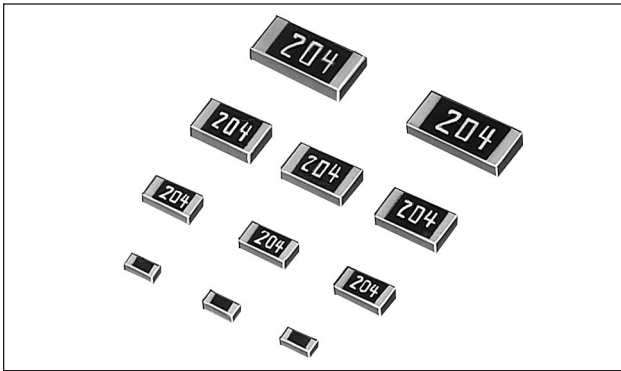


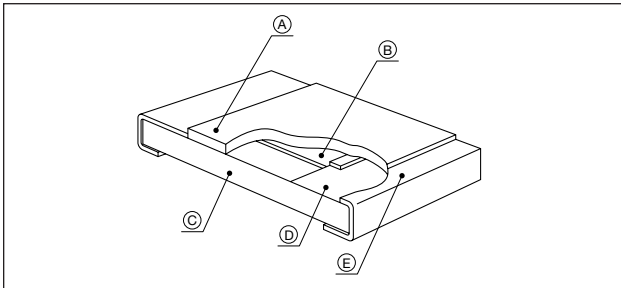
# Thick Film Chip Resistors



## CR, CJ Series



### STRUCTURE AND MATERIAL



Code	Structure	Material
A	Coating	Glass or Epoxy
B	Resistor	RuO <sub>2</sub> Resistor (The same material of Termination for chip jumper)
C	Substrate	96% Alumina
D	Termination	Silver
E	Plating	(Ni, Sn-Pb) Plating

### FEATURES

- Low Noise
- Nickel Barrier Terminations

### APPLICATION

- General Purpose

### HOW TO ORDER

**CR 05 - 472 J - H**

#### Packaging

- T = 7" Reel/Punched Paper Tape (5,000 pcs/reel) except CR05
- H = 7" Reel/Punched Paper Tape (10,000 pcs/reel, 2mm pitch taping) CR05 and CR10
- D = 10" Reel/Punched Paper Tape (10,000 pcs/reel) CR32, CR21, CR10
- K = 13" Reel/Punched Paper Tape (20,000 pcs/reel) except CR05 (optional)

#### Resistance Tolerance

- D = ±0.5%      J = ±5%
- F = ±1%      Blank = Jumper Chips

#### Resistance Value (3 digits or 4 digits)

Example: 562 =  $56 \times 10^2 = 5600\Omega$   
 4021 =  $402 \times 10^1 = 4020\Omega$   
 Chip Jumper = 000

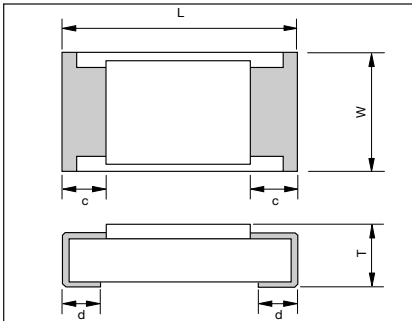
#### Size (EIA)

- 05 = 0402      21 = 0805
- 10 = 0603      32 = 1206

#### Series

CR = Resistor CJ = Jumper

### DIMENSIONS



millimeters (inches)

	CR05, CJ05 (0402)	CR10, CJ10 (0603)	CR21, CJ21 (0805)	CR32, CJ32 (1206)
W	0.50±0.05 (0.020±0.002)	0.80 <sup>+0.18</sup> <sub>-0.004</sub> (0.031 <sup>+0.009</sup> <sub>-0.004</sub> )	1.25 <sup>+0.18</sup> <sub>-0.009</sub> (0.050 <sup>+0.009</sup> <sub>-0.009</sub> )	1.55 <sup>+0.18</sup> <sub>-0.009</sub> (0.061 <sup>+0.009</sup> <sub>-0.009</sub> )
L	1.00±0.05 (0.039±0.002)	1.60±0.10 (0.063±0.004)	2.00±0.10 (0.080±0.004)	3.10±0.10 (0.122±0.004)
C	0.20±0.15 (0.008±0.006)	0.25±0.20 (0.010±0.008)	0.35±0.20 (0.014±0.008)	0.45±0.20 (0.018±0.008)
d	0.20±0.10 (0.008±0.004)	0.20 <sup>+0.20</sup> <sub>-0.008</sub> (0.008 <sup>+0.008</sup> <sub>-0.008</sub> )	0.40±0.20 (0.016±0.008)	0.45±0.20 (0.018±0.008)
T	0.35±0.05 (0.014±0.002)	0.50±0.10 (0.020±0.004)	0.55±0.10 (0.022±0.004)	0.55 <sup>+0.10</sup> <sub>-0.004</sub> (0.022 <sup>+0.010</sup> <sub>-0.004</sub> )

### SPECIFICATIONS

Series	CR05 (0402)	CR10 (0603)	CR21 (0805)	CR32 (1206)
Rated Power	0.0625 (1/16) W	0.10 (1/10) W	0.125 (1/8) W	0.25 (1/4) W
Max. Working Voltage	50V	50V	100V	200V
Resistance Tolerance	F = ±1% J = ±5%	D = ±0.5% F = ±1% J = ±5%	D = ±0.5% F = ±1% J = ±5%	D = ±0.5% F = ±1% J = ±5%
Resistance Value Range	10Ω to 1MΩ : F 1.0Ω to 10MΩ : J	10Ω to 1MΩ : D 10Ω to 1MΩ : F 1.0Ω to 10MΩ : J	10Ω to 1MΩ : D 10Ω to 1MΩ : F 1.0Ω to 10MΩ : J	10Ω to 1MΩ : D 10Ω to 1MΩ : F 1.0Ω to 10MΩ : J
Working Temperature	-55 to +125°C	-55 to +125°C	-55 to +125°C	-55 to +125°C

# Thick Film Chip Resistors



## CR, CJ Series

### SPECIFICATIONS

#### CJ Series

Part Number	CJ05, CJ10, CJ21 (0402, 0603, 0805 Type)	CJ32 (1206 Type)
Rated Current	1A (70°C)	2A (70°C)
Resistivity	50mΩ max.	50mΩ max.
Working Temperature	-55 to +125°C	-55 to +125°C

### HOW TO CALCULATE RATED VOLTAGE

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

E = Rated Voltage (V)

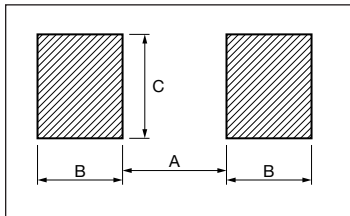
P = Rated Power (W)

R = Standard Resistance Value (Ω)

Rated voltage should be lower than max. working voltage.

### RECOMMENDED LAND PATTERN

millimeters (inches)



EIA Size	0402	0603	0805	1206
A	0.50 (0.020)	0.80 (0.031)	1.00 (0.039)	2.00 (0.079)
B	0.40 (0.016)	0.70 (0.028)	0.80 (0.031)	0.80 (0.031)
C	0.50 (0.020)	0.80 (0.031)	1.20 (0.047)	1.50 (0.059)

### MARKING

Marking available as follows:

Series: CR32, CJ32, CR21, CJ21, CR10, CJ10

3 digit indication

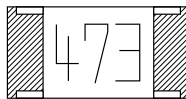
Example: 473=47x10<sup>3</sup> = 47000 Ω = 47 kΩ

0 = 0 Ω (Jumper)

100 = 10 Ω

102 = 1 kΩ

105 = 1 MΩ



Series: CR05 and CJ05 - No marking

Note: On CR32 4 digit marking is standard for ±1% and ±0.5% tolerances.

### STANDARD RESISTANCE VALUE

E24	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			

### For ±1% and ±.5% Tolerance

E96	10.0	10.2	10.5	10.7	11.0	11.3	11.5	11.8	12.1	12.4
	12.7	13.0	13.3	13.7	14.0	14.3	14.7	15.0	15.4	15.8
	16.2	16.5	16.9	17.4	17.8	18.2	18.7	19.1	19.6	20.0
	20.5	21.0	21.5	22.1	22.6	23.2	23.7	24.3	24.9	25.5
	26.1	26.7	27.4	28.0	28.7	29.4	30.1	30.9	31.6	32.4
	33.2	34.0	34.8	35.7	36.5	37.4	38.3	39.2	40.2	41.2
	42.2	43.2	44.2	45.3	46.4	47.5	48.7	49.9	51.1	52.3
	53.6	54.9	56.2	57.6	59.0	60.4	61.9	63.4	64.9	66.5
	68.1	69.8	71.5	73.2	75.0	76.8	78.7	80.6	82.5	84.5
	86.6	88.7	90.9	93.1	95.3	97.6				

### DERATING CURVE

Rated power should be reduced as below when temperature become higher.

Under high temperature, power derated as follows:

