

# **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



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 real for automatic insertion processes. Standard values — E24 Series

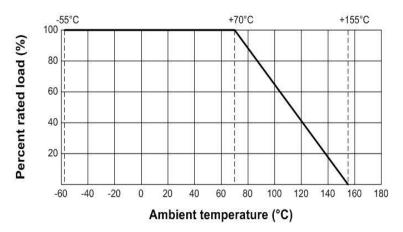
#### Characteristics - Electrical

Туре	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.	$1\Omega$ - $10\Omega$ : $\leq$ ± $400$ PPM/°C $11\Omega$ - $10\Omega\Omega$ : $\leq$ ± $200$ PPM/°C $11\Omega$ - $10M\Omega$ : $\leq$ ± $100$ PPM/°C $\leq$ ± $100$ PPM/°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	$25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ at a relative humidity of $60\%\text{RH} \pm 10\%\text{RH}$ Store in original packaging, out of direct sunlight and not in air with high concentrations of salt or corrosive gases.							

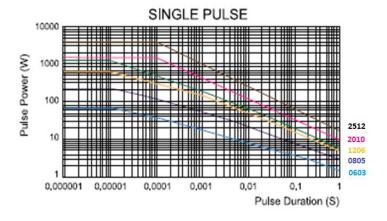


#### Power derating curve

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.

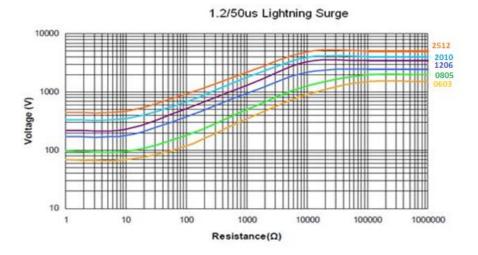


## One Pulse Limiting Electrical Power

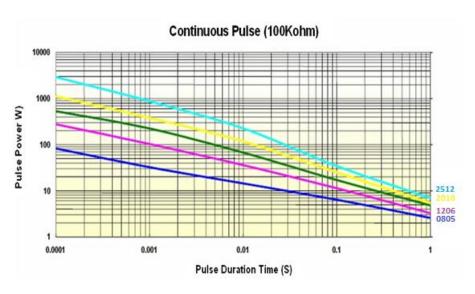




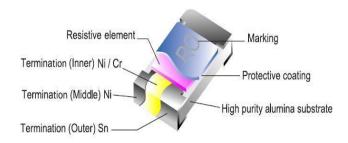
## Lightning Surge



#### **Continuous Pulse**



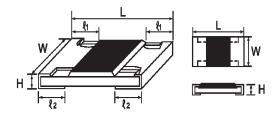
#### Construction





## SMD Anti-Surge Thick Film Chip Resistor

#### Dimensions:



Typo	Dimension (mm)								
Type	L	W	Н	£1	€2				
CRGS0603	1.60 ±0.10	0.80 +0.15	0.80 +0.15		0.30 ±0.20				
		-0.10							
CRGS0805	2.00 ±0.15	1.25 +0.15	0.55 ±0.10	0.40 ±0.20	0.40 ±0.20				
		-0.10							
CRGS1206	3.10 ±0.15	1.55 +0.15	0.55 ±0.10	0.45 ±0.20	0.45 ±0.20				
		-0.10							
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:

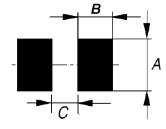
For E24 values 0603 ~ 2512 sizes 3 digit marking.

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

## Example:



## Recommended PCB layout plan



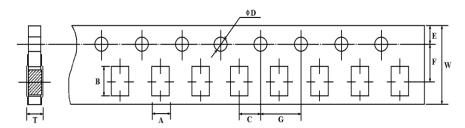
Туре	А	В	С
CRGS0603	1.0	1.0	0.6
CRGS0805	1.3	1.2	1.0
CRGS1206	1.8	1.2	2.2
CRGS2010	3.0	1.5	3.8
CRGS2512	3.7	2.45	2.7



## SMD Anti-Surge Thick Film Chip Resistor

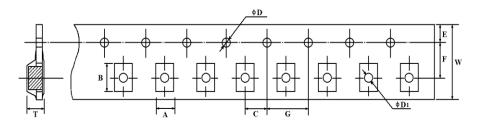
# Packing specification:

## A Paper tape:



Туре	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

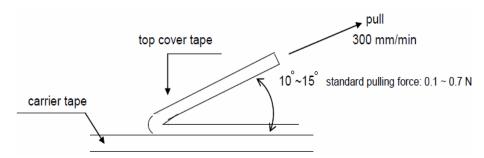
## B. Embossed Tape:



Туре	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

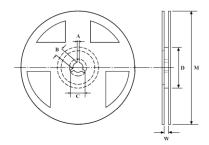
## Peeling strength of top cover tape

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





# Reel dimension (mm)

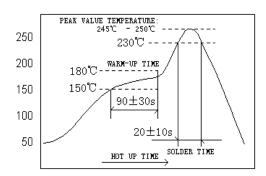


Tuno	Packaging	Quantity	A ± 0.5	B ± 0.5	C ± 0.5	D ±	M ± 2	W ± 1
Туре	Packaging	Per Reel				1		
CRGS0603	Paper	5,000 pcs.	2	13	21	60	178	10
CRGS0805	Paper	5,000 pcs.	2	13	21	60	178	10
CRGS1206	Paper	5,000 pcs.	2	13	21	60	178	10
CRGS2010	Embossed	4,000 pcs.	2	13	21	60	178	13.8
CRGS2512	Embossed	4,000 pcs.	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
			1 ohm (1Ω) 1R0
CRGS – Anti-Surge Thick Film Chip	0603 0805	J - ±5%	1K ohm (1000Ω) 1K0
Resistor	1206 J - ±5 2010 2512		100K ohm (100000Ω) 100K
			1M ohm (1000000Ω) 1M0