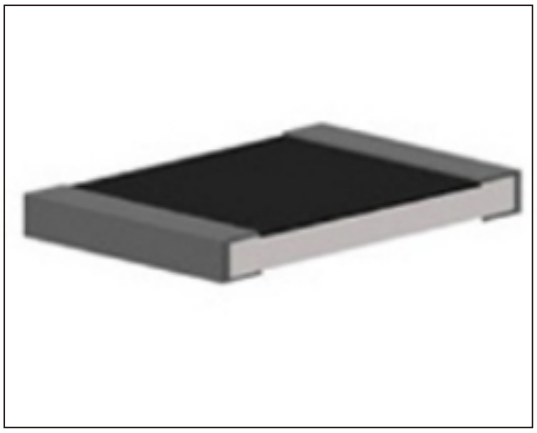
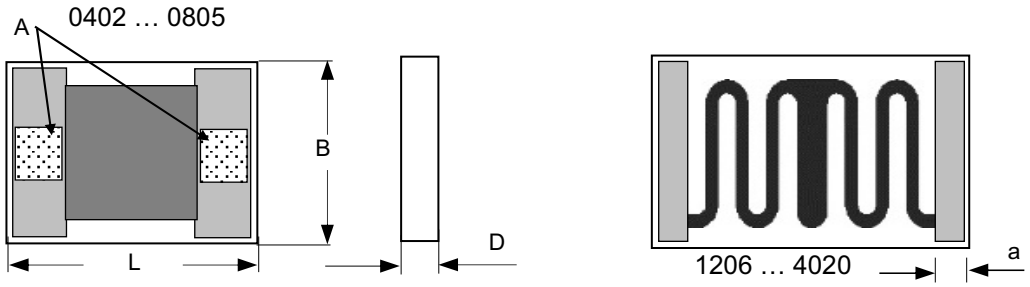
# CBW Non-magnetic Thick Film Chip Resistors



## Features

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

## Dimensions




| Type | Size | | L | B | D | C |
|---|---|---|---|---|---|---|
| | Imperial (Standard) | Metric (ref. only) | length | width | thickness | Bondpad A min bzw. a-Bondpad dimension A min or a |
| CHR | 0402 | 1005 | 0.95+0.10/-0.05 | 0.48+0.10/-0.05 | 0.28+0.10/-0.05 | 0.15X0.15 |
| | 0603 | 1608 | 1.50+0.15/-0.05 | 0.80+0.15/-0.05 | 0.40+0.15/-0.05 | 0.20X0.20 |
| | 0805 | 2012 | 2.00+0.15/-0.05 | 1.25+0.15/-0.05 | 0.40+0.15/-0.05 | 0.25X0.40 |
| | 1206 | 3216 | 3.20+0.15/-0.05 | 1.50+0.20/-0.05 | 0.40+0.15/-0.05 | 0.30+0.20/-0.1 |
| | 2010 | 5025 | 5.10+0.15/-0.05 | 2.50+0.20/-0.05 | 0.60+0.20/-0.1 | 1.2±0.20 |
| | 2512 | 6332 | 6.30+0.15/-0.05 | 3.50+0.20/-0.05 | 0.60+0.15/-0.05 | 0.90±0.20 |
| | 4020 | 10050 | 10.2+0.20/-0.05 | 5.10+0.20/-0.05 | 0.60+0.20/-0.1 | 0.90±0.20 |

## Ordering Information

Example:

| CBW | 0805 | 50 | J | 100M0 | ±50 |
|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) |
| Series Name | Size | Power Rating | Resistance Tolerance | Resistance | TCR |

(1)Type: CBW SERIES
(2)Size:0402,0603,0805,1206,2010,2512， 4020
(2)Power Rating: 50=50mW,100=100mW,125=125mW,250=250mW.....
(3)Tolerance: D=±0.5%,F=±1%,J=±5%,K=±10%,M=±20%
(4)Resistance Value:100K0=100KΩ,100M0=100MΩ,1G100=1.1GΩ,10T00=10TΩ
(6)TCR:±50ppm/℃,±100ppm/℃,±250ppm/℃.....

## Reference Standards

JISC 5201-1

## Power、Voltage and Ranges

| Size | Power (mW)[1] | Working 4) voltage(V) | | Value Ranges / Tolerances / Temperature coefficient TCR (TCR)[2]/ VCR[3] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | trimmed | untrimmed | 10R~<100R | 100R~<1MR | 1MR~<10MR | >10MR~100M | >100MR~1G | >1G~10G | >10G~100G |
| 0402 | 50 | 30 | 60 | 5/10/20% TC 100 | 2/5/10% TC 50/100 | 2/5/10/20% TC 50/100 | 5/10/20% TC 100/250 500ppm/V | 5/10/20/30% TC 500 1000ppm/V | 10/20/30% TC 2000 2000ppm/V | 10/20/30% TC 2000/3000 5000ppm/V |
| 0603 | 100 | 75 | 150 | 5/10/20% TC 50/100 | 1/2/5/10% TC 50/100 | 1/2/5/10% TC 50/100 | 1/2/5/10/20% TC 50/250 500ppm/V | 2/5/10/20% TC 250/500 500ppm/V | 5/10/20/30% TC 500/1000 1000ppm/V | 10/20/30% TC 2000/3000 3000ppm/V |
| 0805 | 125 | 100 | 200 | 5/10/20% TC 50/100 | 1/....10% TC 50/100 | 1/2/5/10% TC 50/100 | 1/2/5/10/20% TC 50/250 500ppm/V | 2/5/10/20% TC 250/500 500ppm/V | 5/10/20% TC 500/1000 1000ppm/V | 10/20/30% TC 2000/3000 3000ppm/V |
| 1206 | 250 | 200 | 400/1500[5] | 2/5/10/20% TC 50/100 | 1/....10% TC 50/100 | 1/2/5/10% TC 50/100 | 0.5/...../20% TC 50/250 500ppm/V | 2/5/10/20% TC 100/250 250ppm/V | 5/10/20% TC 250/500 500ppm/V | 5/10/20% TC500/1000 1000ppm/V |
| 2010 | 750[1] | 1500 | 2500[5] | 2/5/10/20% TC 50/100 | 1/....10% TC 50/100 | 1/2/5/10% TC 50/100 | 0.5/...../20% TC 50/250 500ppm/V | 1/2/5/10/20% TC 50/100 100ppm/V | 2/5/10/20% TC 100/250 250ppm/V | 5/10/20/30% TC 250/500 500ppm/V |
| 2512 | 1000[1] | 1500 | 3500[5] | 1/2/5/10% TC 50/100 | 1/....10% TC 50/100 | 1/2/5/10% TC 50/100 | 0.5/...../20% TC 50/250 500ppm/V | 1/2/5/10/20% TC 50/100 50ppm/V | 2/5/10/20% TC 100/250 100ppm/V | 5/10/20/30% TC 250/500 250ppm/V |
| 4020 | 2000[1] | 4000 | 6000[5] | 1/2/5/10% TC 50/100 | 1/....10% TC 50/100 | 1/2/5/10% TC 50/100 | 0.5/...../20% TC 50/250 500ppm/V | 0.5/...../20% TC 50/250 25ppm/V | 2/5/10/20% TC 50/100 25ppm/V | 5/10/20/30% TC 100/2500 100ppm/V |

1) At continuous power dissipation the dimensions of solder-pads shall ensure sufficient heat dissipation.
2) TCR (TCR): in ppm/K; +25℃...+125℃; for TCR lower than standard TCR (highest value) or value >100G: +25℃...+85℃
3) VCR: typical values, all negative, not for all TCR values available
4) Continuous operating voltage ($U_{-}$, $U_{eff}$): V $\leqslant \sqrt{(P*R)}$ or max. working voltage (the lower value)
5) with passivation

## Performance

| Test Items | Test Methods(IEC60068) |
|---|---|
| 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 5) | 250° C 3s |
| Max. soldering temperature acc. EN 60068-2-58 | 260° C 10s (max. 2 cycles) |
| Moisture Sensitivity Level acc. to J-STD-020 | MSL 1 (unlimited) |

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℃/1000h | <0.5% | <1% | <2% | <5% |
| Max. voltage /1000h | <0.5% | <0.5% | <1% | <2% |
| short term overload(2,5x, 5s) | <0.25% | | | |

5) 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)