

# CHR-Series Chip Resistors, non-magnetic

Sizes: 0402, 0603, 0805, 1206, 2010, 2512, 4020

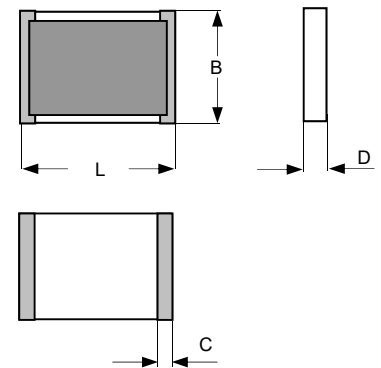
### Features:

- Chip Resistors in thick film technology
- Non-magnetic
- PtAg terminations for conductive gluing and soldering
- RF-versions untrimmed
- Suitable for high vacuum applications – no organics
- High temperature application possible (up to 300°C as CHR-HT)



### Dimensions:

Size	L	B	D	C
0402	0.95 <sup>+0.10/-0.05</sup>	0.48 <sup>+0.10/-0.05</sup>	0.28 <sup>+0.1/-0.05</sup>	0.1 <sup>+0.1/-0.05</sup>
0603	1.50 <sup>+0.15/-0.05</sup>	0.80 <sup>+0.15/-0.05</sup>	0.40 <sup>+0.15/-0.05</sup>	0.2 <sup>+0.2/-0.1</sup>
0805	2.00 <sup>+0.15/-0.05</sup>	1.25 <sup>+0.15/-0.05</sup>	0.40 <sup>+0.15/-0.05</sup>	0.3 <sup>+0.2/-0.1</sup>
1206	3.20 <sup>+0.15/-0.05</sup>	1.50 <sup>+0.2/-0.05</sup>	0.40 <sup>+0.15/-0.05</sup>	0.3 <sup>+0.2/-0.1</sup>
2010	5.10 <sup>+0.15/-0.05</sup>	2.50 <sup>+0.2/-0.05</sup>	0.60 <sup>+0.20/-0.1</sup>	1.2 <sup>±0.2</sup>
2512	6.30 <sup>+0.15/-0.05</sup>	3.50 <sup>+0.2/-0.05</sup>	0.60 <sup>+0.15/-0.05</sup>	0.9 <sup>±0.2</sup>
4020	10.20 <sup>+0.15/-0.05</sup>	5.10 <sup>+0.2/-0.05</sup>	0.60 <sup>+0.15/-0.05</sup>	0.9 <sup>±0.2</sup>



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

### Packaging:

Bulk in plastic bags – minimum quantity 100 pieces per value (500 pcs. for new manufacturing runs)  
 Embossed carrier tape according 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: CHR 0805 221k ± 1% TK100

Untrimmed parts are indicated by the extension “NA” in the order code:  
 Type – NA – value – tolerance– temperature coefficient TK  
 Example: CHR 0805-NA 221k ±10% TK100

Without requirement for the temperature coefficient TK, the standard value (highest value in table) will be supplied.

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## Technical data – depending on size:

Size	0402	0603	0805	1206	2010	2512	4020
Power rating P <sub>70</sub> (mW) (P <sub>155</sub> = 0 mW)	50	100	125	250	750 <sup>3)</sup>	1000 <sup>3)</sup>	2000 <sup>3)</sup>
Max. working voltage (V) <sup>2)</sup> Standard (trimmed) NA (untrimmed, Tol. ≥ 5%)	30 60	75 150	100 200	200 400	250 900	300 1200	500 1500

Ranges / Tolerances / Temperature coefficients TK <sup>1)</sup>							
1R – <10R	10/20% TK250	5/10/20% TK100/250	5/10/20% TK100/250	5/10/20% TK100/250	5/10/20% TK100/250	5/10/20% TK100/250	5/10/20% TK100/250
10R – <100R	5/10% TK100	2/5/10% TK50/100	1/2/5/10% TK50/100	1/2/5/10% TK50/100	1/2/5/10% TK50/100	1/2/5/10% TK50/100	1/2/5/10% TK50/100
100R – 1M	2/5/10% TK50/100	1/2/5/10% TK50/100	0,5/.../10% TK50/100	0,5/.../10% TK50/100	0,5/.../10% TK50/100	0,5/.../10% TK50/100	0,5/.../10% TK50/100
>1M – 10M	2/5/10/20% TK50/100	1/2/5/10% TK50/100	1/2/5/10% TK50/100	1/2/5/10% TK50/100	1/2/5/10% TK50/100	1/2/5/10% TK50/100	1/2/5/10% TK50/100

<sup>1)</sup> Temperature coefficient TK: in ppm/K; +25°C...+125°C; below standard TK (highest value): +25°C...+85°C

<sup>2)</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>3)</sup> At continuous power dissipation the dimensions of solder-pads have to secure a sufficient heat removal.  
Power Mode: **1W** as CHR2010-HT (P<sub>70</sub>=1W, P<sub>300</sub>=0W), **2W** as CHR2512-HT (P<sub>70</sub>=2W, P<sub>300</sub>=0W) and **3W** as CHR4020-HT (P<sub>70</sub>=3W, P<sub>300</sub>=0W) respectively. Higher power rating requires an adequate heat removal (e.g. increased solder pads or Copper 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.

Zero-Ohm-Jumper: < 50 mOhm

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. EN 60068-2-58 (lead-free and lead-containing) <sup>4)</sup>	250°C 3s
Max. soldering temperature acc. EN 60068-2-58	260°C 10s

Extended temperature range up to 300°C possible- see datasheet: “High temperature chip resistors” CHR-HT

Long term stability	10R – 10 M	< 10R
Storage 125°C/1000h	< 0,5%	< 1%
Storage 155°C/1000h	< 1%	< 2%
Load P <sub>70</sub> /70°C/1000 h	< 0,5%	< 1%
Short term overload	< 0,25%	< 0,5%
Damp heat (56d/40°C/96%)	< 0,5%	< 1%

<sup>4)</sup> Up to 6 months after shipment (air, 30°C/60%rH) or up to 12 months at storage in Nitrogen or in evacuated dry packs.  
Other data according to EN 140401-802 (CECC 40401-802).