

# CRM-Series

## Precision High-Value Chip Resistors

Sizes: 0805, 1206, 1210, 2010, 2512, 4020

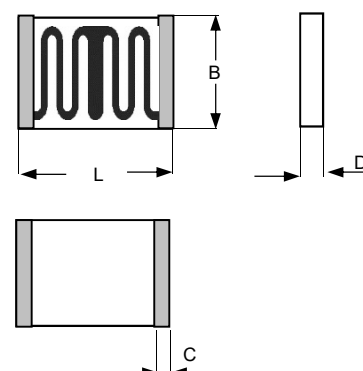
### Features:

- Meander structured high value chip resistors in thick film technology
- Low temperature and voltage dependency
- Suitable for high vacuum applications – no organics
- Termination: Nickel-barrier / matte Tin
- Glass passivated resistor element
- High working voltage up to 6000 V



### Dimensions:

Size	L	B	D	C
0805	2.00 $+0.15/-0.05$	1.25 $+0.15/-0.05$	0.40 $+0.15/-0.05$	0.3 $+0.2/-0.1$
1206	3.20 $+0.15/-0.05$	1.50 $+0.2/-0.05$	0.40 $+0.15/-0.05$	0.3 $+0.2/-0.1$
1210	3.20 $+0.15/-0.05$	2.50 $+0.2/-0.05$	0.50 $+0.15/-0.05$	0.8 $\pm 0.2$
2010	5.10 $+0.15/-0.05$	2.50 $+0.2/-0.05$	0.60 $+0.20/-0.1$	1.2 $\pm 0.2$
2512	6.30 $+0.15/-0.05$	3.50 $+0.2/-0.05$	0.60 $+0.15/-0.05$	0.9 $\pm 0.2$
4020	10.20 $+0.20/-0.05$	5.10 $+0.2/-0.05$	0.60 $+0.20/-0.1$	0.9 $\pm 0.2$



L = Length, B = Width, D = Thickness, C = Width of wrap around (in mm)

### Packaging:

Bulk in plastic bags – minimum quantity 30 pieces per value  
 Embossed carrier tape acc. to IEC 60286-3 – minimum 500 pieces per value  
 Reel diameter 180 mm or 330 mm

### Ordering Data:

Type – value – tolerance – temperature coefficient TK

Example: CRM 2512 10G  $\pm 10\%$  TK100

Untrimmed parts are indicated by the extension “NA” in the order code:

Type – NA – value – tolerance – temperature coefficient TK

Example: CRM 2512-NA 10G  $\pm 10\%$  TK100

Without requirement for the temperature coefficient TK, the standard value (highest value in table) will be supplied. The standard measuring voltage is 10V. Different voltages on request and agreement (specify explicitly).

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Sizes: 0805, 1206, 1210, 2010, 2512, 4020

### Technical data – depending on size:

Size	0805	1206	1210	2010	2512	4020
Power rating P <sub>70</sub> (mW) (P <sub>155</sub> = 0 mW)	125	250	350	750 (1000) <sup>2)</sup>	1000 (2000) <sup>2)</sup>	2000 (3000) <sup>2)</sup>
Working voltage U <sub>-</sub> , U <sub>eff</sub> (V) Standard (trimmed) <sup>1)</sup> NA (untrimmed, Tol. ≥ 5%)	200 400	600 1000	800 1200	1500 2000	2500 3500	4000 6000

Ranges / Tolerances / Temperature coefficient TK <sup>3)</sup> / VCR <sup>4)</sup>						
100K – 100M	0.5/1/2/5/10% TK25/50/100 100 ppm/V	0.5/1/2/5/10% TK25/50/100 50 ppm/V	0.5/1/2/5/10% TK25/50/100 50 ppm/V	0.5/1/2/5/10% TK25/50/100 25 ppm/V	0.5/1/2/5/10% TK25/50/100 10 ppm/V	0.25/ ... /10% TK25/50/100 5 ppm/V
>100M – 1G	2/5/10/20% TK50/100/250 250 ppm/V	2/5/10/20% TK50/100/250 100 ppm/V	1/2/5/10/20% TK25/50/100 50 ppm/V	1/2/5/10/20% TK25/50/100 50 ppm/V	1/2/5/10/20% TK25/50/100 25 ppm/V	0.5/ ... /20% TK25/50/100 10 ppm/V
>1G – 10G	5/10/20% TK250/500 500 ppm/V	5/10/20% TK100/250 250 ppm/V	2/5/10/20% TK25/50/100 100 ppm/V	2/5/10/20% TK25/50/100 100 ppm/V	2/5/10/20% TK25/50/100 50 ppm/V	1/2/5/10/20% TK25/50/100 10 ppm/V
>10G – 100G	10/20/30% TK1000/2000 1000 ppm/V	10/20/30% TK500/1000 500 ppm/V	5/10/20/30% TK500/1000 500 ppm/V	5/10/20/30% TK250/500 250 ppm/V	5/10/20/30% TK100/250/500 100 ppm/V	2/5/10/20/30% TK50/100/250 50 ppm/V

<sup>1)</sup> Continuous operating voltage (U<sub>-</sub>, U<sub>eff</sub>):  $V \leq \sqrt{P \cdot R}$  or max. working voltage (the lower value)

<sup>2)</sup> At continuous power dissipation the dimensions of solder-pads have to secure a sufficient heat removal.

Power Mode (**1W** at CRM2010; **2W** at CRM2512; **3W** at CRM4020): The temperature of the resistor element is higher than in standard mode! Higher power rating requires an adequate heat removal (e.g. increased solder pads or Cu-thicknesses). The user has to guarantee, that solder joints will not run over their load limit. The resistor must not exceed the specified operating temperature range.

<sup>3)</sup> Temperature coefficient TK: in ppm/K; +25°C...+125°C; below standard TK (highest value) or R >100G: +25°C...+85°C

<sup>4)</sup> VCR: typical values, all negative, not for all temperature coefficient values available

Lower values of tolerance, temperature coefficient TK and VCR on request and agreement only

### Technical data – general:

Operating temperature range	-55°C ... +155°C
Climatic category acc. to EN 60068-1	55/155/56
Solderability acc. to EN 60068-2-58 (lead-free and lead-containing)	250°C, 3s
Max. soldering temperature acc. to EN 60068-2-58	260°C, 10s

Long term stability	< 1G	< 10G	≥ 10G
Load Life 70°C/1000h	< 0.25%	< 0.5%	< 1%
Storage 125°C/1000h	< 0.5%	< 1%	< 2%
Max voltage/1000h	< 0.5%	< 1%	< 2%

Other data according to EN 140401-802 (CECC 40401-802)