

# Thick Film Chip Resistors

CR Series

MERITEK

## FEATURES

- Excellent mechanical strength and electrical stability
- Ideal for pick and place machinery
- Stable high frequency characteristics
- Miniature, high board density
- Equivalent specification EIAJ- RC- 2690, EIAJ- RC- 1009B, EIA- RS- 481A

## PART NUMBERING SYSTEM

Meritek Series **CR**      **10**      **1002**      **F**

Size

CODE	01	02	04	08	10	16	20
	2512	2010	1210	1206	0805	0603	0402

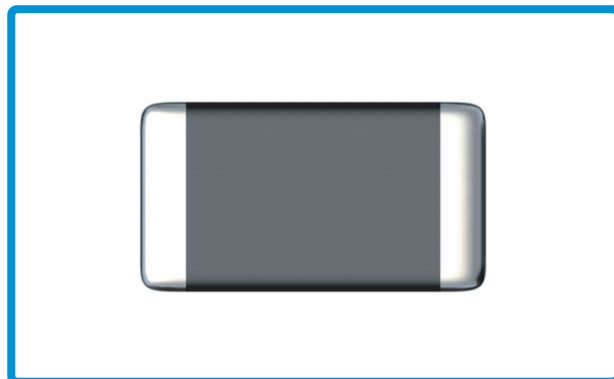
Resistance Value

5%	3 digits. First 2 are significant, third is multiplier (10 <sup>x</sup> )
1%	4 digits. First 3 are significant, fourth is multiplier (10 <sup>x</sup> )

000 = Jumper "0" ohm

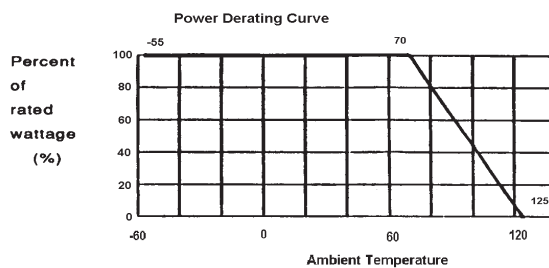
Tolerance

CODE	F	J
	±1%	±5%



## POWER DERATING CURVE

For operating conditions where ambient temperature exceeds 70°C, ratings must be derated in accordance with the curve below.



## STANDARD CHIP

Size	Power Rating (W)	Max. Working Voltage	Max. Overload Voltage	TCR (ppm / °C)	Resistance Range				Jumper Rated Current
					D (±0.5%) E-96	F (±1%) E-96	G (±2%) E-24	J (±5%) E-24	
CR01 (2512)	1.0	200	400	±100		10 to 1M			2A
				±200			10 to 1M	10 to 10M	
				±400				to 9.1	
CR02 (2010)	1/2	200	400	±100		10 to 1M			2A
				±200			10 to 1M	10 to 10M	
				±400				1 to 9.1	
CR04 (1210)	1/3	200	400	±100		10 to 1M			2A
				±200			10 to 1M	10 to 10M	
				±400		1 to 9.1	1 to 9.1	1 to 9.1	
CR08 (1206)	1/4	200	400	±50	100 to 100K				2A
				±100	10 to 91, 110K to 1M	10 to 1M			
				±200			10 to 1M	10 to 10M	
				±400		1 to 9.1	1 to 9.1	1 to 9.1, 11M to 22M	
CR10 (0805)	1/8	150	300	±50	100 to 100K				2A
				±100	10 to 91, 110K to 1M	10 to 1M			
				±200			10 to 1M	10 to 10M	
				±400		1 to 9.1	1 to 9.1	1 to 9.1, 11M to 22M	
CR16 (0603)	1/10	50	100	±50	100 to 100K				1A
				±100	10 to 91, 110K to 1M	10 to 1M			
				±200			10 to 1M	10 to 10M	
				±400		1 to 9.1	1 to 9.1	1 to 9.1, 11M to 22M	
CR20 (0402)	1/16	50	100	+500/-200		1 to 9.1	1 to 9.1	1 to 9.1	1A
				±200		10 to 1M	10 to 1M	10 to 3.3M	
				±200		100 to 1M		100 to 3.3M	
CR25 (0201)	1/20	25	50	±200		10 to 97.6		10 to 97.6	
				±300					
				+500/-200				1 to 9.1	

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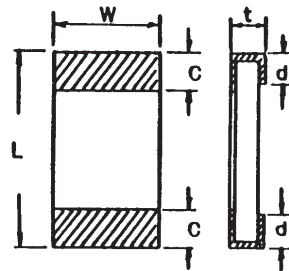
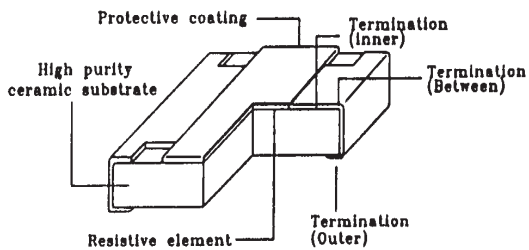
## PRECISION CHIP

Size	Power Rating (W)	TCR (ppm / °C)	Resistance Range			
			B (±0.1%) E24~E96	C (±0.25%) E24~E96	D (±0.5%) E24~E96	F (±1%) E24~E96
CR01 (2512)	1.0	±50	100-1M	100-1M	100-1M	10-1M
CR02 (2010)	1/2					
CR08 (1206)	1/4	±100	-	-	-	0.51-10M
CR16 (0603)	1/8					

## LOWER RESISTANCE CHIP

Size	Power Rating (W)	TCR (ppm / °C)	Resistance Range		
			F (±1%)	G (±2%)	J (±5%)
CR01 (2512)	1.0	±600	0.01-0.02		
CR02 (2010)	1/2	±400	0.022-0.047		
CR08 (1206)	1/4	±200	0.05-0.091		
CR16 (0603)	1/8	±200	0.1-0.47		
		±200	0.5-0.91		

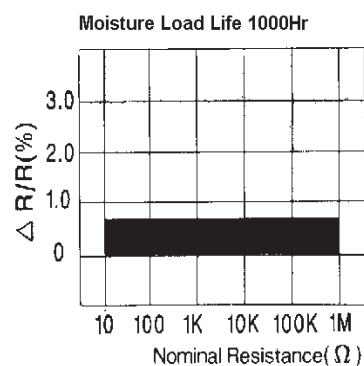
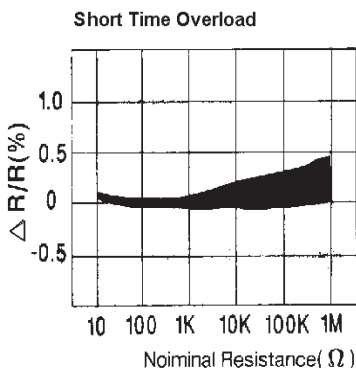
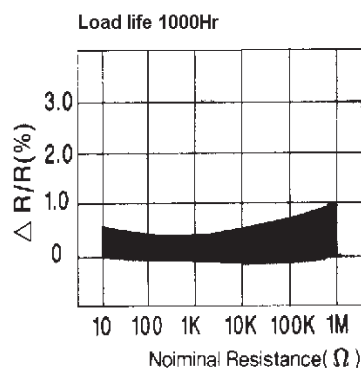
## Construction and Materials



## DIMENSIONS

Size	Dimensions in millimeters (mm)				
	L	W	C	d	t
CR25 (0201)	0.60 ±0.03	0.30 ±0.03	0.15 ±0.03	0.15 ±0.03	0.23 ±0.03
CR20 (0402)	1.00 ±0.10	0.50 ±0.10	0.25 ±0.05	0.25 ±0.05	0.35 ±0.10
CR16 (0603)	1.60 ±0.10	0.80 +0.15/-0.05	0.30 ±0.15	0.30 ±0.15	0.45 ±0.10
CR10 (0805)	2.00 + 0.15/-0.10	1.25 +0.10/-0.05	0.35 ±0.20	0.35 ±0.15	0.50 ±0.10
CR08 (1206)	3.10 ±0.10	1.55 ±0.10	0.45 ±0.20	0.35 ±0.15	0.55 +0.10/-0.05
CR04 (1210)	3.10 ±0.10	2.55 ±0.10	0.50 ±0.20	0.50 ±0.20	0.55 ±0.10
CR02 (2012)	5.00 ±0.20	2.50 ±0.2	0.60 ±0.20	0.60 ±0.20	0.55 ±0.10
CR01 (2512)	6.30 ±0.20	3.20 ±0.2	0.60 ±0.20	0.60 ±0.20	0.55 ±0.10

#### CHARACTERISTIC DATA



#### CHARACTERISTIC

ITEM	0.5%, 1%	2%, 5%	TEST METHOD
<b>Temperature Cycling</b>	$\pm(0.5\% + 0.05\Omega)$	$\pm(1.0\% + 0.10\Omega)$	JIS-C5202-7.4 Cycle between -55°C and +125°C for 5 cycles
<b>Low Temperature Operation</b>	$\pm(0.5\% + 0.05\Omega)$	$\pm(1.0\% + 0.10\Omega)$	By manufacturer Followed by 45 Minutes of RCWV.
<b>Short Time Overload</b>	$\pm(1.0\% + 0.05\Omega)$	$\pm(2.0\% + 0.10\Omega)$	JIS-C5202-5.5 Apply 2.5 times rated voltage for 5 seconds
<b>Resistance to Soldering Heat</b>	$\pm(0.5\% + 0.05\Omega)$	$\pm(1.0\% + 0.05\Omega)$	JIS-C5202-6.10 Immerse for 10 sec. in solder at 260 ±5°C
<b>Loading Life in Moisture</b>	$\pm(0.5\% + 0.05\Omega)$	$\pm(2.0\% + 0.05\Omega)$	JIS-C5202-7.9 40°C, 1000Hrs at RCWV, 1.5Hr ON, 0.5Hr OFF
<b>Resistance to Dry Heat</b>	$\pm(1.0\% + 0.05\Omega)$	$\pm(2.0\% + 0.10\Omega)$	JIS-C5202-7.2 96Hrs at 125°C
<b>Load Life</b>	$\pm(1.0\% + 0.05\Omega)$	$\pm(3.0\% + 0.10\Omega)$	JIS-C5202-7.10 70°C, 1000Hrs at RCWV, 1.5Hr ON, 0.5Hr OFF
<b>Solderability</b>	Coverage ≥ 95%	Coverage ≥ 95%	JIS-C5202-6.11 Immerse for 3 sec. in solder at 215 ±3°C
<b>Bending Strength</b>	$\pm(1.0\% + 0.05\Omega)$	$\pm(1.0\% + 0.05\Omega)$	JIS-C5202-6.1.4 5mm deflection in either direction (CR20=3mm)
<b>Intermittent Overload</b>	$\pm(5.0\% + 0.10\Omega)$	$\pm(5.0\% + 0.10\Omega)$	JIS-C5202-5.8 Apply 4 times rated voltage, 1 sec ON, 25 sec OFF, 10000
<b>Dielectric Withstanding Voltage</b>	No short or burned appearance		JIS-C5202-5.7 Apply 500VAC for 1 min. (0603--300VAC) (0402-- 300VAC/1sec)
<b>Terminal Strength</b>	No evidence of mechanical damage		JIS-C5202-5.9 Apply 5N pushing force for 10 sec

RCWV= Rated Continuous Working Voltage

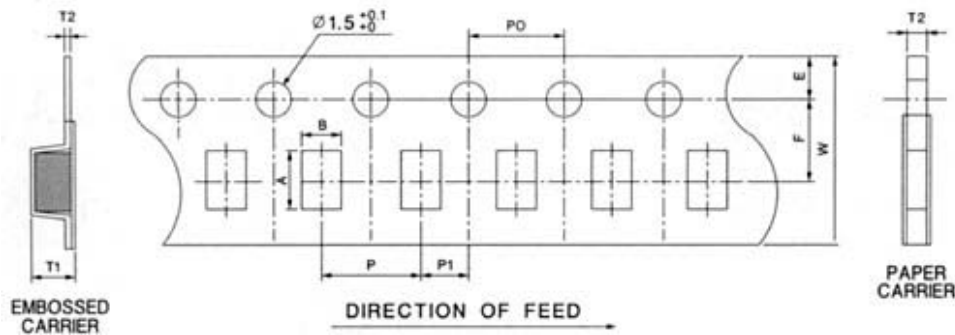
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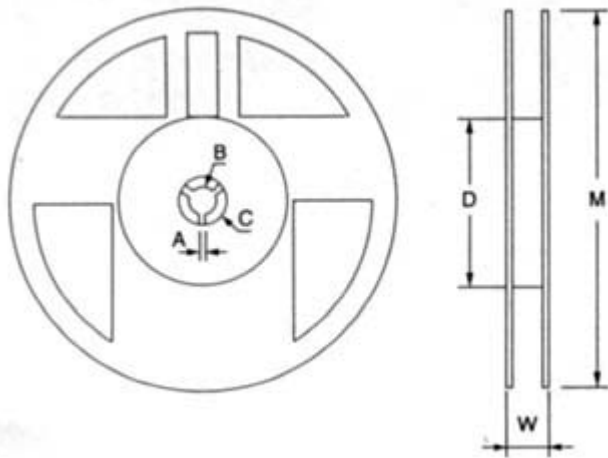
## Taping Specifications

### Tape Dimensions



Packing	TYPE	A	B	W	E	F	T1	T2	P	P0	P1
Tape	CR20	1.15±0.05	0.65±0.05	8.0±0.2	1.75±0.1	3.5±0.05	...	0.45±0.05	2.0±0.1	4.0±0.05	2.0±0.05
	CR16	1.70±0.1	1.00±0.1	8.0±0.2	1.75±0.1	3.5±0.05	...	0.60±0.1	4.0±0.1	4.0±0.05	2.0±0.05
	CR10	2.30±0.1	1.55±0.1	8.0±0.2	1.75±0.1	3.5±0.05	...	0.75±0.1	4.0±0.1	4.0±0.05	2.0±0.05
	CR08	3.50±0.2	1.90±0.2	8.0±0.2	1.75±0.1	3.5±0.05	...	0.75±0.1	4.0±0.1	4.0±0.05	2.0±0.05
	CR04	3.50±0.2	2.80±0.2	8.0±0.2	1.75±0.1	3.5±0.05	...	0.75±0.1	4.0±0.1	4.0±0.05	2.0±0.05
	CR02	5.50±0.2	2.80±0.2	12.0±0.2	1.75±0.1	5.5±0.05	...	0.75±0.1	4.0±0.1	4.0±0.05	2.0±0.05
	CR01	6.70±0.2	3.40±0.2	12.0±0.2	1.75±0.1	5.5±0.05	0.85±0.15	0.23±0.15	4.0±0.1	4.0±0.05	2.0±0.05

## Reel Specification



## Standard Packaging Quantities

TYPE	Taping Package(pcs/reel)	
	Paper Carrier	
	2mm Pitch	4mm Pitch
CR20	10,000	---
CR16	10,000	5,000
CR10	---	5,000
CR08	---	5,000
CR04	---	5,000
CR02	...	4,000
CR01	...	4,000

TYPE	W	M	A	B	C	D
CR20	12.5±1.5	178±2.0	2.0±0.5	13.5±0.5	21.0±0.5	60.0±2.0
CR16						
CR10						
CR08						
CR04						
CA14						
CR02	16.5±1.5					80.0±2.0
CR01						