

### FEATURES:

- Ruthenium Oxide (RuO<sub>2</sub>) resistive material for good reliability
- Tolerance as low as 1%
- Available in convex and block type



## PART NUMBER STRUCTURE

CRN	10	- 4		- 102	J	T
Series	Size	Number of Elements	Optional PPM Identifier	Resistance Code	Tolerance	Packaging
	06 10 16	(2 or 4)	Add a -K for ±100PPM (only 16-4 size)	Resistance Value Code (3-digit marking)	F = ±1% J = ±5%	T = Tape & Reel

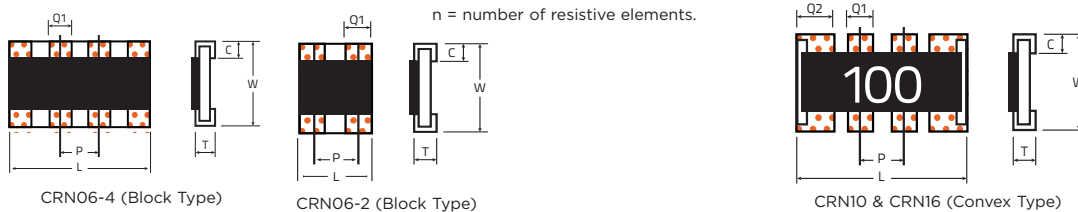
Example P/N: CRN10-4-102JT

Standard termination finish is 100% matte Tin (Sn) over Nickel.

## DIMENSIONS

Unit: mm

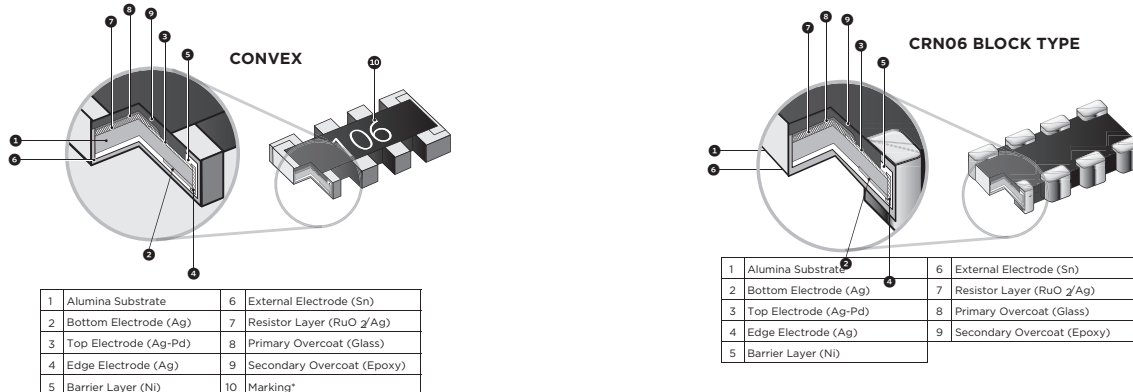
SIZE	NUMBER OF ELEMENTS	PPM	L	W	T	P (REF.)	Q1	Q2	C	TERMINAL TYPE
06	2	±200	0.80 ± 0.10	0.60 ± 0.10	0.35 ± 0.10	0.50 ± 0.10	0.30 ± 0.10	N/A	0.15 ± 0.10	Block
06	4	±200	1.4 ± 0.10	0.6 ± 0.10	0.35 ± 0.10	0.40 ± 0.10	0.20 ± 0.10	N/A	0.15 ± 0.05	Block
10	2	±200	1.0 ± 0.05	1.0 ± 0.05	0.45 ± 0.10	0.50 ± 0.15	0.30 ± 0.10	0.40 ± 0.10	0.25 ± 0.05	Convex
10	4	±200	2.0 ± 0.05	1.0 ± 0.05	0.45 ± 0.10	0.50 ± 0.15	0.30 ± 0.10	0.40 ± 0.10	0.25 ± 0.05	Convex
16	2	±200	1.6 ± 0.10	1.6 ± 0.10	0.50 ± 0.15	0.80 ± 0.20	0.50 ± 0.15	0.60 ± 0.15	0.25 ± 0.15	Convex
16	4	±200	3.2 ± 0.10	1.6 ± 0.10	0.50 ± 0.15	0.80 ± 0.20	0.50 ± 0.15	0.60 ± 0.15	0.25 ± 0.15	Convex
16	4	±100	3.2 ± 0.10	1.6 ± 0.10	0.50 ± 0.10	0.80	0.40 ± 0.10	0.60 ± 0.10	0.30 ± 0.20	Convex



## MARKING CODE

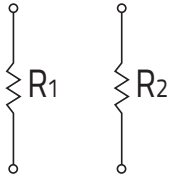
- CRN16-2 and CRN16-4 - 5% tolerance, E24 values - marked with a 3 digit code
- CRN16-2 and CRN16-4 - 1% tolerance, E-96 values - No marking
- CRN16-2 and CRN16-4 - 1% tolerance, E-96 values that cross over to E24 values - marked with a 3 digit code

## STRUCTURE

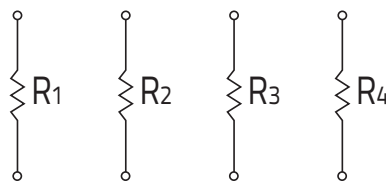


## ELEMENT COUNT

2 ELEMENT



4 ELEMENT

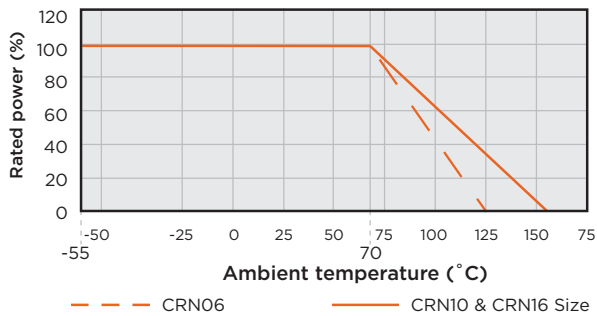


## ELECTRICAL SPECIFICATIONS & RANGE

Size		06	10	16	
Power Rating at 70°C (W)		0.03W (1/32W)	0.063W (1/16W)	0.063W (1/16W)	
Max. Working Voltage		12.5V	25V	50V	
TCR		±200PPM/°C	±200PPM/°C	±100PPM/°C	±200PPM/°C
Individual Resistor Size		0201	0402	0603	
Operating Temperature Range		-55°C to +125°C	-55°C to +155°C	-55°C to +125°C	-55°C to +155°C
Zero Ohm (Jumper)	Current Rating	0.5A	1A	1A	1A
Zero Ohm (Jumper)	Resistance	50MΩ (Max)	50MΩ (Max)	50MΩ (Max)	
Tolerance	Number of Resistors	Resistance Range	Resistance Range	Resistance Range	
±1% (F)	2	10Ω - 1MΩ	0, 10Ω - 1MΩ	-	-
	4	10Ω - 1MΩ	0, 10Ω - 1MΩ	10Ω - 1MΩ	0, 10Ω - 1MΩ
±5% (J)	2	0, 10Ω - 1MΩ	0, 1Ω - 1MΩ	-	0, 10Ω - 1MΩ
	4	0, 10Ω - 1MΩ	0, 1Ω - 1MΩ	-	0, 1Ω - 1MΩ

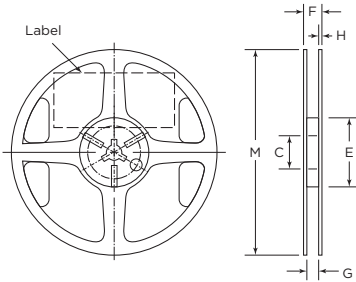
NOTE: Overload Voltage=2.5\*√(P\*R). CRN06 has a current rating of 0.5A.

## DERATING CURVE



## TAPE & REEL SPECIFICATIONS

### REEL

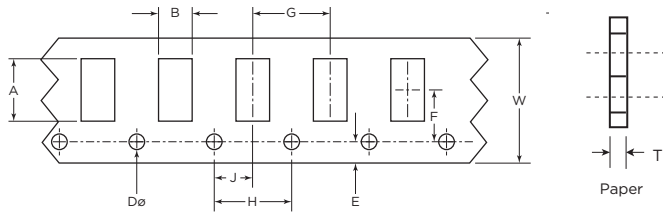


Unit: mm (inch)

SIZE	C	E	F	G	H	M
06, 10-2, 10-4, 16-2, 16-4	13.0 ± 0.2 (0.51 ± 0.008)	60.0 ± 1.0 (2.36 ± 0.03)	11.4 ± 1.0 (0.45 ± 0.04)	9.0 ± .3 (0.35 ± 0.012)	1.5 ± .3 (0.06 ± 0.012)	180 ± 2.0 (7.09 ± 0.08)

Minimum of 30 empty pockets at the beginning of reel, 65 minimum empty pockets at the end.

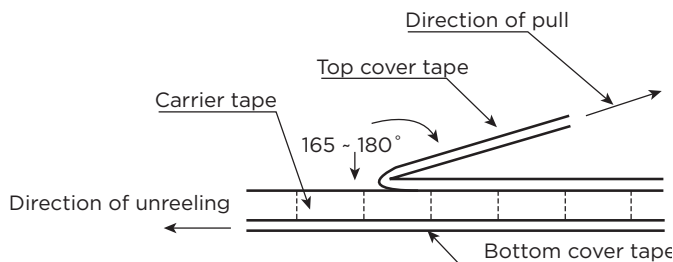
### TAPE



All dimensions in mm.

TAPE	SIZE	A	B	W	E	F	T	G	H	J	DØ
Paper	06	1.57 ± 0.05	0.77 ± 0.05	8.0 ± 0.10	1.75 ± 0.05	3.50 ± 0.05	0.50 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	2.00 ± 0.05	1.50 +0.1, -0
	10-2	1.57 ± 0.05	0.77 ± 0.05	8.0 ± 0.10	1.75 ± 0.05	3.50 ± 0.05	0.50 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	2.00 ± 0.05	1.50 +0.1, -0
	10-4	2.20 ± 0.10	1.20 ± 0.10	8.0 ± 0.10	1.75 ± 0.05	3.50 ± 0.05	0.70 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	2.00 ± 0.05	1.50 ± 0.05
	16-2	3.50 ± 0.10	1.95 ± 0.1	8.0 ± 0.10	1.75 ± 0.05	3.50 ± 0.05	0.85 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	1.50 ± 0.05
	16-4	3.50 ± 0.10	1.95 ± 0.1	8.0 ± 0.10	1.75 ± 0.05	3.50 ± 0.05	0.85 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	1.50 ± 0.05

## PEEL BACK FORCE & DIRECTION DIAGRAM



Peel back force and direction of peel back angle should follow EIA481-1-A. Peel back force should be between 0.1N - 1.3N and peel back angle of 165° - 180°.

## ENVIRONMENTAL CHARACTERISTICS

TEST	REQUIREMENT			TEST METHOD
	±1%	±5%	Jumper	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.			JIS-C-5201-1 4.8 IEC-60115-1 4.8 At 25°C/-55°C and 25°C/+125°C, 25°C is the reference temperature
Short Time Overload	±(1.0%+0.05Ω) CNA42/43: ±(2.0%+0.05Ω)	±(2.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.13 IEC-60115-1 4.13 RCWV*2.5 or Max. Overload Voltage whichever is lower for 5 seconds
Insulation Resistance	≥10G			JIS-C-5201-1 4.6 IEC-60115-1 4.6 Max. Overload Voltage for 1 minute
Endurance	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)	<50mΩ CN-21/41& CNA42/43: <100mΩ	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1 70±2°C, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"
Damp Heat with Load	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)	<50mΩ CNA42/43: <100mΩ	JIS-C-5201-1 4.24 IEC-60115-1 4.24 40±2°C, 90-95% R.H., RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"
Dry Heat	±(1.0%+0.05Ω)	±(1.5%+0.10Ω) CN-21/41: ±(3.0%+0.10Ω)	<50mΩ CN-21/41: <100mΩ	JIS-C-5201-1 4.23 IEC-60115-1 4.23.2 at +125/+155°C for 1000 hrs
Bending Strength	±(1.0%+0.05Ω)	±(1.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending once for 5 seconds with 3mm
Solderability	95% min. coverage			JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 3 seconds
Resistance to Soldering Heat	±(0.5%+0.05Ω) CNA42/43: ±(1.0%+0.05Ω)	±(1.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds
Voltage Proof	No breakdown or flashover			JIS-C-5201-1 4.7 IEC-60115-1 4.7 1.42 times Max. Operating Voltage for 1 minute
Leaching	Individual leaching area ≤5% Total leaching area ≤10%			JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1 260±5°C for 30 seconds
Rapid Change of Temperature	±(0.5%+0.05Ω)	±(1.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.19 IEC-60115-1 4.19 -55°C to +125/+155°C, 5 cycles

RCWV (Rated Continuous Working Voltage)=√(P\*R ) or or Max. Operating Voltage whichever is lower.  
Storage Temperature: 15-28°C; Humidity: < 80%RH°C