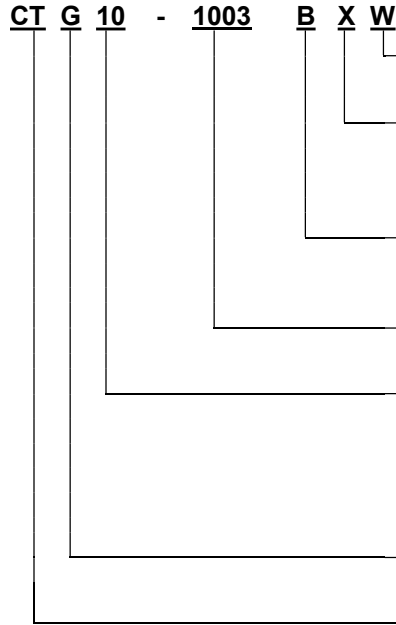


## HOW TO ORDER



### Packaging

W = Waffle Pack    M = Tape Reel

### TCR (PPM/°C)

L =  $\pm 1$     P =  $\pm 5$     Y =  $\pm 50$   
M =  $\pm 2$     Q =  $\pm 10$     Z =  $\pm 100$   
N =  $\pm 3$     X =  $\pm 25$

### Tolerance (%)

U =  $\pm 0.1$     A =  $\pm 0.05$     C =  $\pm 0.25$     F =  $\pm 1$   
P =  $\pm 0.02$     B =  $\pm 0.10$     D =  $\pm 0.50$

### EIA Resistance Value

Standard decade values

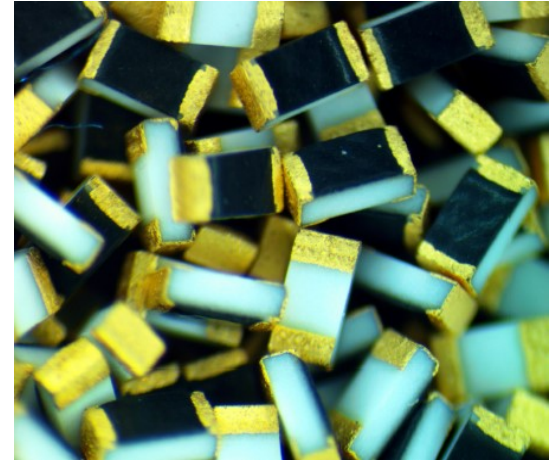
### Size

20=0201    05=0402    16=0603  
10=0805    18=1206    14=1712  
12=2020    01=4520

### Au Termination

### Series

CT = Thin Film Precision Resistors

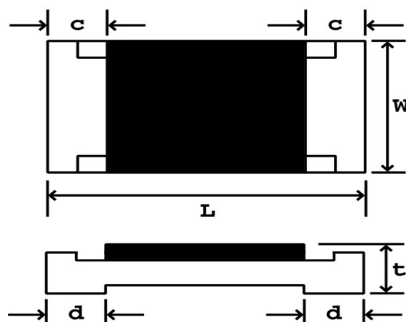


## FEATURES

- Stable at high temperature and humidity
- Accurate resistance tolerance and temperature coefficient of resistance
- Low current noise, excellent linearity
- Gold Thickness start from 7.87µin

## SCHEMATIC

### Wraparound Termination



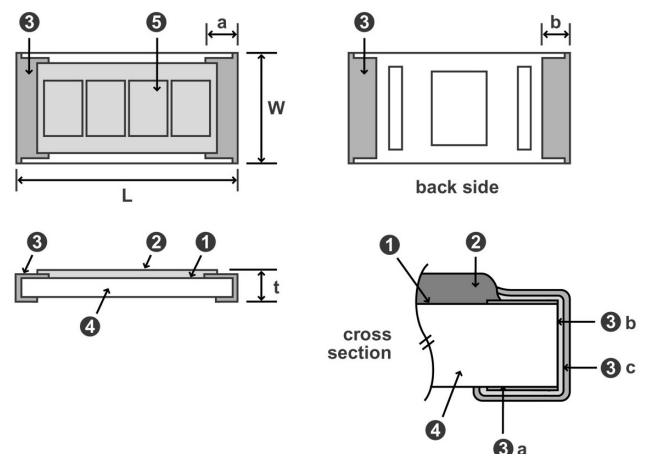
## DIMENSIONS (mm)

Size	L	W	c	d	t
0201	0.60 $\pm$ 0.03	0.30 $\pm$ 0.03	0.15 $\pm$ 0.05	0.15 $\pm$ 0.05	0.23 $\pm$ 0.03
0402	1.00 $\pm$ 0.10	0.5 + 0.10, - 0.05	0.15 $\pm$ 0.10	0.25 $\pm$ 0.10	0.35 $\pm$ 0.05
0603	1.60 $\pm$ 0.20	0.80 $\pm$ 0.20	0.30 $\pm$ 0.20	0.30 $\pm$ 0.20	0.45 $\pm$ 0.10
0805	2.00 $\pm$ 0.20	1.25 $\pm$ 0.10	0.40 $\pm$ 0.25	0.40 $\pm$ 0.25	0.50 $\pm$ 0.10
1206	3.20 $\pm$ 0.20	1.60 + 0.05, - 0.15	0.50 $\pm$ 0.25	0.50 $\pm$ 0.25	0.60 $\pm$ 0.10
1712	4.20 $\pm$ 0.20	3.00 $\pm$ 0.20	0.80 $\pm$ 0.30	0.80 $\pm$ 0.25	0.70 + 1.5, -0
2020	5.08 $\pm$ 0.20	5.08 $\pm$ 0.20	0.80 $\pm$ 0.30	0.80 $\pm$ 0.25	0.70 + 1.5, -0
4520	11.50 $\pm$ 0.30	5.00 $\pm$ 0.20	0.80 $\pm$ 0.30	0.80 $\pm$ 0.25	0.70 + 1.5, -0

## CONSTRUCTION MATERIALS

Item	Part	Material
1	Resistor	Nichrome Thin Film
2	Protective Film	Polymide Epoxy Resin
3	Electrode	
3a	Grounding Layer	Nichrome Thin Film
3b	Barrier Layer	Nickel Plating
3c	Solder Layer	Gold Plate (Au)
4	Substrate	Alumina
5	Marking	Epoxy Resin

## CONSTRUCTION FIGURE (Wraparound)





# Gold Termination Thin Film Precision Chip Resistors

**RoHS**  
Compliant  
2011/65/EU

## ELECTRICAL CHARACTERISTICS

Size	Power Rating at 85°C (W)	Resistance Range	±% Tolerance	TCR (10 <sup>-6</sup> /°C)	Working Voltage	Max. Overload Voltage	Operating Temp Range
0201	0.05	100 ~ 10K	0.1, 0.5, 1.0	±25 ±50	25V	50V	-55°C ~ +155°C
		100 ~ 10K	0.1, 0.5	±10			
0402	0.063	10.0 ~ 46.4	0.5	±100	50V	100V	-55°C ~ +155°C
		47.0 ~ 100K	0.1, 0.25, 0.5, 1	±25, ±50			
		200~47K	0.1, 0.25, 0.5, 1	±15			
0603	0.100	5 ~ 100K	0.05, 0.1, 0.25, 0.5, 1	3,5,10,25,50	75V	150V	-55°C ~ +155°C
		47~330K	0.1, 0.25, 0.5, 1	25, 50			-55°C ~ +155°C
0805	0.125	5 ~ 200K	0.05, 0.1, 0.25, 0.5, 1	2, 3, 5, 10, 25, 50	100V	200V	-55°C ~ +155°C
		47 ~ 1M	0.1, 0.25, 0.5, 1.0	10, 25, 50			-55°C ~ +155°C
1206	0.250	5.01 ~ 560K	0.02, 0.05, 0.1, 0.25, 0.5, 1	2, 3, 5, 10, 25, 50	150V	300V	-55°C ~ +155°C
		47 ~ 1.00M	0.1, 0.25, 0.5	25			-55°C ~ +155°C
1712	0.250	5 ~ 1M	0.05, 0.10, 0.25, 0.50, 1	± 2, ± 3, ± 5, ±10, ± 25	200V	400V	55°C ~ +155°C
2020	0.500	5 ~ 2M	0.05, 0.10, 0.25, 0.50, 1	± 2, ± 3, ± 5, ±10, ± 25	350V	500V	55°C ~ +155°C
4520	1.000	5 ~ 5M	0.05, 0.10, 0.25, 0.50, 1	± 2, ± 3, ± 5, ±10, ± 25	500V	600V	55°C ~ +155°C

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



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**Halogen  
FREE**

## RELIABILITY SPECIFICATIONS

Test Item	Test Condition	Specification
Short Time Overload	2.5 times of the rated voltage shall be applied for 5 seconds	± (0.1% + 0.05Ω)
Load Life	The resistor shall be subjected to rated voltage for 90 min. followed by a pause of 30 min. at a temperature of 85°C. This constitutes 1 cycle. Cycles shall be repeated for 1000 hours.	± (0.1% + 0.05Ω)
Moisture Load Life	The resistor subjected to rated voltage for 90 min followed by a pause for 30 min at a temperature of 40°C with relative humidity of 90% to 95%. This constitutes 1 cycle. Cycles shall be repeated for 1000 hours.	± (0.1% + 0.05Ω)
Temperature Cycle	[-55°C 30 min → room temperature 3 min +155°C 30 min → room temperature 3 min] The resistor shall be subjected to 5 continuous cycles	± (0.1% + 0.05Ω)

## VALUE MARKING



0201, and 0402 Size  
No marking  
E-24 & E-96 Values  
Custom Value Any Size



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



0603 ~ 2512 Sizes  
EIA 3 Digit Code of 10K ohm resistor  
E-24 Values, E-96 Values



0805 ~ 2512 Sizes  
EIA 4 Digit Code of 121K ohm resistor  
E-96 Values

## PACKAGE QUANTITY

Type	0201	0402	0603	0805	1206
M	10,000	10,000	5,000	5,000	5,000
W	400	400	170		

Type	1210	1217	2010	2020	2045	2512
M	5,000	2,000	4,000	2,000	3,000	4,000
W						

## WAFFLE PACKING QUANTITY



## LABEL DESCRIPTION

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

1. Manufacturer's name & symbol
2. Part Number
3. Quantity
4. Lot number for production: year/weeks/production lot/suffix
5. Order number

The content of this specification may change without notification  
4/06/2017