

SMD Anti-Surge Thick Film Chip Resistor

Type CRGS Series

Key Features

Small size and light weight

Suitable for both wave and reflow soldering techniques

Supplied on tape

Can withstand high surge

5 different package sizes

Terminal finish matte Sn over Ni

Moisture sensitivity level - MSL1



TE Connectivity is pleased to introduce this SMD Anti surge thick film Chip resistor, suitable for auto placement in volume and for most applications. Available in five different packages and supplied on tape and reel for automatic insertion processes. Standard values – E24 Series

Note: SMD (Surface mount devices) resistors and inductors should be kept in their original packaging to protect them from ESD (Electrostatic Discharge). The full reels can be broken into smaller quantities, without exposing them to ESD, as long as the components are still in the plastic or paper tape. These resistors and inductors should not be removed from the plastic or paper tape unless they are in an ESD protected environment.

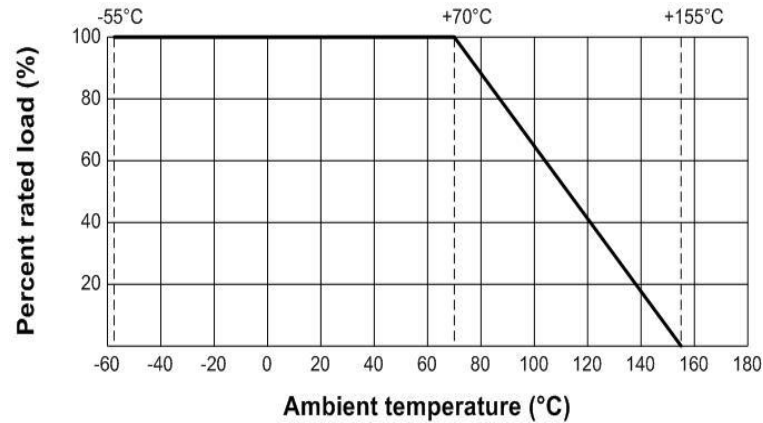
Characteristics – Electrical

Type	CRGS0603	CRGS0805	CRGS1206	CRGS2010	CRGS2512
Power Rating	0.25W	0.5W	0.6W	0.75W	1.5W
Resistance Range	1R0 – 10M	1R0 – 10M	1R0 – 10M	1R0 – 10M	1R0 – 10M
Tolerance	±5%				
T.C.R.	1Ω-10Ω : ≤±400PPM/°C 11Ω-10MΩ : ≤±100PPM/°C			1Ω-10Ω : ≤±200PPM/°C 11Ω-10MΩ : ≤±100PPM/°C	
Standard Series	E24				
Max. Working Voltage	50V	150V	200V	200V	250V
Max. Overload Voltage	100V	300V	400V	500V	500V
Dielectric Withstanding Voltage	300V	500V	500V	500V	500V
Temperature Range	-55°C ~ +155°C				
Storage Temperature	25°C ± 5°C at a relative humidity of 60%RH ± 10%RH Store in original packaging, out of direct sunlight and not in air with high concentrations of salt or corrosive gases.				

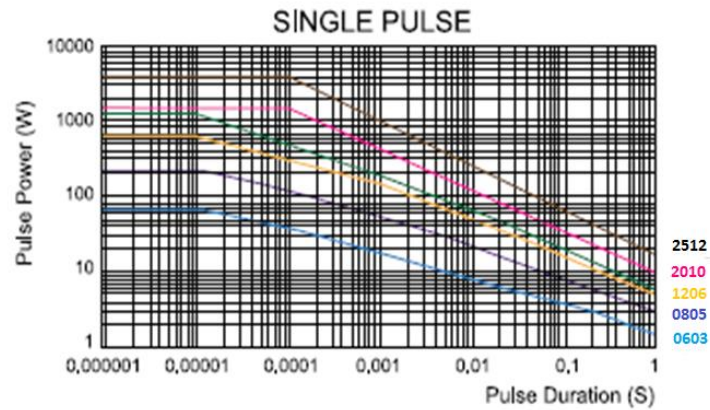
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Power derating curve

Power rating based on continuous load operation in ambient temperature of 70°C. For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with this curve.

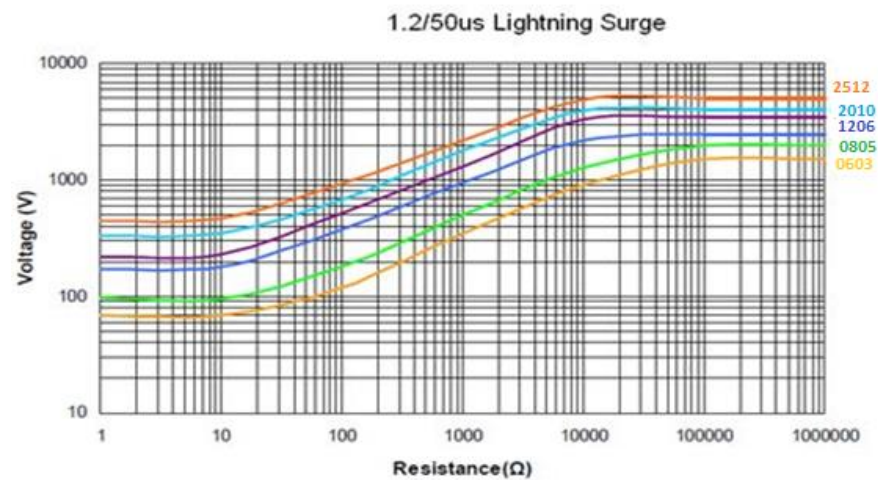


One Pulse Limiting Electrical Power

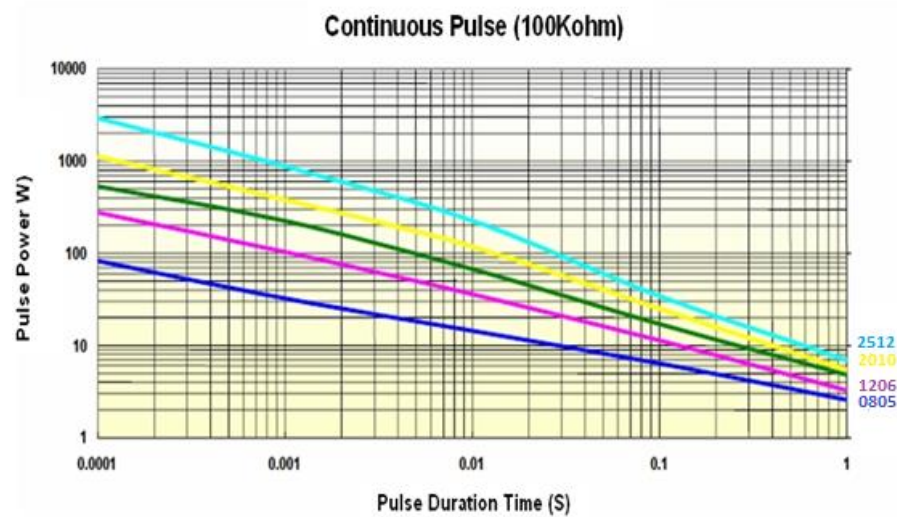


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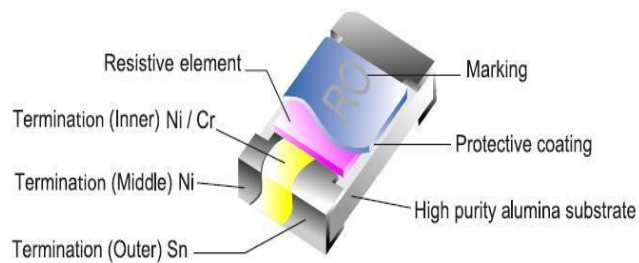
Lightning Surge



Continuous Pulse

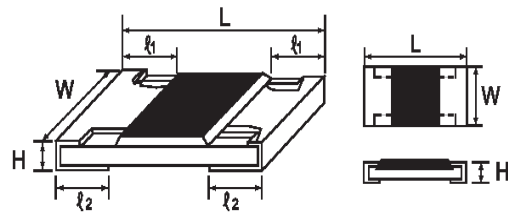


Construction



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Dimensions:



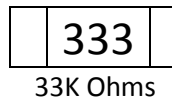
Type	Dimension (mm)				
	L	W	H	l1	l2
CRGS0603	1.60 ±0.10	0.80 +0.15 -0.10	0.45 ±0.10	0.30 ±0.20	0.30 ±0.20
CRGS0805	2.00 ±0.15	1.25 +0.15 -0.10	0.55 ±0.10	0.40 ±0.20	0.40 ±0.20
CRGS1206	3.10 ±0.15	1.55 +0.15 -0.10	0.55 ±0.10	0.45 ±0.20	0.50 ±0.20
CRGS2010	5.00 ± 0.10	2.50 ± 0.15	0.55 ±0.10	0.60 ± 0.25	0.50 ± 0.20
CRGS2512	6.35 ± 0.10	3.20 ± 0.15	0.55 ±0.10	0.60 ± 0.25	1.80 ± 0.25

Marking:

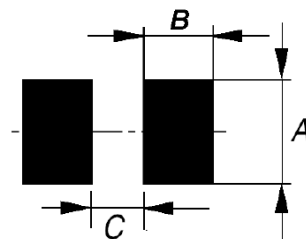
For E24 values 0603 ~ 2512 sizes 3 digit marking.

The first two digits are significant figures of resistance and the third digit denoted number of zeros

Example:



Recommended PCB layout plan

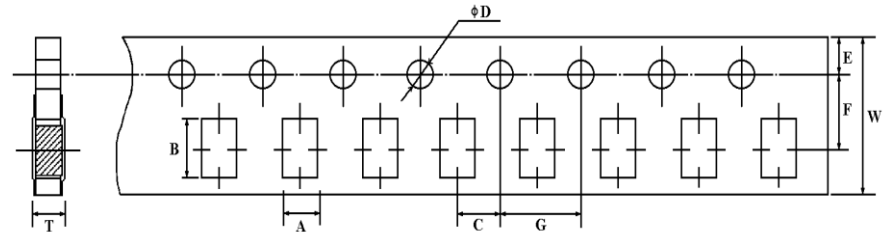


Type	A	B	C
CRGS0603	1.0	1.0	0.6
CRGS0805	1.3	1.2	1.0
CRGS1206	3.8	1.45	5.2
CRGS2010	3.0	1.5	3.8
CRGS2512	3.7	2.45	2.7

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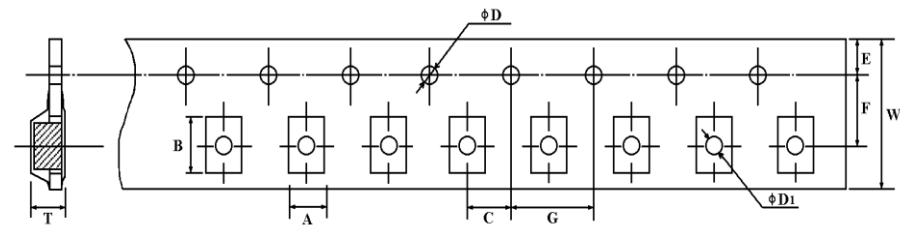
Packing specification:

A Paper tape:



Type	A ± 0.2	B ± 0.2	C ± 0.05	ØD +0.1 -0	E ± 0.1	F ± 0.05	G ± 0.1	W ± 0.2	T ± 0.1
CRGS0603	1.10	1.90	2.0	1.5	1.75	3.5	4.0	8.0	0.67
CRGS0805	1.65	2.40	2.0	1.5	1.75	3.5	4.0	8.0	0.81
CRGS1206	2.00	3.60	2.0	1.5	1.75	3.5	4.0	8.0	0.81

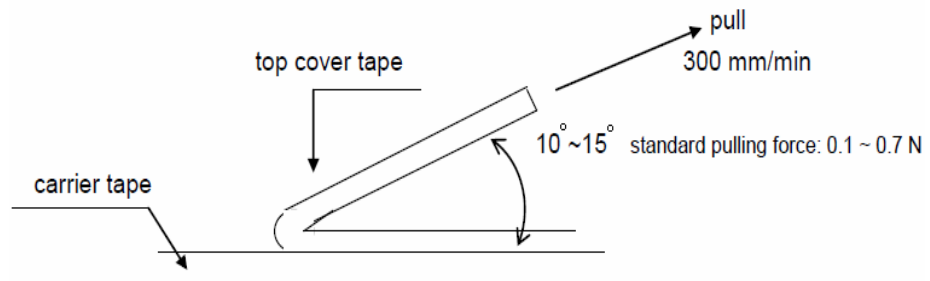
B. Embossed Tape:



Type	A ±0.2	B ±0.2	C ±0.05	ØD +0.1 -0	E ±0.1	F ±0.05	G ±0.1	W ±0.2	ØD +0.1 -0	T ± 0.1
CRGS2010	2.90	5.60	2.0	1.5	1.75	5.5	4.0	12.0	1.5	1.0
CRGS2512	3.50	6.70	2.0	1.5	1.75	5.5	4.0	12.0	1.5	1.0

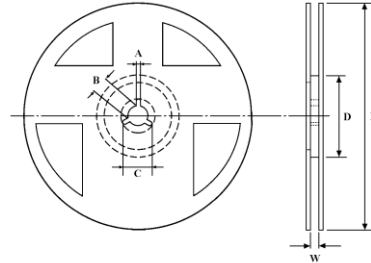
Peeling strength of top cover tape

Test Condition: 0.1 to 0.7N at a peel off speed of 300mm / min.



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Reel dimension (mm)

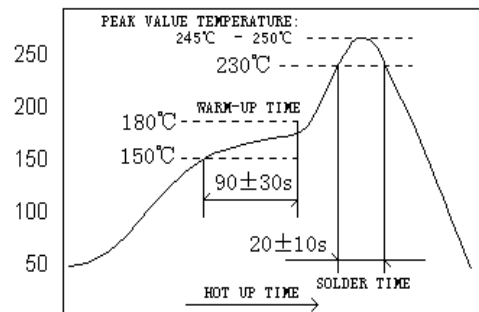


Type	Packaging	Quantity Per Reel	A ± 0.5	B ± 0.5	C ± 0.5	D ± 1	M ± 2	W ± 1
CRGS0603	Paper	5,000 pcs.	2	13	21	60	178	10
CRGS0805	Paper	5,000 pcs.	2	13	21	60	178	10
CRGS1206	Paper	5,000 pcs.	2	13	21	60	178	10
CRGS2010	Embossed	4,000 pcs.	2	13	21	60	178	13.8
CRGS2512	Embossed	4,000 pcs.	2	13	21	60	178	13.8

Solder Profile

Wave solder: 245°C ±3°C dipping time in solder : 2-3 seconds.

Reflow Solder



How To Order

CRGS	0603	J	10K
Common Part	Size	Tolerance	Resistance Value
CRGS – Anti-Surge Thick Film Chip Resistor	0603	J - ±5%	1 ohm (1Ω) 1R0
	0805		1K ohm (1000Ω) 1K0
	1206		100K ohm (100000Ω) 100K
	2010		
	2512		1M ohm (1000000Ω) 1M0