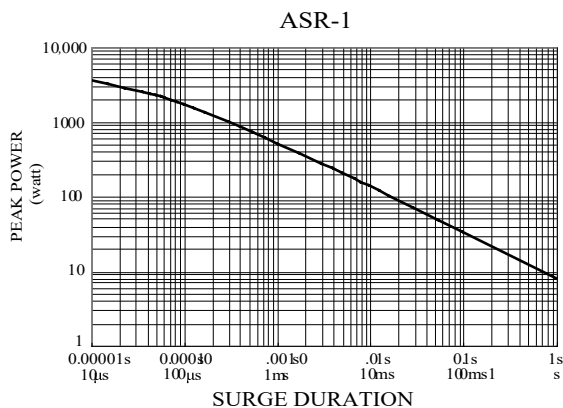
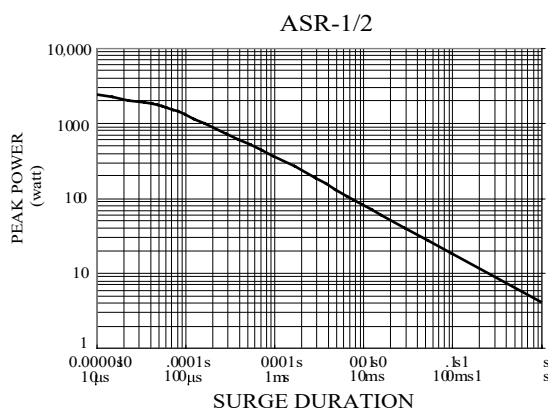
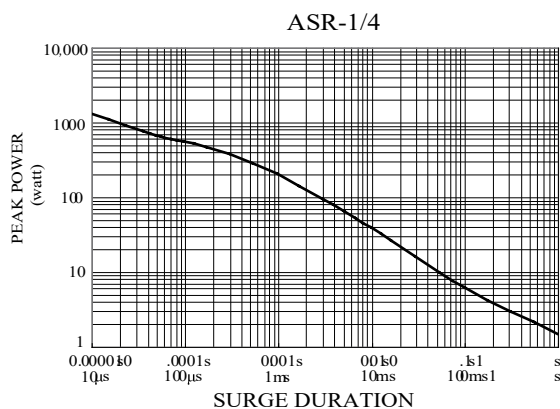
Technical Summary

Characteristics	Limits	
Dielectric Withstanding Voltage, VAC or DC	ASR-1/4, ASR-1/2, ASR-1	600
	ASR-2	700
	ASR-3, ASR-4, ASR-5	800
Temperature Coefficient, PPM/°C	ASR-1/4, ASR-1, ASR-2, ASR-3, ASR-5	±600
	ASR-1/2, ASR-4	±750
Operating Temperature Range, °C	-55 ~ 150	
Insulation Resistance, MΩ	> 10 ⁴	

Power Derating Curve

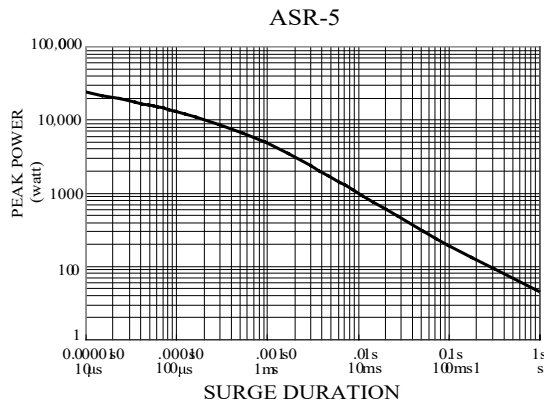
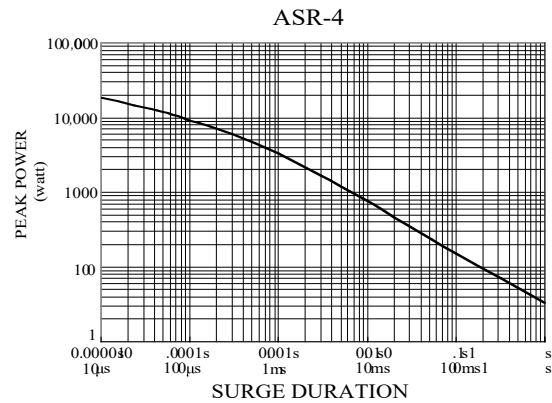
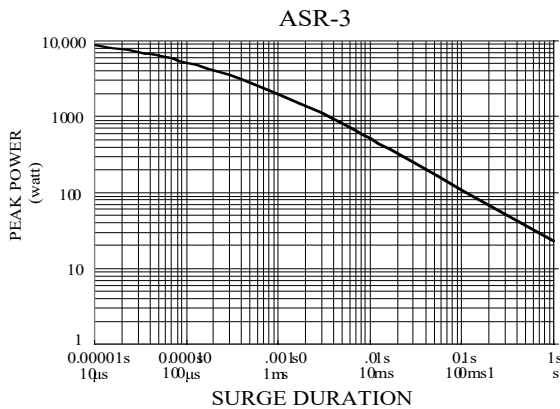


Single Surge Performance

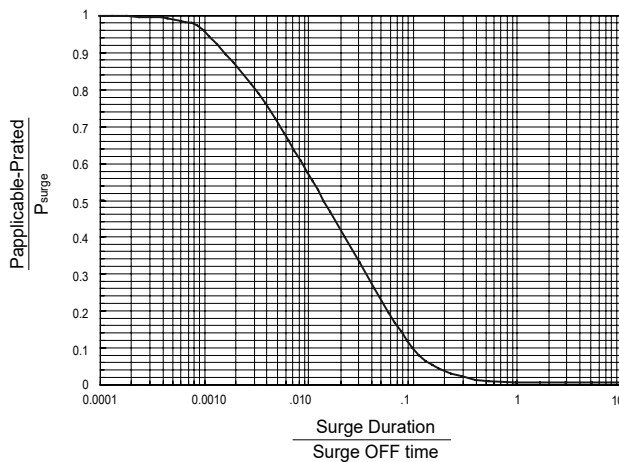


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Single Surge Performance



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 $P_{\text{applicable}}$ backwardly according to Yaxis of SURGE POWER DERATING CURVE.

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Performance Specifications

Characteristics	Test Conditions	Limits		
Short Time Over Load	IEC 60115-1 4.13 5 seconds 2.5x rated voltage (not over 2X max. working voltage)	±2%		
Load Life In Humidity	IEC 60115-1 4.24 56 days rated load (not over max. working voltage) 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 60115-1 4.22 Six hours in each parallel and axial direction with a simple harmonic motion having an amplitude of 1.52mm and 10 to 2,000 Hz.	±0.5%		
Thermal Endurance	IEC 60115-1 4.25.3 1000 hours at 150°C without load	±2.5%		
Thermal Shock	IEC 60115-1 4.19 -55°C 30minutes, +150°C 30minutes, 5 cycles	±3%		
Surge Test	Proprietary test specification FRC-TR-010113 = (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 = 3000	ASR-1/4	10KV	±5%
		ASR-1/2	15KV	
		ASR-1	20KV	
		ASR-2	22.5KV	
		ASR-3	25KV	
		ASR-4	30KV	
		ASR-5	35KV	