

# CBW-Series Bondable Chip Resistors, non-magnetic

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

## Features:

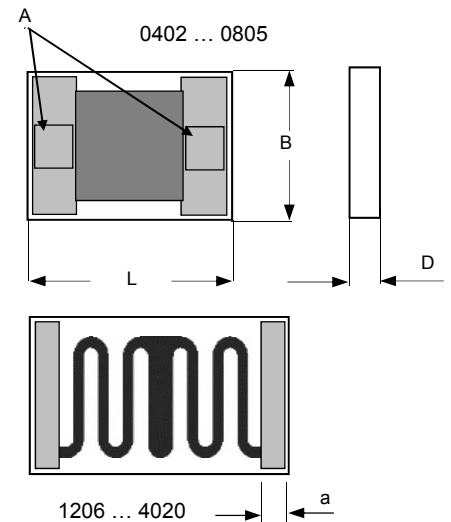
- Chip Resistors in thick film technology
- AgPd termination for flip chip assembly (face-down; for conductive epoxy assembly or soldering) or Gold termination (0402, 0603, 0805) for wire bonding (US/TC; face-up) as well as flip chip (face-down; for conductive epoxy assembly)
- High temperature application up to 200°C possible (CBW-HT)
- No wrap-around
- Bottom side completely insulated; passivation on resistor side from 1206 available
- Non-magnetic



## Dimensions:

Size	L	B	D	Bondpad A <sub>min</sub> or a
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>	0.15 x 0.15
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>	0.20 x 0.20
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>	0.25 x 0.40
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>	0.30 <sup>±0.2</sup>
2010	5.10 <sup>+0.15/-0.05</sup>	2.50 <sup>+0.2/-0.05</sup>	0.65 <sup>+0.15/-0.05</sup>	0.60 <sup>±0.2</sup>
2512	6.30 <sup>+0.15/-0.05</sup>	3.50 <sup>+0.2/-0.05</sup>	0.65 <sup>+0.15/-0.05</sup>	0.60 <sup>±0.2</sup>
4020	10.20 <sup>+0.20/-0.05</sup>	5.10 <sup>+0.2/-0.05</sup>	0.65 <sup>+0.15/-0.05</sup>	0.90 <sup>±0.2</sup>

L = Length, B = Width, D = Thickness, A = Bond pad/ solder pad size (measures in mm)



## Packaging:

Bulk in plastic bags – minimum quantity 100 pcs/value  
 Waffle-Pack / Gel-Tray (JEDEC 2“) – minimum 100 pcs./value (sizes 0402, 0603 and 0805 only)  
 Embossed carrier tape acc. to IEC 60286-3 – min. 500 pcs/value (0402 in punched carrier tape)  
 Reel diameter 180 mm or 330 mm

- Orientation in tape:
- face-up for wire bonding
  - face-down for flip-chip assembly

The orientation in the tape is to specify with order. If not specified face-down is used as standard.

## Ordering Data:

Gold termination for face-up assembly (wire bonding)

Type – value – tolerance – temperature coefficient TK – termination – (component orientation in tape)

Example: CBW 0603 100K ±5% TK100 Au – (face-up)

AgPd termination for face-down assembly (flip chip) – (component orientation in tape)

Type – value – tolerance – temperature coefficient TK – (component orientation in tape)

Example: CBW 0603 1G ±20% TK1000 – (face-down)

If no requirements for TK and packaging are given, the highest value in table will be supplied and packaging is bulk. Standard measuring voltage is 10V. Different voltages on request and agreement (specify explicitly). Without specification the termination is AgPd for flip-chip application.

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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	500	1000 <sup>1)</sup>	2000 <sup>1)</sup>
Working voltage <sup>4)</sup> Standard (trimmed ) NA (untrimmed; Tol. ≥ 5%)	30 60	75 150	100 200	200 400 / 1500 <sup>0)</sup>	1500 2500 <sup>0)</sup>	1500 3500 <sup>0)</sup>	4000 6000 <sup>0)</sup>
<b>Value Ranges / Tolerances / TK (TCR)<sup>2)</sup> / VCR<sup>3)</sup></b>							
10R – <100R	5/10/20% TK100	5/10/20% TK50/100	5/10/20% TK50/100	2/5/10/20% TK50/100	2/5/10/20% 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	1/.../10% TK50/100	1/.../10% TK50/100	1/.../10% TK50/100	1/.../10% TK50/100	1/.../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
>10M – 100M	5/10/20% TK100/250 500 ppm/V	1/2/5/10/20% TK50/100 500 ppm/V	1/2/5/10/20% TK50/100 500 ppm/V	0.5/.../20% TK50/100 250 ppm/V	0.5/.../20% TK50/100 50 ppm/V	0.5/.../20% TK50/100 25 ppm/V	0.5/.../20% TK50/100 10 ppm/V
>100M – 1G	5/10/20/30% TK500 1000 ppm/V	2/5/10/20% TK250/500 500 ppm/V	2/5/10/20% TK250/500 500 ppm/V	2/5/10/20% TK100/250 250 ppm/V	1/2/5/10/20% TK50/100 100 ppm/V	1/2/5/10/20% TK50/100 50 ppm/V	0.5/.../20% TK50/100 25 ppm/V
>1G – 10G	10/20/30% TK2000 2000 ppm/V	5/10/20/30% TK500/1000 1000 ppm/V	5/10/20% TK500/1000 1000 ppm/V	5/10/20% TK250/500 500 ppm/V	2/5/10/20% TK100/250 250 ppm/V	2/5/10/20% TK100/250 100 ppm/V	2/5/10/20% TK50/100 25 ppm/V
>10G – 100G	10/20/30% TK2000/3000 5000 ppm/V	10/20/30% TK2000/3000 3000 ppm/V	10/20/30% TK2000/3000 3000 ppm/V	5/10/20% TK500/1000 1000 ppm/V	5/10/20/30% TK250/500 500 ppm/V	5/10/20/30% TK250/500 250 ppm/V	5/10/20/30% TK100/250 100 ppm/V
>100G – 1T	<i>on Request</i>	<i>on Request</i>	10/20/30% TK3000 5000 ppm/V	10/20/30% TK2000 2000 ppm/V	5/10/20/30% TK500/1000 1000 ppm/V	5/10/20/30% TK500/1000 500 ppm/V	5/10/20/30% TK250/500 250 ppm/V

Lower values of tolerance, TCR and VCR on request and agreement only

<sup>0)</sup> with passivation

<sup>1)</sup> At continuous power dissipation the dimensions of solder-pads shall ensure sufficient heat dissipation.

<sup>2)</sup> TK (TCR): in ppm/K; +25°C...+125°C; for TK lower than standard TK (highest value) or value >100G: +25°C...+85°C

<sup>3)</sup> VCR: typical values, all negative, not for all TK (TCR) values available

<sup>4)</sup> Continuous operating voltage (U<sub>-</sub>, U<sub>eff</sub>): V ≤ √(P\*R) or max. working voltage (the lower value)

## Technical data – general:

Operating temperature range	-55°C ... +155°C
Climatic category acc. to EN 60068-1	55/155/56
Protection of the resistor element	Glass passivation (sizes 1206 to 4020)
Solderability acc. EN 60068-2-58 <sup>5)</sup>	250°C 3s
Max. soldering temperature acc. EN 60068-2-58	260°C 10s (max. 2 cycles)

Extended temperature range up to 200°C: see datasheet “High temperature chip resistors” CBW-HT

Long term stability	< 10M	10M - 1G	1G - 10G	≥10G
Storage 125°C/1000h	< 0.5%	<1%	<2%	<5%
Max. voltage /1000h	< 0.5%	<0.5%	<1%	<2%
Short term overload (2,5x, 5s)	< 0.25%			

<sup>5)</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.

Data not specified according to EN 140401-802 (CECC 40401-802).