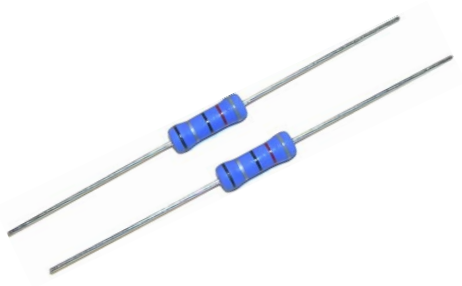
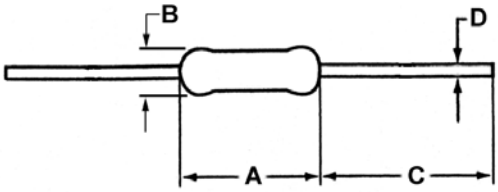
Features:

- Excellent anti-surge characteristics
- Stable characteristics through the resistance range
- Good alternative to carbon composition resistors
- Applications include power supplies, CRT's, and anti-surge circuits
- Cut and formed product is available on select sizes; contact factory for details
- Flameproof coating per UL94 V-0
- RoHS compliant / lead-free



Electrical Specifications						
Type / Code	Power Rating (Watts) @ 70ºC	Maximum Working Voltage (1)	Maximum Overload Voltage	Dielectric Withstand Voltage	Surge Withstanding (2)	Ohmic Range (Ω) and Tolerance
						5%
ASR14	0.25W	DC 1600V AC 1150V	DC 2000V AC 1500V	400VAC	1000V 3000V	10 - 510K 560K - 12M
ASRM12	0.5W	2000V	2500V	500VAC	5000V 10000V	10 - 510K 560K - 12M
ASRM1	1W	4000V	5000V	500VAC	5000V 10000V	10 - 510K 560K - 12M
ASR1	1W	4000V	5000V	500VAC	5000V 10000V	10 - 510K 560K - 12M
ASRM2	2W	4000V	5000V	500VAC	5000V 10000V	10 - 510K 560K - 12M

(1) Lesser of √PR or maximum working voltage.
(2) 10 discharges from a 0.01µF capacitor every 5 seconds.

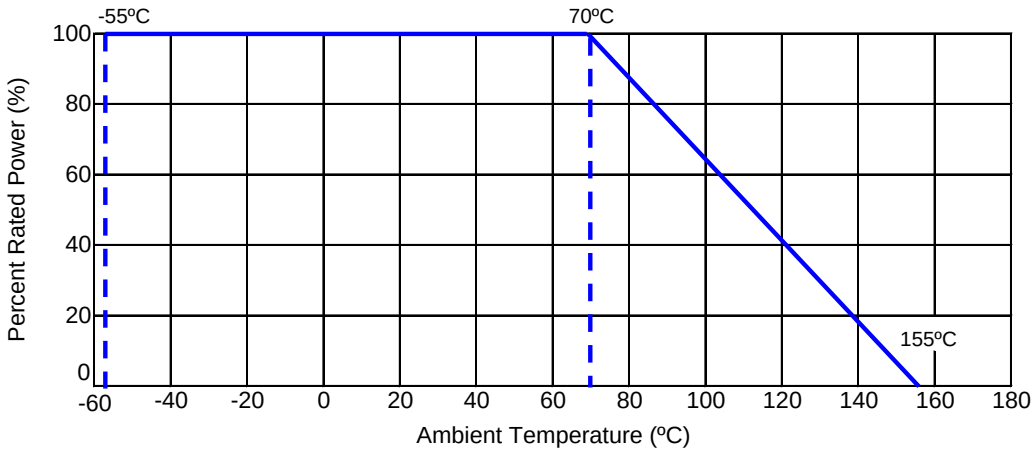


Mechanical Specifications						
Type / Code	Weight (mg)	A Body Length	B Body Diameter	C Lead Length(Bulk)	D Lead Diameter	Unit
ASR14	210	0.236 ± 0.012 6.00 ± 0.30	0.091 ± 0.008 2.30 ± 0.20	1.102 ± 0.118 28.00 ± 3.00	0.022 ± 0.002 0.55 ± 0.05	inches mm
ASRM12	330	0.354 ± 0.039 9.00 ± 1.00	0.118 ± 0.020 3.00 ± 0.50	1.102 ± 0.118 28.00 ± 3.00	0.028 ± 0.002 0.70 ± 0.05	inches mm
ASRM1	570	0.433 ± 0.039 11.00 ± 1.00	0.157 ± 0.020 4.00 ± 0.50	1.102 ± 0.118 28.00 ± 3.00	0.031 ± 0.002 0.80 ± 0.05	inches mm
ASR1	1,340	0.591 ± 0.039 15.00 ± 1.00	0.197 ± 0.020 5.00 ± 0.50	1.378 ± 0.118 35.00 ± 3.00	0.031 ± 0.002 0.80 ± 0.05	inches mm
ASRM2	1,340	0.591 ± 0.039 15.00 ± 1.00	0.197 ± 0.020 5.00 ± 0.50	1.378 ± 0.118 35.00 ± 3.00	0.031 ± 0.002 0.80 ± 0.05	inches mm

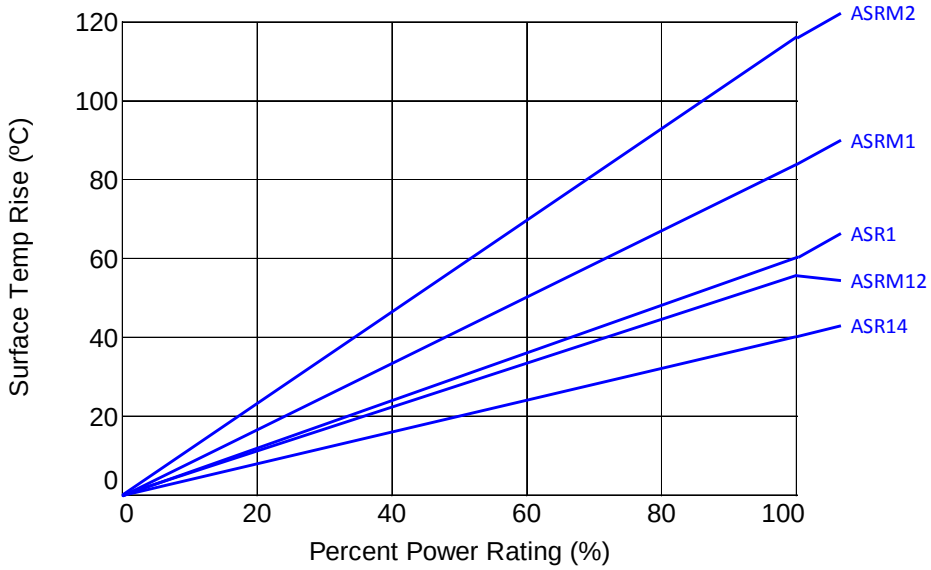
Performance Characteristics	
Test	Test Results
Moisture Resistance	± 5%
Temperature Cycling	± 1%
Load Life	± 5%
Resistance to Soldering Heat	± 1%
Overload (short time)	≤± (1%+0.05Ω)
Discharge	≤± (10%+0.05Ω)

Operating Temperature Range: -55°C to +155°C

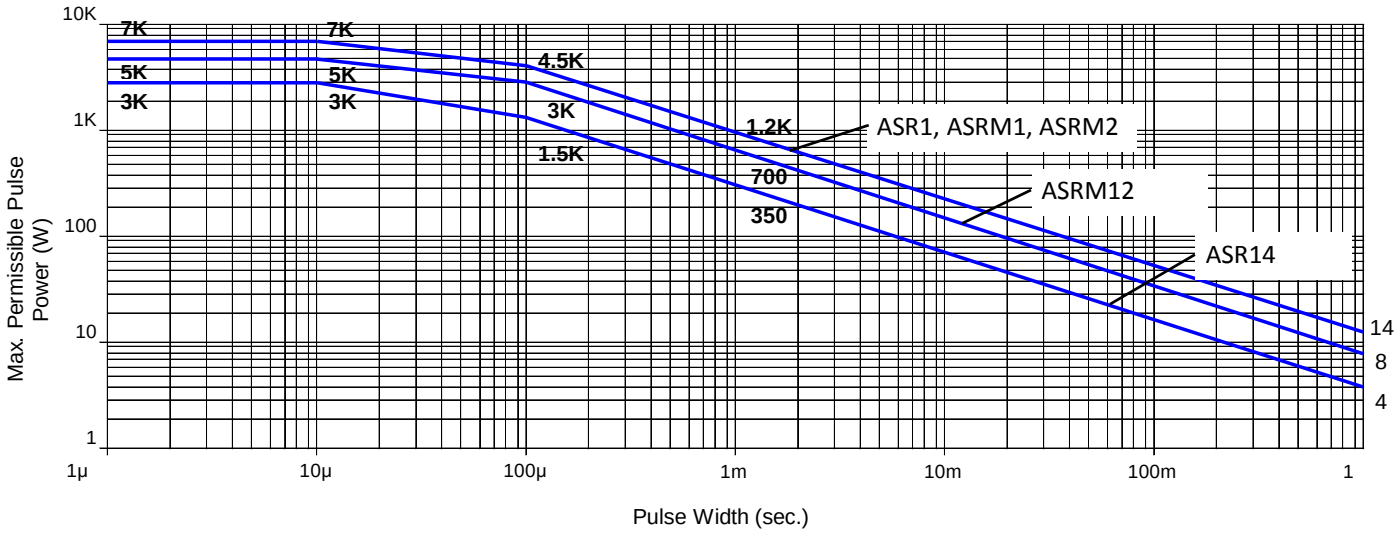
Power Derating Curve:



Heat Rise:

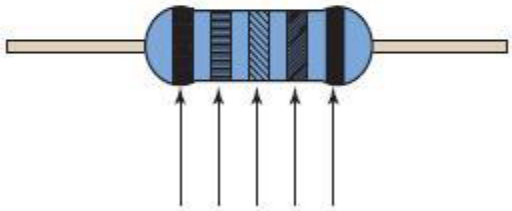


Pulse Limiting Power (single square shaped pulse):



Color Code

Description



Color code No. 1 2 3 4 5

1, 1st band significant figure

2, 2nd band significant figure

3, Multiplier

4, Tolerance

5, Color code 5th Color Black(Anti-Surge Resistor)

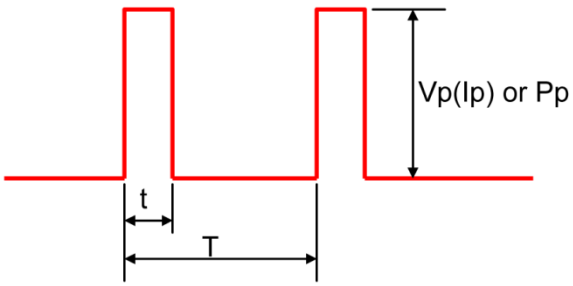
Repetitive Pulse Information

If repetitive pulses are applied to resistors, pulse wave form must be less than “Pulse limiting voltage”, “Pulse limiting current” or “Pulse limiting wattage” calculated by the formula below.

$Vp = K\sqrt{P \times R \times T/t}$

$Ip = K\sqrt{P/R \times T/t}$

$Pp = K^2 \times P \times T/t$



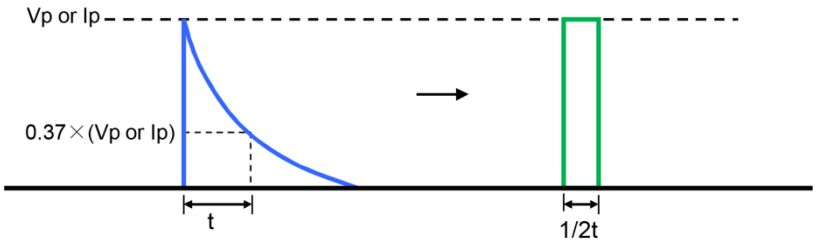
Where:
- Vp: Pulse limiting voltage (V)
- Ip: Pulse limiting current (A)
- Pp: Pulse limiting wattage (W)
- P: Power rating (W)
- R: Nominal resistance (ohm)
- T: Repetitive period (sec)
- t: Pulse duration (sec)
- K: Coefficient by resistors type (refer to below matrix)
- [Vr: Rated Voltage (V), Ir: Rated Current (A)]

Note 1: If T>10 → T = 10 (sec), T/t>1000 → T/t = 1000
Note 2: If T>10 and T/t>1000, “Pulse Limiting power (Single pulse) is applied
Note 3: If Vp<Vr (Ip<Ir or Pp<P), Vr (Ir, P) is Vp (Ip, Pp)
Note 4: Pulse limiting voltage (Current, Wattage) is applied at less than rated ambient temperature. If ambient temperature is more than the rated temperature (70º), please decrease power rating according to “Power Derating Curve”
Note 5: Please assure sufficient margin for use period and conditions for “Pulse limiting voltage”
Note 6: If the pulse waveform is not square wave, please judge after transform the waveform into square wave according to “Waveform Transformation to Square Wave” information.

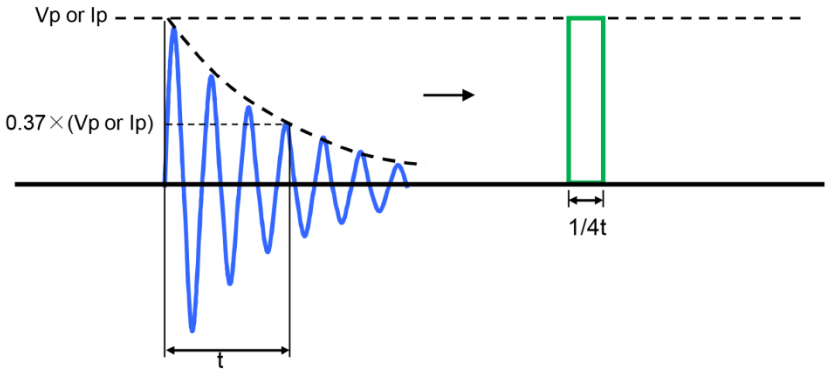
Coefficient (K) Matrix	
Resistor Type	K
ASR, ASRM	1.0

Waveform Transformation to Square Wave

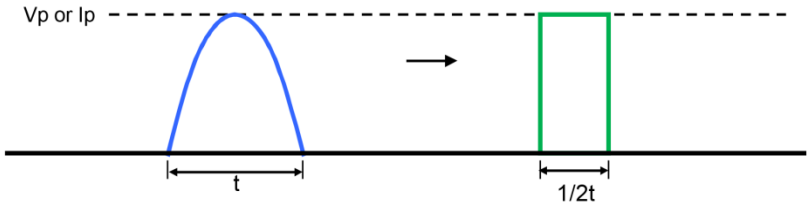
1. Discharge curve wave with time constant “t” → Square wave



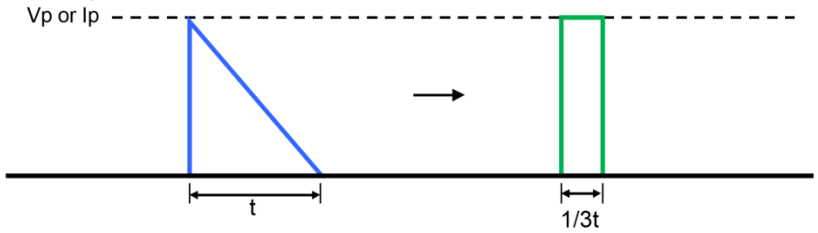
2. Damping oscillation wave with time constant of envelope “t” → Square wave



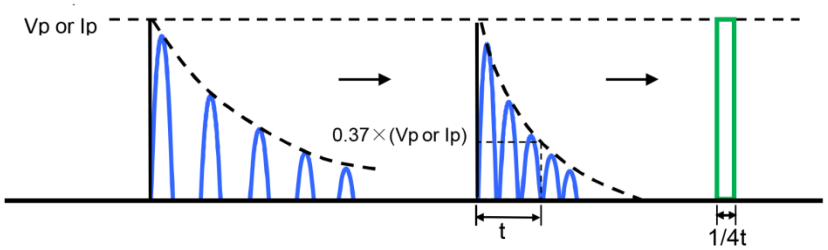
3. Half-wave rectification wave → Square wave



4. Triangular wave → Square wave



5. Special wave → Square wave



How to Order

1	2	3	4	5	6	7	8	9	10	11
A	**S**	**R**	**1**	**4**	**J**	**A**	**1**	**0**	**0**	**K**

Product Series	
ASR	Standard
ASRM	Mini

Size	Power
14	0.25W
12	0.5W
1	1W
2	2W

Tolerance	
Code	Tol
J	5%

Packaging			
Code	Description	Size	Quantity
B	Bulk	ASR14, ASRM12, ASRM1, ASR1, ASRM2	1,000
A	Ammo	ASR14, ASRM12	2,000
		ASRM1	1,000
		ASR1, ASRM2	500

Resistance Value
Four characters with the multiplier used as the decimal holder.
10 ohm = 10R0 560 Kohm = 560K 1 Mohm = 1M00

Legacy Part Number (before January 3, 2011):

SEI Type	Code	Nominal Resistance	Tolerance	Packaging
ASR	**1/4**	**100K**	**5%**	**T**

Code	Description
ASR	Standard
ASRM	Mini

Code	Wattage
1/4	0.25W
1/2	0.5W
1	1W
2	2W

Tolerance
5%

SEI Types	Pkg Qty	Description	Code
ASR14, ASRM12, ASRM1, ASR1, ASRM2	1,000	Bulk	A
ASR14, ASRM12	2,000	Ammo	T
ASRM1	1,000		
ASR1, ASRM2	500		