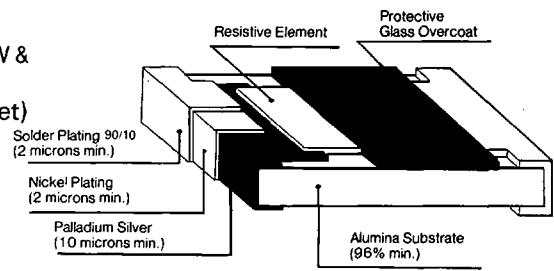


## FEATURES:

- EIA standard sizing 0402(1/16W), 0603(1/16W), 0805(1/10W), 1206(1/8W & 1/4W), 1210(1/4W), 2010(1/2W) and 2512(1W)
- Metal glazed thick film on high purity alumina substrate (cermet) provides uniform quality and high reliability.
- Double glass overcoat assures strong mechanical construction and long life, nickel barrier prevents leaching.
- All sizes are available in tape/reel for automatic mounting.
- Both flow solder and reflow soldering are applicable
- Zero Ohm (jumper) chip available in 0402, 0603, 0805 and 1206 sizes
- Trimmable Type Available



## CONSTRUCTION

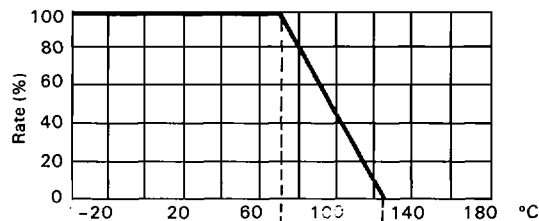
SURFACE MOUNT

Type	EIA Size	Power Rating at 70°C	Max. Working Voltage	Max. Overload Voltage	Resistance Tolerance (code)	Temperature Coefficient (ppm/°C)	Resistance Range (Ω)	Resistance Value
NRC04	0402	1/16 (0.063)W	50V	100V	±5%(J)	±250	10 ~ 1M	E24
					±1%(F)	±250	10 ~ 1M	E96
NRC06	0603	1/16(0.063)W	50V	100V	±1% (F)	±200	10 ~ 1M	E96
					± 2%(G), ± 5%(J)	±300	10 ~ 1M	E24
NRC10	0805	1/10 (0.1)W	150V	300V	± 1% (F)	±100	10 ~ 2.2M	E96
					± 2%(G), ± 5%(J)	± 200	10 ~ 2.2M	E24
					± 5% (J)	±350	Below 10 or over 2.2M *1	E24
NRC12R	0805	1/8 (0.125)W	200V	300V	± 1% (F)	± 100	100 ~ 1M	E96
					± 5% (J)	± 200	100 ~ 1M	E24
NRC12	1206	1/8 (0.125)W	200V	400V	± 0.5%(D)	± 50	510 ~ 510k *1	E96
					± 0.5%(D)	± 100	100 ~ 1M *1	E96
					± 1% (F)	± 100	10 ~ 1M	E96
					± 2%(G), ± 5%(J)	± 200	10 ~ 2.2M	E24
NRC25R	1206	1/4 (0.25) W	200V	400V	± 1% (F)	± 100	10 ~ 1M	E96
					± 2%(G), ± 5%(J)	± 200	10 ~ 1M	E24
NRC25	1210	1/4 (0.25) W	250V	500V	± 1% (F)	± 100	100 ~ 1M	E96
					± 5% (J)	± 200	10 ~ 2.2M	E24
NRC50	2010	1/2 (0.5) W	350V	700V	± 5% (J)	± 200	10 ~ 2.2M	E24
					± 350	Below 10 *1		
NRC100	2512	1W	500V	1000V	± 5% (J)	± 200	10 ~ 1M	E24
						± 350	Below 10 *1	
NRC04Z0	0402	Zero Ohm Jumper @ Rated Current 1.0 max.				(0.050 OHM MAXIMUM DC RESISTANCE)		
NRC06Z0	0603	Zero Ohm Jumper @ Rated Current 1.0 max.				(0.050 OHM MAXIMUM DC RESISTANCE)		
NRC10Z0	0805	Zero Ohm Jumper @ Rated Current 1.5A max.				(0.050 OHM MAXIMUM DC RESISTANCE)		
NRC12Z0	1206	Zero Ohm Jumper @ Rated Current 2.0A max.				(0.050 OHM MAXIMUM DC RESISTANCE)		

Note \*1 : Optional. Please consult our sales for availability.

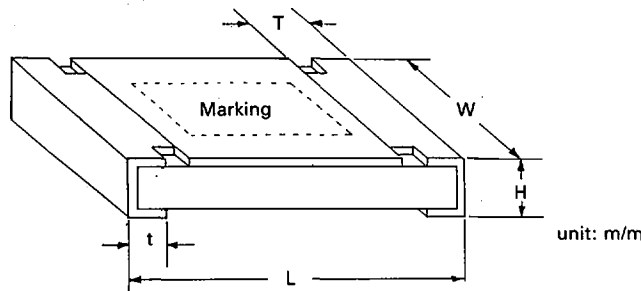
\*2 : Trimmable type is also available in 0805 and 1206 sizes on request.

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



## DIMENSIONS

Type	Power Rating	EIA Size	L	W	H	T	t	
NRC04	1/16W	0402	1.0 $\begin{smallmatrix} +0.1 \\ -0.05 \end{smallmatrix}$	0.5 $\begin{smallmatrix} +0.1 \\ -0.05 \end{smallmatrix}$	0.35 $\pm 0.05$	0.2 $\pm 0.1$	0.25 $\begin{smallmatrix} +0.05 \\ -0.1 \end{smallmatrix}$	
NRC06	1/16W	0603	1.6 $\pm 0.15$	0.8 $\pm 0.15$	0.45 $\pm 0.1$	0.3 $\pm 0.2$	0.2 $\begin{smallmatrix} +0.2 \\ -0.1 \end{smallmatrix}$	
NRC10	1/10W	0805	2.0 $\pm 0.2$	1.25 $\pm 0.1$	0.5 $\pm 0.1$	0.4 $\pm 0.2$	0.2 $\begin{smallmatrix} +0.2 \\ -0.1 \end{smallmatrix}$	
NRC12R	1/8W							
NRC12	1/8W	1206	3.1 $\pm 0.15$	1.55 $\pm 0.15$	0.55 $\pm 0.1$	0.5 $\pm 0.2$	0.5 $\pm 0.25$	
NRC25R	1/4W							
NRC25	1/4W	1210	3.1 $\pm 0.15$	2.65 $\pm 0.15$	0.55 $\pm 0.1$	0.5 $\pm 0.2$	0.5 $\pm 0.25$	
NRC50	1/2W	2010	5.0 $\pm 0.15$	2.50 $\pm 0.15$	0.55 $\pm 0.1$	1.0 $\pm 0.2$	0.5 $\pm 0.25$	
NRC100	1W	2512	6.4 $\pm 0.2$	3.2 $\pm 0.15$	0.55 $\pm 0.1$	1.3 $\pm 0.2$	0.6 $\pm 0.3$	
NRC06Z0	JUMPER	0603	SEE NRC06					
NRC10Z0	JUMPER	0805	SEE NRC10					
NRC12Z0	JUMPER	1206	SEE NRC12					



## Marking

- For E-24 Series ( $\pm 5\%$ -J,  $\pm 2\%$ -G,  $\pm 10\%$ -K Tolerances)

In 0603, 0805, 1206, 1210, 2010 and 2512 sizes:  
**3 DIGIT SYSTEM** - First two digits are significant and third digit is multiplier, "R" indicates decimal on values under 10 ohms.

Examples: 10R = 10 ohms      102 = 1k ohms  
 470 = 47 ohms      103 = 10k ohms  
 101 = 100 ohms      104 = 100k ohms  
                                  105 = 1 megohms

- For E-96 Series ( $\pm 1\%$  -F Tolerance) in 0805, 1206, and 1210 sizes:

**4 DIGIT SYSTEM** - First 3 digits are significant and fourth digit is multiplier, "R" indicates decimal on values under 10 ohms.

Examples 10R0 = 10 ohms      1003 = 100 kohms  
 1000 = 100 ohms      1004 = 1 megohms  
 1001 = 1k ohms      1052 = 10.5k ohms  
 1002 = 10k ohms      2213 = 221k ohms

- For E-96 Series ( $\pm 1\%$  -F Tolerance) in 0603 size  
**3 DIGIT SYSTEM** (Due to space restrictions)

## STANDARD E-96 VALUES AND 0603 RESISTANCE CODE

E-24		E-96						
Value	Value	Code	Value	Code	Value	Code	Value	Code
100	100	01	102	02	105	03	107	04
110	110	05	113	06	115	07	118	08
120	121	09	124	10	127	11	130	12
130	133	13	137	14	140	15	143	16
150	147	17	150	18	154	19	158	20
160	162	21	165	22	169	23	174	24
180	178	25	182	26	187	27	191	28
200	196	29	200	30	205	31	210	32
220	215	33	221	34	226	35	232	36
240	237	37	243	38	249	39	255	40
270	261	41	267	42	274	43	280	44
300	287	45	294	46	301	47	309	48
330	316	49	324	50	332	51	340	52
360	348	53	357	54	365	55	374	56
390	383	57	392	58	402	59	412	60
430	422	61	432	62	442	63	453	64
470	464	65	475	66	487	67	499	68
510	511	69	523	70	536	71	549	72
560	562	73	576	74	590	75	604	76
620	619	77	634	78	649	79	665	80
680	681	81	698	82	715	83	732	84
750	750	85	768	86	787	87	806	86
820	825	89	845	90	866	91	887	92
910	909	93	931		953	95	976	

## MULTIPLIER CODE

Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	10 <sup>0</sup>	10 <sup>1</sup>	10 <sup>2</sup>	10 <sup>3</sup>	10 <sup>4</sup>	10 <sup>5</sup>	10 <sup>6</sup>	10 <sup>7</sup>	10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>

## CODING FORMULA



Example: 10.2 k $\Omega$  =  $\frac{102}{02} \times \frac{10^2}{C} \Omega = 02C$

33.2  $\Omega$  =  $\frac{332}{51} \times \frac{10^{-1}}{X} = 51X$

## Marking Examples

10 $\Omega$  = 01X  
 7.5k  $\Omega$  = 85B  
 150k  $\Omega$  = 18D  
 1 Meg $\Omega$  = 01E



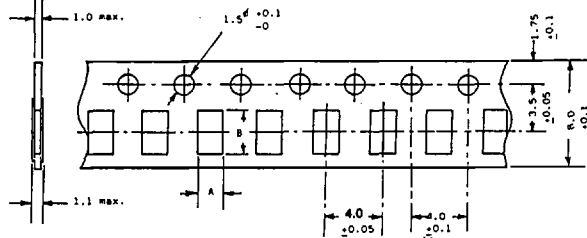
## Taping Specifications in Millimeters

### (1) Availability

Type	Power Rating	EIA Size	Carrier Tape			Q'ty per Reel (pcs)
			Fig	Material	Width	
NRC04	1/18W	0402	A	Paper	8	10,000
NRC06	1/16W	0603	A	Paper	8	5,000
NRC10	1/10W	0805	A	Paper	8	5,000
NRC12	1/8 W	1206	A	Paper	8	5,000
NRC25R	1/4 W	1206	A	Paper	8	5,000
NRC25	1/4 W	1210	B	Plastic	12	4,000
NRC50	1/2 W	2010	B	Plastic	12	4,000
NRC100	1 W	2512	B	Plastic	12	4,000
NCR06Z0	JUMPER	0603	A	Paper	8	5000
NRC10Z0	JUMPER	0805	A	Paper	8	5,000
NRC12Z0	JUMPER	1206	A	Paper	8	5,000

### (2) Paper Tape specifications

FIG. A.

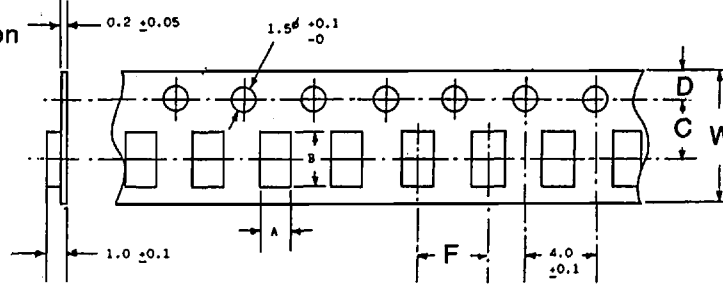


Type	EIA Size	A	B
NRC04	0402	0.65±0.1	1.15±0.1
NRC06*	0603	1.135±0.05	1.95±0.05
NRC10*	0805	1.65±0.2	±0.2
NRC12*	1206	2.0±0.2	3.6±0.2
NRC25R			

\*SAME FOR JUMPER (Z0) TYPES

### (3) Embossed plastic tape specification

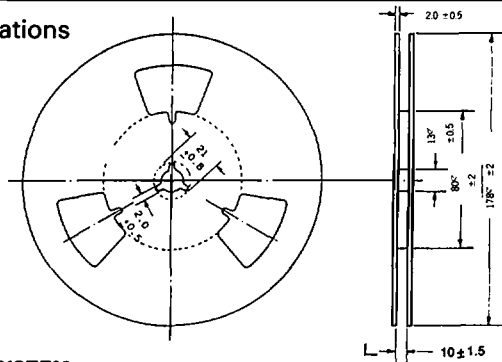
FIG. B.



TYPE	EIA SIZE	A	B	C	D	F	W
NRC 25	1210	2.9±0.1	3.6±0.1	3.5±0.05	1.75±0.1	4.0±0.1	8.0±0.1
NRC 50	2010	2.9±0.1	5.4±0.1	5.65±0.05	1.50±0.1	4.0±0.1	12.0±0.1
NRC100	2512	3.6±0.1	6.9±0.1	5.65±0.05	1.50±0.1	4.0±0.1	12.0±0.1

### (4) Reel Specifications

FIG. C

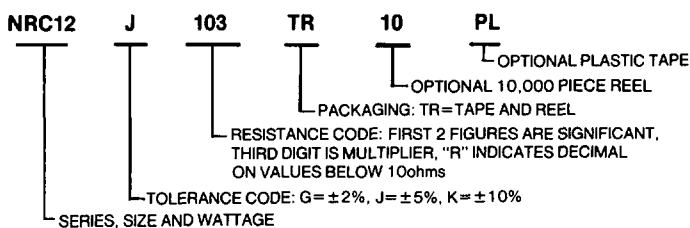


Type	EIA Size	L±1.5
NRC04	0402	10.0
NRC06	0603	10.0
NRC10	0805	10.0
NRC12	1206	10.0
NRC25R	1206	10.0
NRC25	1210	10.0
NRC50	2010	13.5
NRC100	2512	13.5

1. Leader tape : Approximately 250 μm leader shall be provided at each end of the tape.
2. Accumulative tolerance of feeding hole and chip pocket shall not exceed 0.2mm over 10 pitches.

### PART NUMBERING SYSTEM

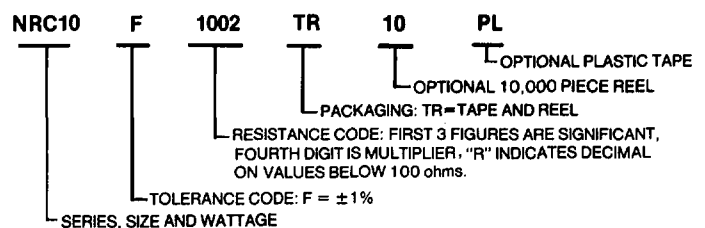
#### 1. E-24 SERIES; ±2%(G), ±5%(J), ±10%(K) TOLERANCES



EXAMPLES OF RESISTANCE CODE: 4R7 = 4.7 ohms  
100 = 10 ohms  
105 = 1meg ohms  
101 = 100 ohms  
102 = 1K ohms

103 = 10K ohms  
104 = 100K ohms  
105 = 1meg ohms  
106 = 10meg ohms

#### 2. E-96 SERIES; ±1%(F) TOLERANCE



EXAMPLES OF RESISTANCE CODE: 10R0 = 10 ohms  
47R5 = 47.5 ohms  
1000 = 100 ohms  
1001 = 1K ohms  
1002 = 10K ohms  
1003 = 100K ohms

1004 = 1meg ohm  
1050 = 105 ohms  
1501 = 1.5K ohms  
1052 = 10.5K ohms  
1153 = 115K ohms  
1214 = 1.21meg ohms

