

# Anti-Surge Thick Film Chip Resistors

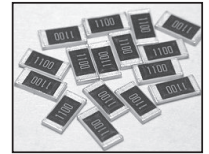
NRCP Series

## FEATURES

- EXCELLENT ANTI-SURGE CHARACTERISTICS
- BOTH FLOW SOLDER AND REFLOW SOLDERING ARE APPLICABLE
- HIGHER PULSE POWER
- AEC-Q200 QUALIFIED

**RoHS Compliant**  
includes all homogeneous materials

\*See Part Number System for Details



## SPECIFICATIONS

Type	EIA Size	Power Rating at 70°C	Max. *1 Working Voltage	Max. *2 Overload Voltage	Resistance Tolerance Code and Values	Temperature Coefficient (ppm/°C)	Resistance Range (Ω)	Operating Temperature Range
NRCP06	0603	1/10W	50	100	5% (J) E-24 10% (K) E-12 20% (M) E-6	±200ppm	10 ~ 1Meg	-55°C ~ +155°C
NRCP10	0805	1/4W	150	300				
NRCP12	1206	1/3W	200	400				
NRCP25	1210	1/2W						
NRCP50	2010	3/4W						
NRCP100	2512	1W						

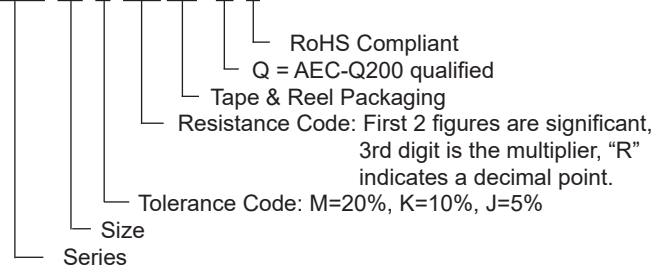
Note \*1 - Maximum allowable continuous Working Voltage for all resistors is the lower of the two values: "Maximum Working Voltage" as specified above (or)

$$\sqrt{\text{Power rating (Watts)} \times \text{Resistance (Ohms)}}$$

Note \*2 - Maximum allowable Overload voltage is 2 times the Maximum Working Voltage (see Note \*1 above) or Maximum Overload Voltage as specified in the table whichever is lower.

### PART NUMBER SYSTEM (E-24 VALUES)

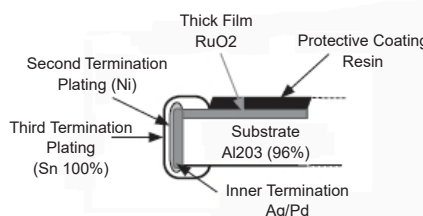
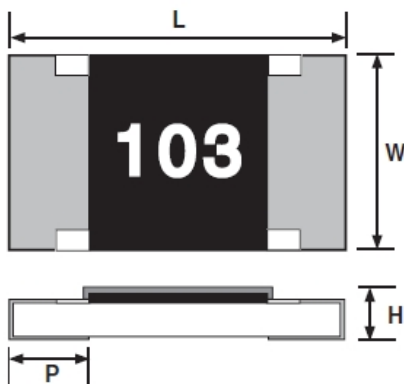
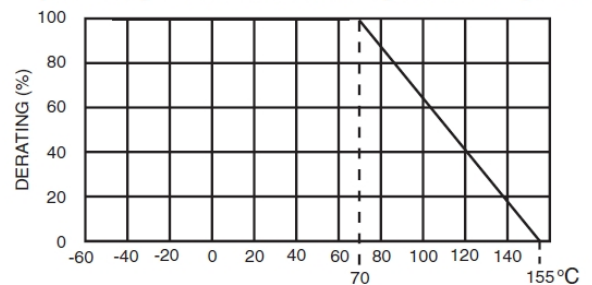
NRCP 12 K 103 TR Q F



## COMPONENT DIMENSIONS (mm)

Type	EIA Size	L	W	H	P
NRCP06	0603	1.60 ± 0.15	0.80 ± 0.15	0.45 ± 0.10	0.30 ± 0.20
NRCP10	0805	2.00 ± 0.20	1.25 ± 0.10	0.50 -0.10/+0.15	0.40 ± 0.20
NRCP12	1206	3.20 -0.20/+0.15	1.60 ± 0.15	0.60 -0.15/+0.10	0.50 ± 0.25
NRCP25	1210	3.20 ± 0.20	2.50 -0.15/+0.20	0.55 ± 0.15	0.50 ± 0.25
NRCP50	2010	5.00 ± 0.20	2.50 ± 0.15	0.55 ± 0.15	0.50 ± 0.30
NRCP100	2512	6.30 ± 0.20	3.20 ± 0.20	0.55 ± 0.15	0.65 ± 0.25

Power Derating Curve: For operation above 70°C, power rating must be derated according to the following chart:



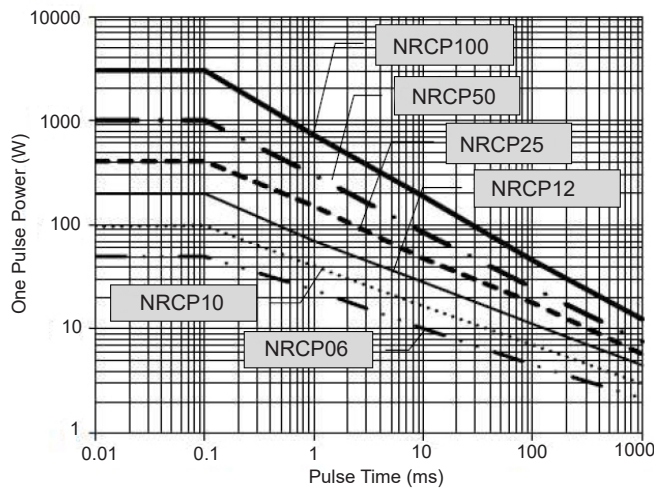
## STANDARD VALUES E-6, E-12 AND E-24

E-6 Value	E-12 Value	E-24 Value	
10	10	10	33
15	12	11	36
22	15	12	39
33	18	13	43
47	22	15	47
68	27	16	51
	33	18	56
	39	20	62
	47	22	68
	56	24	75
	68	27	82
	82	30	91

## PERFORMANCE CHARACTERISTICS


Test Items	Requirement $\Delta R \pm (\% \pm 0.1\Omega)$	Test Method (JISC5201-1)
Voltage proof	No breakdown or flashover	Maximum Overload Voltage, 60 seconds
Variation of resistance with temperature	See Specifications Table	+20°C/-55°C/+20°C/+125°C/+20°C or +20°C/-55°C/+20°C/+155°C/+20°C
Shorttime Overload	[2%]	Rated Voltage x 2.5 or Max. Overload Voltage x 2 Whichever is the greater, 2 seconds
Resistance to Soldering Heat	[1%]	Immersion into solder bath at 260°C for 5 seconds
Temperature Cycling	[1%]	100 times at -55°C 30 minutes/+125°C 30 minutes
Humidity Test (Steady State)	[1%]	+40°C, 90% ~ 95% RH, 1,000 hours
Load Life	[3%]	Rated Voltage, 1.5 hrs ON/0.5 hrs OFF Cycle, +70°C, 1,000 hrs
Humidity Load Life	[3%]	+40°C, 90% ~ 95% RH, 1,000 hours Rated Voltage, 1.5 hrs ON/0.5 hrs OFF cycle, 1,000 hrs

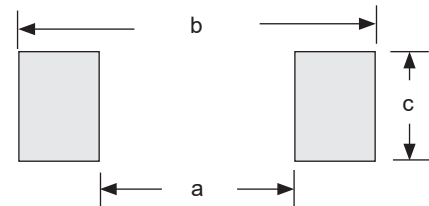
## ONE PULSE LIMITING POWER



## LAND PATTERN DIMENSIONS (mm)

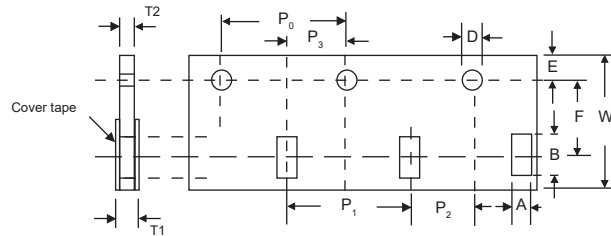
EIA Size	a	b	c
0603	0.9	2.6	0.7
0805	1.35	3.45	1.1
1206	2.2	4.7	1.4
1210	2.2	5.2	2.15
2010	3.7	6.2	2.15
2512	4.7	7.6	2.75

 **Reflow Soldering Heat Profile and Limits**  
 → [www.niccomp.com/resource/files/resistive/NIC-ChipR-Reflow-Sept2020-Rev2.pdf](http://www.niccomp.com/resource/files/resistive/NIC-ChipR-Reflow-Sept2020-Rev2.pdf)  
 Wave soldering? – Please review your wave soldering process profile with NIC: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)



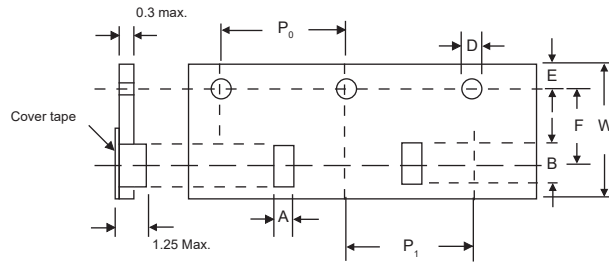
### PAPER TAPE DIMENSIONS (mm)

Type	EIA Size	A	B	D	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	W	Reel Quantity
NRCP06	0603	1.10 ± 0.20	1.90 ± 0.20	1.55 + 0.05	1.75 ± 0.10	3.50 ± 0.05	4.0 ± 0.10	4.0 ± 0.10	2.0 ± 0.05	1.4 max.	1.0 max.	8.0 ± 0.20	5,000
NRCP10	0805	1.65 ± 0.20	2.45 ± 0.25										
NRCP12	1206	2.00 ± 0.15	3.55 ± 0.25										
NRCP25	1210	2.85 ± 0.20	3.55 ± 0.25										4,000 or 5,000

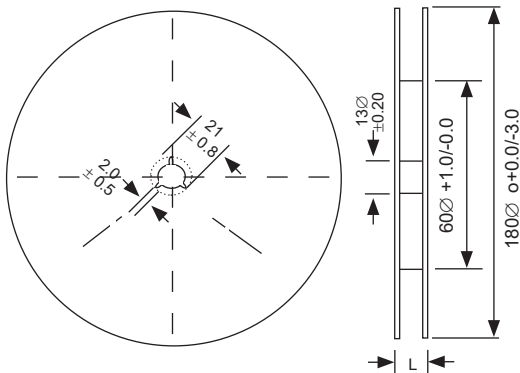


### EMBOSSED PLASTIC TAPE SPECIFICATION

Type	EIA Size	A	B	D	E	F	P <sub>0</sub>	P <sub>1</sub>	W	Qty per 7" Reel
NRCP50	2010	3.05 ± 0.25	5.45 ± 0.25	1.55 ± 0.05	1.75 ± 0.10	5.50 ± 0.05	4.0 ± 0.10	4.0 ± 0.10	12.0 ± 0.30	4,000
NRCP100	2512	3.55 ± 0.25	6.80 ± 0.30							4,000



### REEL SPECIFICATIONS



Type	EIA Size	L (mm)
NRCP06	0603	11.4 ± 1.00
NRCP10	0805	
NRCP12	1206	
NRCP25	1210	
NRCP50	2010	15.4 ± 1.00
NRCP100	2512	