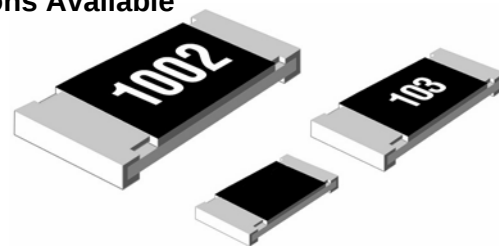
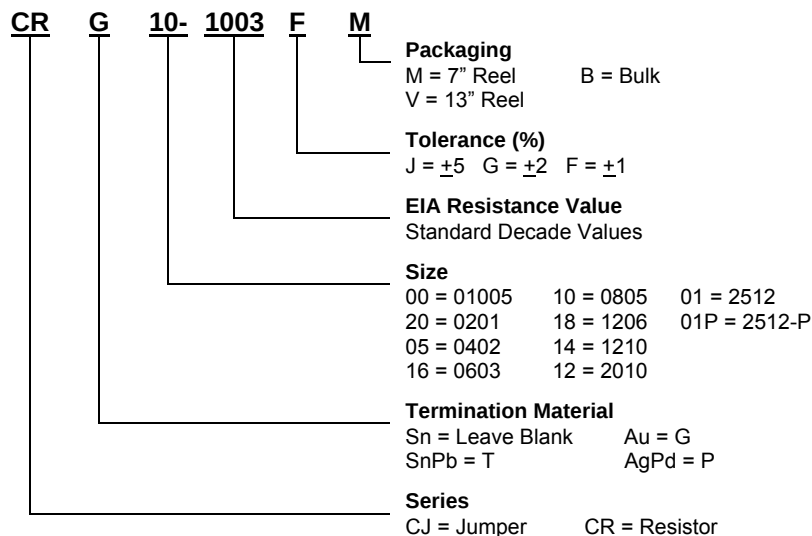


## Tin / Tin Lead / Silver Palladium Non-Magnetic / Gold Terminations Available

Custom solutions are available.

### HOW TO ORDER

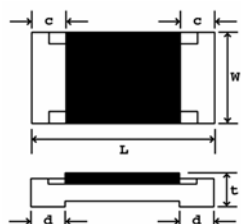


### FEATURES

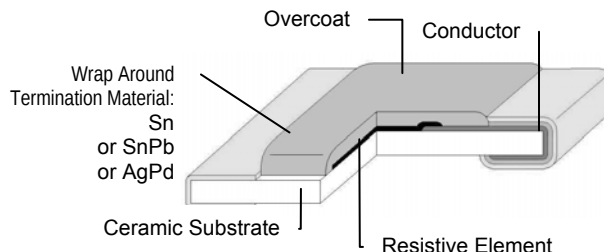
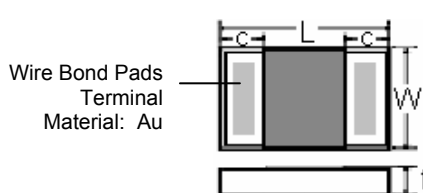
- Excellent stability over a wide range of environmental conditions
- CR and CJ types in compliance with RoHS
- CRP and CJP non-magnetic types constructed with AgPd Terminals, Epoxy Bondable
- CRG and CJG types constructed top side terminations, wire bond pads, with Au termination material.
- Operating temperature -55°C ~ +125°C
- Appl. Specifications: EIA 575, IEC 60115-1, JIS 5201-1, and MIL-R-55342G

### SCHEMATIC

**Wrap Around Terminal**  
CR, CJ, CRP, CJP type



**Top Side Termination, Bottom Isolated**  
CRG, CJG type



### DIMENSIONS (mm)

| Size   | Size Code | L               | W               | c               | d               | t               |
|--------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 01005  | 00        | 0.40 $\pm$ 0.02 | 0.20 $\pm$ 0.02 | 0.08 $\pm$ 0.03 | 0.10 $\pm$ 0.03 | 0.12 $\pm$ 0.02 |
| 0201   | 20        | 0.60 $\pm$ 0.03 | 0.30 $\pm$ 0.03 | 0.10 $\pm$ 0.05 | 0.15 $\pm$ 0.05 | 0.25 $\pm$ 0.05 |
| 0402   | 05        | 1.00 $\pm$ 0.05 | 0.5+0.1-0.05    | 0.20 $\pm$ 0.10 | 0.25+0.05-0.10  | 0.35 $\pm$ 0.05 |
| 0603   | 16        | 1.60 $\pm$ 0.10 | 0.80 $\pm$ 0.10 | 0.20 $\pm$ 0.10 | 0.30+0.20-0.10  | 0.50 $\pm$ 0.10 |
| 0805   | 10        | 2.00 $\pm$ 0.15 | 1.25 $\pm$ 0.15 | 0.40 $\pm$ 0.25 | 0.30+0.20-0.10  | 0.50 $\pm$ 0.15 |
| 1206   | 18        | 3.20 $\pm$ 0.15 | 1.60 $\pm$ 0.15 | 0.45 $\pm$ 0.25 | 0.40+0.20-0.10  | 0.60 $\pm$ 0.15 |
| 1210   | 14        | 3.20 $\pm$ 0.20 | 2.60 $\pm$ 0.20 | 0.50 $\pm$ 0.30 | 0.40+0.20-0.10  | 0.60 $\pm$ 0.10 |
| 2010   | 12        | 5.00 $\pm$ 0.20 | 2.50 $\pm$ 0.20 | 0.50 $\pm$ 0.30 | 0.50+0.20-0.10  | 0.60 $\pm$ 0.10 |
| 2512   | 01        | 6.30 $\pm$ 0.20 | 3.10 $\pm$ 0.20 | 0.50 $\pm$ 0.30 | 0.50+0.20-0.10  | 0.60 $\pm$ 0.15 |
| 2512-P | 01P       | 6.50 $\pm$ 0.30 | 3.20 $\pm$ 0.20 | 0.60 $\pm$ 0.30 | 1.50 $\pm$ 0.30 | 0.60 $\pm$ 0.10 |

### ELECTRICAL SPECIFICATIONS for CHIP RESISTORS

| Size                   | 01005          | 0201                                       | 0402                                                              |
|------------------------|----------------|--------------------------------------------|-------------------------------------------------------------------|
| Power Rating (EIA 575) | 0.031 (1/32) W | 0.05 (1/20) W                              | 0.063 (1/16) W                                                    |
| Working Voltage*       | 15V            | 25V                                        | 50V                                                               |
| Overload Voltage       | 30V            | 50V                                        | 100V                                                              |
| Tolerance (%)          | $\pm 5$        | $\pm 1$ $\pm 2$ $\pm 5$                    | $\pm 1$ $\pm 2$ $\pm 5$                                           |
| EIA Values             | E-24           | E-96 E-24                                  | E-96 E-24                                                         |
| Resistance             | 10 ~ 1.0M      | 10 ~ 1M 1.0~9.1, 10~10M                    | 1.0~9.1, 10~10M 1.0~9.1, 10~10M                                   |
| TCR (ppm/°C)           | $\pm 250$      | $\pm 200$ +600 <sup>-200</sup> , $\pm 200$ | +500 <sup>-200</sup> , $\pm 200$ +500 <sup>-200</sup> , $\pm 200$ |
| Operating Temp.        | -55°C ~ +125°C | -55°C ~ +125°C                             | -55°C ~ +125°C                                                    |

| Size                   | 0603           |    |    | 0805           |    |    | 1206           |    |    | 1210           |    |    |
|------------------------|----------------|----|----|----------------|----|----|----------------|----|----|----------------|----|----|
| Power Rating (EIA 575) | 0.100 (1/10) W |    |    | 0.125 (1/8) W  |    |    | 0.250 (1/4) W  |    |    | 0.33 (1/3) W   |    |    |
| Working Voltage*       | 50V            |    |    | 100V           |    |    | 200V           |    |    | 200V           |    |    |
| Overload Voltage       | 100V           |    |    | 200V           |    |    | 400V           |    |    | 400V           |    |    |
| Tolerance (%)          | ±1             | ±2 | ±5 | ±1             | ±2 | ±5 | ±1             | ±2 | ±5 | ±1             | ±2 | ±5 |
| EIA Values             | E-96           |    |    | E-24           |    |    | E-96           |    |    | E-24           |    |    |
| Resistance             | 10 ~ 1 M       |    |    | 10 ~ 1 M       |    |    | 10 ~ 1 M       |    |    | 10 ~ 1 M       |    |    |
| TCR (ppm/°C)           | ±100           |    |    | ±100           |    |    | ±100           |    |    | ±100           |    |    |
| Operating Temp.        | -55°C ~ +125°C |    |    | -55°C ~ +125°C |    |    | -55°C ~ +125°C |    |    | -55°C ~ +125°C |    |    |

| Size                   | 2010           |    |    | 2512           |    |    | 2512-P         |    |    |
|------------------------|----------------|----|----|----------------|----|----|----------------|----|----|
| Power Rating (EIA 575) | 0.500 (1/2) W  |    |    | 1.0 W          |    |    | 2.0 W          |    |    |
| Working Voltage*       | 200V           |    |    | 200V           |    |    | 200V           |    |    |
| Overload Voltage       | 400V           |    |    | 400V           |    |    | 400V           |    |    |
| Tolerance (%)          | ±1             | ±2 | ±5 | ±1             | ±2 | ±5 | ±1             | ±2 | ±5 |
| EIA Values             | E-96           |    |    | E-24           |    |    | E-96           |    |    |
| Resistance             | 10 ~ 1 M       |    |    | 10 ~ 1 M       |    |    | 1.0 ~ 1.0M     |    |    |
| TCR (ppm/°C)           | ±100           |    |    | ±100           |    |    | ±100           |    |    |
| Operating Temp.        | -55°C ~ +125°C |    |    | -55°C ~ +125°C |    |    | -55°C ~ +155°C |    |    |

\* Rated Voltage:  $\sqrt{P \times R}$

## ELECTRICAL SPECIFICATIONS for ZERO OHM JUMPERS

| Series                | CJ20 (0201)    | CJ05 (0402)    | CJ06 (0603)    | CJ10 (0805)    | CJ18 (1206)    | CJ14 (1210)    | CJ12 (2010)    | CJ01 (2512)    |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Rated Current         | 0.5A (70°C)    | 1A (70°C)      | 1A (70°C)      | 2A (70°C)      | 2A (70°C)      | 2A (70°C)      | 2A (70°C)      | 2A (70°C)      |
| Resistance (Max)      | 50 m $\Omega$  | 50 m $\Omega$  | 50 m $\Omega$  | 50 m $\Omega$  | 50 m $\Omega$  | 50 m $\Omega$  | 50 m $\Omega$  | 50 m $\Omega$  |
| Max. Overload Current | 1A             | 2.5A           | 2.5A           | 5A             | 5A             | 5A             | 5A             | 5A             |
| Working Temp.         | -55°C ~ +125°C | -55°C ~ +125°C | -55°C ~ +125°C | -55°C ~ +125°C | -55°C ~ +125°C | -55°C ~ +125°C | -55°C ~ +125°C | -55°C ~ +125°C |

\* Rated Voltage:  $\sqrt{P \times R}$

## DERATING CURVE

For resistors operated at ambient temperature over 70°, power rating shall be derated in accordance with figure 1.

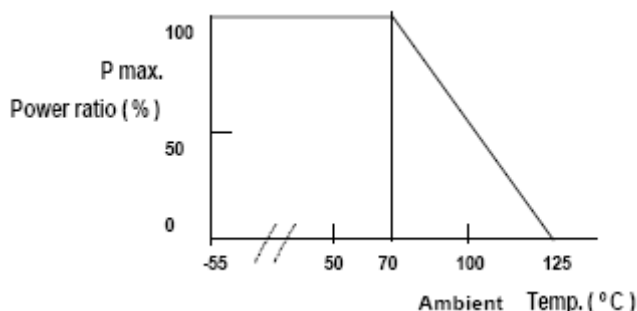


Figure 1

The rated voltage is calculated by the following formula:

$$E = \sqrt{P \times R}$$

E=Rated Voltage(V)

P=Rated Power(W)

R=Resistance Value( $\Omega$ )

## CHARACTERISTICS

| Test Item                 | Maximum $\Delta \Omega$ +0.05 $\Omega$          |                                                   | Test Conditions                                                              |
|---------------------------|-------------------------------------------------|---------------------------------------------------|------------------------------------------------------------------------------|
|                           | $\pm 2\% \text{ \& } \pm 5\% \text{ Tolerance}$ | $\pm 1\% \text{ \& } \pm 0.5\% \text{ Tolerance}$ |                                                                              |
| Short Time Overload       | $\pm 0.75\%$                                    | $\pm 0.50\%$                                      | EIA Standard 575, $\pi$ 3.6<br>2.5 x rated voltage for 5 seconds             |
| Load Life                 | $\pm 1.50\%$                                    | $\pm 1.00\%$                                      | EIA Standard 575, $\pi$ 3.14<br>90 minutes on; 30 minutes off for 1000 hours |
| Thermal Shock             | $\pm 0.25\%$                                    | $\pm 0.50\%$                                      | EIA Standard 575, $\pi$ 3.5<br>-55°C ~ +150°C for 5 cycles                   |
| High Temperature Exposure | $\pm 0.50\%$                                    | $\pm 1.25\%$                                      | EIA Standard 575, $\pi$ 3.7<br>125°C $\pm$ 5°C continuous for 100 hours      |
| Terminal Strength         | $\pm 0.50\%$                                    | $\pm 0.50\%$                                      | EIA Standard 575, $\pi$ 3.9<br>20gms @ 90° angle for 30 seconds              |
| Moisture Resistance       | $\pm 1.00\%$                                    | $\pm 0.50\%$                                      | EIA Standard 575, $\pi$ 3.10                                                 |
| Solderability             | 95% minimum coverage                            | 95% minimum coverage                              | EIA Standard 575, $\pi$ 3.12<br>3 seconds of immersion @ +215°C              |

## EIA Standard Values

### Decade Values in the EIA Standard E-24 Series:

|     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|
| 1.0 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 |
| 1.8 | 2.0 | 2.2 | 2.4 | 2.7 | 3.0 |
| 3.3 | 3.6 | 3.9 | 4.3 | 4.7 | 5.1 |
| 5.6 | 6.2 | 6.8 | 7.5 | 8.2 | 9.1 |

### Decade Values in the EIA Standard E-96 Series:

|      |      |      |      |      |      |
|------|------|------|------|------|------|
| 1.00 | 1.02 | 1.05 | 1.07 | 1.10 | 1.13 |
| 1.15 | 1.18 | 1.21 | 1.24 | 1.27 | 1.30 |
| 1.33 | 1.37 | 1.40 | 1.43 | 1.47 | 1.50 |
| 1.54 | 1.58 | 1.62 | 1.65 | 1.69 | 1.74 |
| 1.78 | 1.82 | 1.87 | 1.91 | 1.96 | 2.00 |
| 2.05 | 2.10 | 2.15 | 2.21 | 2.26 | 2.32 |
| 2.37 | 2.43 | 2.49 | 2.55 | 2.61 | 2.67 |
| 2.74 | 2.80 | 2.87 | 2.94 | 3.01 | 3.09 |
| 3.16 | 3.24 | 3.32 | 3.40 | 3.48 | 3.57 |
| 3.65 | 3.74 | 3.83 | 3.92 | 4.02 | 4.12 |
| 4.22 | 4.32 | 4.42 | 4.53 | 4.64 | 4.75 |
| 4.87 | 4.99 | 5.11 | 5.23 | 5.36 | 5.49 |
| 5.62 | 5.76 | 5.90 | 6.04 | 6.19 | 6.34 |
| 6.49 | 6.65 | 6.81 | 6.98 | 7.15 | 7.32 |
| 7.50 | 7.68 | 7.87 | 8.06 | 8.25 | 8.45 |
| 8.66 | 8.87 | 9.09 | 9.31 | 9.53 | 9.76 |

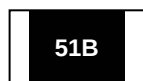
Those items in a shaded box are also E-24 values and will be marked with the EIA 3 Digit Code.

## VALUE MARKING

For those parts ordered with an E-24 value, the product will be marked with a 3 digit code. For those products ordered with an E-96 value, the product will be marked with a 4 digit code. For those parts which fall under E-96 and E-24 values (e.g. 1K ohm is both an E-96 and E-24 value), the part will be marked with a 3 digit code; 4 digit markings for this type is available upon special request.



01005, 0201, and 0402 Size  
No marking  
E-24 & E-96 Values



0603 Size  
EIA 96 Digit Code of 3.32K ohm  
E-96 Values

103

0603, 0805, 1206, 1210, 2010, 2512 Sizes  
EIA 3 Digit Code of 10K ohm resistor  
E-24 Values, E-96 Values

1213

0805, 1206, 1210, 2010, 2512 Sizes  
EIA 4 Digit Code of 121K ohm resistor  
E-96 Values

## 0603 MARKING CODE for E96 VALUES

By combining a specific two digit number and a letter code, you have a series of numeric/alpha digits that give you the complete (E96) resistance value codes for 0603 size part marking.

| Value | Code | Value | Code | Value | Code | Value | Code |
|-------|------|-------|------|-------|------|-------|------|
| 10.0  | 01   | 17.8  | 25   | 31.6  | 49   | 56.2  | 73   |
| 10.2  | 02   | 18.2  | 26   | 32.4  | 50   | 57.6  | 74   |
| 10.5  | 03   | 18.7  | 27   | 33.2  | 51   | 59.0  | 75   |
| 10.7  | 04   | 19.1  | 28   | 34.0  | 52   | 60.4  | 76   |
| 11.0  | 05   | 19.6  | 29   | 34.8  | 53   | 61.9  | 77   |
| 11.3  | 06   | 20.0  | 30   | 35.7  | 54   | 63.4  | 78   |
| 11.5  | 07   | 20.5  | 31   | 36.5  | 55   | 64.9  | 79   |
| 11.8  | 08   | 21.0  | 32   | 37.4  | 56   | 66.5  | 80   |
| 12.1  | 09   | 21.5  | 33   | 38.3  | 57   | 68.1  | 81   |
| 12.4  | 10   | 22.1  | 34   | 39.2  | 58   | 69.8  | 82   |
| 12.7  | 11   | 22.6  | 35   | 40.2  | 59   | 71.5  | 83   |
| 13.0  | 12   | 23.3  | 36   | 41.2  | 60   | 73.2  | 84   |
| 13.3  | 13   | 23.7  | 37   | 42.2  | 61   | 75.0  | 85   |
| 13.7  | 14   | 24.3  | 38   | 43.2  | 62   | 76.8  | 86   |
| 14.0  | 15   | 24.9  | 39   | 44.2  | 63   | 78.7  | 87   |
| 14.3  | 16   | 25.5  | 40   | 45.3  | 64   | 80.6  | 88   |
| 14.7  | 17   | 26.1  | 41   | 46.4  | 65   | 82.5  | 89   |
| 15.0  | 18   | 26.7  | 42   | 47.5  | 66   | 84.5  | 90   |
| 15.4  | 19   | 27.4  | 43   | 48.7  | 67   | 86.6  | 91   |
| 15.8  | 20   | 28.0  | 44   | 49.9  | 68   | 88.7  | 92   |
| 16.2  | 21   | 28.7  | 45   | 51.1  | 69   | 90.9  | 93   |
| 16.5  | 22   | 29.4  | 46   | 52.3  | 70   | 93.1  | 94   |
| 16.9  | 23   | 30.1  | 47   | 53.6  | 71   | 95.3  | 95   |
| 17.4  | 24   | 30.9  | 48   | 54.9  | 72   | 97.6  | 96   |

### Letter Multiplier Cross Reference

A = 10      C = 1,000      E = 100,000      X = 1  
B = 100      D = 10,000      F = 1,000,000      Y = 0.1

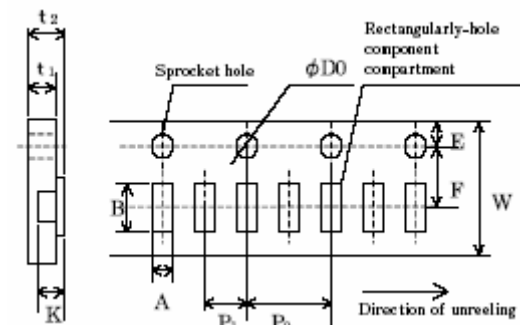
| 0603 Code | Explanation            | Value                         |
|-----------|------------------------|-------------------------------|
| 01B       | 01 = 10.0 & B = 100    | 10.0x100 = 1K $\Omega$        |
| 25C       | 25 = 17.8 & C = 1,000  | 17.8x1,000 = 17.8K $\Omega$   |
| 93D       | 93 = 90.9 & D = 10,000 | 90.9 x 10,000 = 909K $\Omega$ |

## PACKAGE QUANTITY

| Type | 01005  | 0201   | 0402   | 0603   | 0805   |
|------|--------|--------|--------|--------|--------|
| B    |        |        |        | 25,000 | 10,000 |
| M    | 15,000 | 10,000 | 10,000 | 5,000  | 5,000  |
| V    |        | 40,000 | 40,000 | 20,000 | 20,000 |

| Type | 1206   | 1210   | 2010   | 2512   |
|------|--------|--------|--------|--------|
| B    | 5,000  |        |        |        |
| M    | 5,000  | 5,000  | 4,000  | 4,000  |
| V    | 20,000 | 20,000 | 20,000 | 20,000 |

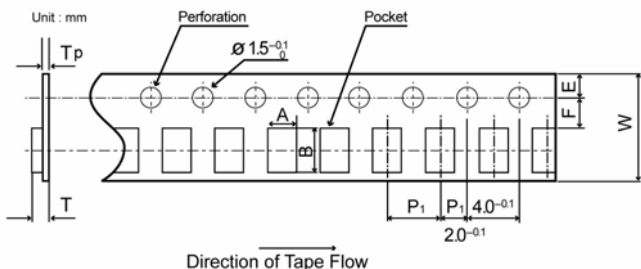
## TAPE SCHEMATIC



### 01005 Size

| A         | B         | W        | F        | E         |
|-----------|-----------|----------|----------|-----------|
| 0.38±0.02 | 0.68±0.02 | 8.0±0.10 | 3.5±0.05 | 1.75±0.05 |

| P1       | P0       | D0        | t1        | t2  | K         |
|----------|----------|-----------|-----------|-----|-----------|
| 2.0±0.05 | 4.0±0.10 | 1.55±0.03 | 0.42±0.05 | 0.5 | 0.27±0.02 |



### 0201 ~ 2512 Size

## TAPE DIMENSIONS (mm)

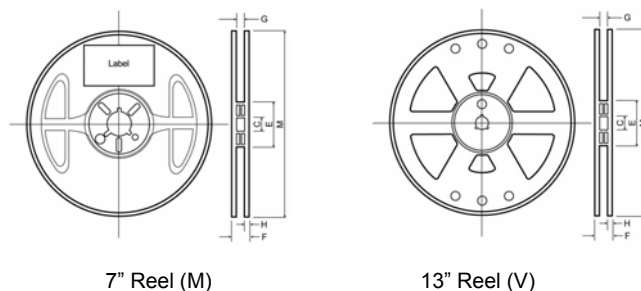
|                | 0201               | 0402      | 0603     | 0805     |
|----------------|--------------------|-----------|----------|----------|
| A              | 0.41±0.1           | 0.65±0.1  | 1.1±0.2  | 1.65±0.2 |
| B              | 0.71±0.1           | 1.15±0.1  | 1.9±0.2  | 2.4±0.2  |
| W              | 8.0±0.2            | 8.0±0.2   | 8.0±0.2  | 8.0±0.2  |
| E              | 1.75±0.10          | 1.75±0.10 | 1.75±0.1 | 1.75±0.1 |
| F              | 3.5±0.05           | 3.5±0.05  | 3.5±0.05 | 3.5±0.05 |
| P <sub>1</sub> | 2.0±0.05           | 2.0±0.05  | 4.0±0.1  | 4.0±0.1  |
| T              | 0.5 <sub>max</sub> | 0.55±0.1  | 0.70±0.1 | 0.90±0.1 |
| T <sub>p</sub> | 0.4±0.05           | 0.40±0.05 | 0.60±0.1 | 0.75±0.1 |

|                | 1206     | 1210     | 2010     | 2512     |
|----------------|----------|----------|----------|----------|
| A              | 2.0±0.15 | 2.9±0.1  | 2.9±0.1  | 3.4±0.1  |
| B              | 3.6±0.15 | 3.5±0.1  | 5.3±0.1  | 6.6±0.1  |
| W              | 8.0±0.2  | 8.0±0.2  | 12.0±0.2 | 12.0±0.2 |
| E              | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 |
| F              | 3.5±0.05 | 3.5±0.05 | 5.5±0.05 | 5.5±0.05 |
| P <sub>1</sub> | 4.0±0.1  | 4.0±0.1  | 4.0±0.1  | 4.0±0.1  |
| T              | 0.90±0.1 | 0.90±0.1 | 1.0±0.1  | 1.0±0.1  |
| T <sub>p</sub> | 0.75±0.1 | 0.75±0.1 | 0.25±0.1 | 0.25±0.1 |

## TAPE

| Type                              | Resistor Size                      |
|-----------------------------------|------------------------------------|
| Press Pocket Carrier Tape         | 01005                              |
| Rect. Punching Carrier Paper Tape | 0201, 0402, 0603, 0805, 1206, 1210 |
| Plastic (Embossed Tape)           | 2010 & 2512                        |

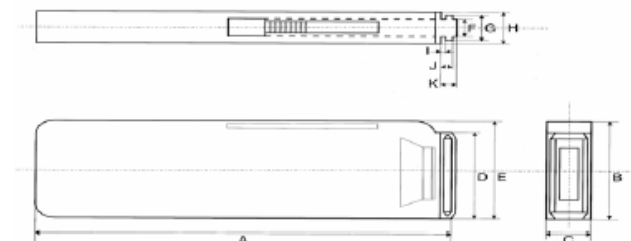
## REEL DRAWINGS



## PACKAGE DIMENSIONS (mm)

|   | 7 inch Reel (M) | 13 inch Reel (V) |
|---|-----------------|------------------|
| M | 180 ± 3.0       | 330 ± 2.5        |
| H | 1.20            | 2.3 ± 0.5        |
| C | 13.0 ± 0.2      | 13.0 ± 0.2       |
| G | 9.0 ± 0.3       | 9.5 ± 0.5        |
| E | 60 ± 1.0        | 80.0 ± 1.0       |
| F | 11.4 ± 1.0      | 14.4             |

## BULK CASE SCHEMATIC



## BULK CASE DIMENSIONS (mm)

| A         | B        | C        | D        | E        |
|-----------|----------|----------|----------|----------|
| 110.0±0.7 | 36.0±0.2 | 12.0±0.1 | 31.5±0.2 | 36.0±0.2 |

| F       | G       | H        | I       | J       | K       |
|---------|---------|----------|---------|---------|---------|
| 6.8±0.1 | 8.8±0.1 | 12.0±0.1 | 1.5±0.1 | 2.0±0.1 | 4.7±0.1 |

## LABEL DESCRIPTION

One side surface of a reel is marked with a label with the following items of information.

1. Chip Resistor
2. Part Number
3. Tolerance
4. Quantity
5. Lot number for production month/year/suffix L\*
6. Manufacturer's name or symbol

\* The suffix "L" indicates that this item is lead free. As of September 2004, all new production items of the series CR and CJ are no longer containing tin/lead (SnPb) terminals; they are lead free and in compliance with Lead Free/RoHS.



# THICK FILM CHIP RESISTORS

The content of this specification may change without notification 10/04/07



## CR-KITS Series, Thick Film Chip Resistor Engineering Kits

This engineering and design kit is a great sales tool, allowing for application testing before ordering minimum quantities. AAC offers a wide assortment of popular chip resistors sizes and tolerances, in addition to a large quantity of each value. The kits are convenient with easy-to-use packaging.

### PACKAGE CONSTRUCTION

- 3 Ring Binder Case Holder
- Plastic pages with slip holders for each value
- Each value is individually identified in a slip holder
- Resistors are packaged on paper tape strips

### E-24 KIT VALUES

|     |    |     |     |      |      |      |     |      |      |
|-----|----|-----|-----|------|------|------|-----|------|------|
| 2.2 | 10 | 47  | 180 | 560  | 1.8K | 5.6K | 18K | 56K  | 270K |
| 2.7 | 18 | 68  | 220 | 680  | 2.2K | 6.8K | 22K | 82K  | 390K |
| 3.9 | 22 | 75  | 270 | 850  | 2.7K | 8.2K | 27K | 100K | 470K |
| 4.7 | 27 | 100 | 330 | 1.0K | 3.3K | 10K  | 33K | 120K | 560K |
| 6.8 | 33 | 120 | 390 | 1.2K | 3.9K | 12K  | 39K | 150K | 1.0M |
| 8.2 | 39 | 150 | 470 | 1.5K | 4.7K | 15K  | 47K | 220K | 2.2M |

### E-96 KIT VALUES

|      |      |      |     |     |       |       |       |       |       |       |      |      |      |
|------|------|------|-----|-----|-------|-------|-------|-------|-------|-------|------|------|------|
| 10.0 | 24.3 | 56.2 | 133 | 301 | 681   | 1.62K | 4.22K | 10.0K | 23.7K | 60.4K | 150K | 332K | 649K |
| 11.3 | 26.1 | 61.9 | 150 | 332 | 750   | 1.82K | 4.75K | 11.0K | 27.4K | 68.1K | 162K | 365K | 681K |
| 12.1 | 28.7 | 68.1 | 162 | 348 | 825   | 2.00K | 5.11K | 12.1K | 30.1K | 75.0K | 178K | 392K | 732K |
| 13.3 | 33.2 | 75.0 | 174 | 383 | 909   | 2.21K | 5.62K | 13.0K | 33.2K | 82.5K | 200K | 422K | 750K |
| 15.0 | 35.7 | 82.5 | 200 | 422 | 1.00K | 2.37K | 6.19K | 15.0K | 39.2K | 90.9K | 221K | 464K | 825K |
| 16.5 | 39.2 | 90.9 | 215 | 475 | 1.10K | 2.67K | 6.81K | 16.2K | 41.2K | 100K  | 237K | 511K | 866K |
| 18.2 | 42.2 | 100  | 237 | 511 | 1.21K | 3.01K | 7.50K | 18.2K | 47.5K | 110K  | 255K | 536K | 909K |
| 20.0 | 46.4 | 107  | 261 | 549 | 1.33K | 3.32K | 8.25K | 20.0K | 49.9K | 121K  | 274K | 562K | 953K |
| 22.1 | 51.1 | 118  | 287 | 604 | 1.50K | 3.92K | 9.09K | 22.1K | 56.2K | 130K  | 301K | 619K | 1.0M |

## Engineering Kits J Type

### FEATURES

- EIA Standard E-24 Values
- Full range from 1  $\Omega$  ~ 1M  $\Omega$
- Resistance Tolerance of  $\pm 5\%$
- 3,000 Pieces: 50 pieces of 60 different values
- ISO 9002 Quality Certified products

### Part Number for $\pm 5\%$ Sample Kit

| Part Number | Description                                                      |
|-------------|------------------------------------------------------------------|
| CR05-J-KITS | 0402, 1/16w, 5%, E-24 values (1 $\Omega$ through 2.2M $\Omega$ ) |
| CR16-J-KITS | 0603, 1/16w, 5%, E-24 values (1 $\Omega$ through 2.2M $\Omega$ ) |
| CR10-J-KITS | 0805, 1/10w, 5%, E-24 values (1 $\Omega$ through 2.2M $\Omega$ ) |
| CR18-J-KITS | 1206, 1/8w, 5%, E-24 values (1 $\Omega$ through 2.2M $\Omega$ )  |

## Engineering Kits F Type

### FEATURES

- EIA Standard E-24 Values
- Full range from 10  $\Omega$  ~ 1M  $\Omega$
- Resistance Tolerance of  $\pm 1\%$
- 3,150 Pieces: 25 pieces of 126 different values
- ISO 9002 Quality Certified products

### Part Number for $\pm 1\%$ Sample Kit

| Part Number | Description                                                     |
|-------------|-----------------------------------------------------------------|
| CR05-F-KITS | 0402, 1/16w, 1%, E-96 values (10 $\Omega$ through 1M $\Omega$ ) |
| CR16-F-KITS | 0603, 1/16w, 1%, E-96 values (10 $\Omega$ through 1M $\Omega$ ) |
| CR10-F-KITS | 0805, 1/10w, 1%, E-96 values (10 $\Omega$ through 1M $\Omega$ ) |
| CR18-F-KITS | 1206, 1/8w, 1%, E-96 values (10 $\Omega$ through 1M $\Omega$ )  |