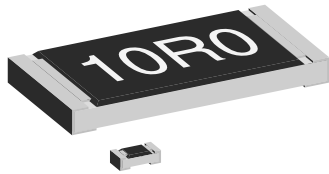


Thick Film, Rectangular Chip Resistors



FEATURES

- Metal glaze on high quality ceramic
- Protective overglaze
- Lead bearing (90 % Sn/10 % Pb) solder contacts
- Excellent stability ($|\Delta R/R| \leq \pm 0.5\%$ for 1000 h at 70 °C) in different environmental conditions
- High volume product suitable for commercial and special applications

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | | | | |
|-------------------------------------------------------------------------------|------|--------|--------------------------------------|-------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|--------------------------|
| MODEL | SIZE | | POWER RATING $P_{70\text{ °C}}$ W | LIMITING ELEMENT VOLTAGE MAX V_{Ξ} | TEMPERATURE COEFFICIENT ppm/K | TOLERANCE % | RESISTANCE RANGE Ω | E-SERIES |
| | INCH | METRIC | CECC 40401-802/EIA-575 | | | | | |
| D10 CRCW0402 | 0402 | 1005 | 0.063 | 50 | $\pm 200^{1)}$ ± 100 ± 200 | ± 1 ± 1 ± 5 | 1R0 - 9R76 10R - 10M 1R0 - 10M | 24 + 96 24 + 96 24 |
| Zero-Ohm-Resistor: $R_{\max} = 20\text{ m}\Omega$, $I_{\max} = 1\text{ A}$ | | | | | | | | |
| D11 CRCW0603 | 0603 | 1608 | 0.10 | 75 | $\pm 200^{1)}$ ± 100 ± 200 | ± 1 ± 1 ± 5 | 1R0 - 9R76 10R - 10M 1R0 - 10M | 24 + 96 24 + 96 24 |
| Zero-Ohm-Resistor: $R_{\max} = 20\text{ m}\Omega$, $I_{\max} = 1.5\text{ A}$ | | | | | | | | |
| D12 CRCW0805 | 0805 | 2012 | 0.125 | 150 | $\pm 200^{1)}$ ± 100 ± 200 | ± 1 ± 1 ± 5 | 1R0 - 9R76 10R - 10M 1R0 - 10M | 24 + 96 24 + 96 24 |
| Zero-Ohm-Resistor: $R_{\max} = 20\text{ m}\Omega$, $I_{\max} = 2\text{ A}$ | | | | | | | | |
| D25 CRCW1206 | 1206 | 3216 | 0.25 | 200 | $\pm 200^{1)}$ ± 100 ± 200 | ± 1 ± 1 ± 5 | 1R0 - 9R76 10R - 10M 1R0 - 10M | 24 + 96 24 + 96 24 |
| Zero-Ohm-Resistor: $R_{\max} = 20\text{ m}\Omega$, $I_{\max} = 2.5\text{ A}$ | | | | | | | | |
| CRCW1210 | 1210 | 3225 | 0.33 | 200 | $\pm 200^{1)}$ ± 100 ± 200 | ± 1 ± 1 ± 5 | 1R0 - 9R76 10R - 1M0 1R0 - 10M | 24 + 96 24 + 96 24 |
| Zero-Ohm-Resistor: $R_{\max} = 20\text{ m}\Omega$, $I_{\max} = 2.5\text{ A}$ | | | | | | | | |
| CRCW1218 | 1218 | 3246 | 1.0 | 200 | $\pm 200^{1)}$ ± 100 ± 200 | ± 1 ± 1 ± 5 | 1R0 - 9R76 10R - 2M2 1R0 - 2M2 | 24 + 96 24 + 96 24 |
| Zero-Ohm-Resistor: $R_{\max} = 20\text{ m}\Omega$, $I_{\max} = 4\text{ A}$ | | | | | | | | |
| CRCW2010 | 2010 | 5025 | 0.5 | 400 | $\pm 200^{1)}$ ± 100 ± 200 | ± 1 ± 1 ± 5 | 1R0 - 9R76 10R - 10M 1R0 - 10M | 24 + 96 24 + 96 24 |
| Zero-Ohm-Resistor: $R_{\max} = 20\text{ m}\Omega$, $I_{\max} = 3\text{ A}$ | | | | | | | | |
| CRCW2512 | 2512 | 6332 | 1.0 | 500 | $\pm 200^{1)}$ ± 100 ± 200 | ± 1 ± 1 ± 5 | 1R0 - 9R76 10R - 10M 1R0 - 10M | 24 + 96 24 + 96 24 |
| Zero-Ohm-Resistor: $R_{\max} = 20\text{ m}\Omega$, $I_{\max} = 4\text{ A}$ | | | | | | | | |

- 1) 100 ppm/K on request
- Ask about further value ranges
 - For low values see Thick Film rectangular low value resistors
 - For high values see Thick Film rectangular high values
 - Marking and packaging: see appropriate catalog or web pages

- For precision Thick Film CRCW see Thick Film rectangular Precision Resistors
- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material
- AgPd or Pd terminations for conductive adhesive attachment on request

| TECHNICAL SPECIFICATIONS | | | | | | | | | |
|------------------------------------------------------|-------------------|------------------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|
| PARAMETER | UNIT | D10 CRCW0402 | D11 CRCW0603 | D12 CRCW0805 | D25 CRCW1206 | CRCW1210 | CRCW1218 | CRCW2010 | CRCW2512 |
| Rated Dissipation at 70 °C (CECC 40401 EIA 575) | W | 0.063 | 0.10 | 0.125 | 0.25 | 0.33 | 1.0 | 0.5 | 1.0 |
| Limiting Element Voltage ²⁾ | V_{Ξ} | 50 | 75 | 150 | 200 | 200 | 200 | 400 | 500 |
| Insulation Voltage (1 min) | V_{peak} | > 75 | > 100 | > 200 | > 300 | > 300 | > 300 | > 300 | > 300 |
| Thermal Resistance | K/W | $\leq 870^{1)}$ | $\leq 550^{1)}$ | $\leq 440^{1)}$ | $\leq 220^{1)}$ | $\leq 140^{3)}$ | $\leq 65^{3)}$ | $\leq 88^{3)}$ | $\leq 65^{3)}$ |
| Insulation Resistance | Ω | | | | | | | | |
| Category Temperature | °C | | | | | | | | |
| Failure Rate | h^{-1} | 0.3 × 10 ⁻⁹ | | | | | | | |
| Weight/1000 pcs | g | 0.65 | 2 | 5.5 | 10 | 16 | 29.5 | 25.5 | 40.5 |

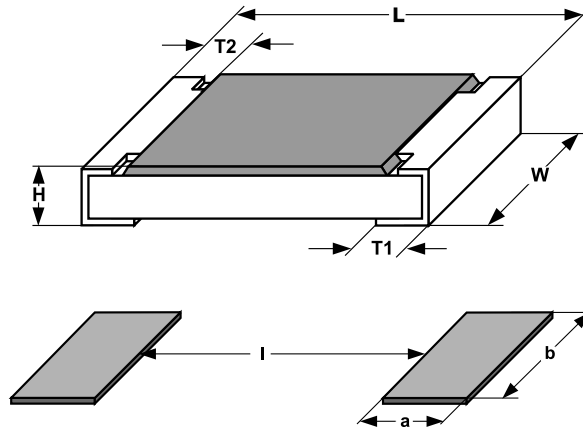
1) Measuring conditions in acc. to CECC 4040

3) Depending on solder pad dimensions

2) Rated voltage: $\sqrt{P \times R}$



DIMENSIONS



| SIZE | | DIMENSIONS [in millimeters] | | | | |
|------|--------|----------------------------------------|-------------|-------------|---------------------------------------|-----------|
| INCH | METRIC | L | W | H | T1 | T2 |
| 0402 | 1005 | 1.0 ± 0.05 | 0.5 ± 0.05 | 0.35 ± 0.05 | 0.25 ± 0.05 | 0.2 ± 0.1 |
| 0603 | 1608 | 1.55 ^{+0.10} _{-0.05} | 0.85 ± 0.1 | 0.45 ± 0.05 | 0.3 ± 0.2 | 0.3 ± 0.2 |
| 0805 | 2012 | 2.0 ^{+0.20} _{-0.10} | 1.25 ± 0.15 | 0.45 ± 0.05 | 0.3 ^{+0.20} _{-0.10} | 0.3 ± 0.2 |
| 1206 | 3216 | 3.2 ^{+0.10} _{-0.20} | 1.6 ± 0.15 | 0.55 ± 0.05 | 0.45 ± 0.2 | 0.4 ± 0.2 |
| 1210 | 3225 | 3.2 ± 0.2 | 2.5 ± 0.2 | 0.55 ± 0.05 | 0.45 ± 0.2 | 0.4 ± 0.2 |
| 1218 | 3246 | 3.2 ^{+0.10} _{-0.20} | 4.6 ± 0.15 | 0.55 ± 0.05 | 0.45 ± 0.2 | 0.4 ± 0.2 |
| 2010 | 5025 | 5.0 ± 0.15 | 2.5 ± 0.15 | 0.6 ± 0.1 | 0.6 ± 0.2 | 0.6 ± 0.2 |
| 2512 | 6332 | 6.3 ± 0.2 | 3.15 ± 0.15 | 0.6 ± 0.1 | 0.6 ± 0.2 | 0.6 ± 0.2 |

| SIZE | | SOLDER PAD DIMENSIONS [in millimeters] | | | | | |
|------|--------|----------------------------------------|-----|-----|----------------|-----|-----|
| INCH | METRIC | REFLOW SOLDERING | | | WAVE SOLDERING | | |
| | | a | b | l | a | b | l |
| 0402 | 1005 | 0.4 | 0.6 | 0.5 | | | |
| 0603 | 1608 | 0.5 | 0.9 | 1.0 | 0.9 | 0.9 | 1.0 |
| 0805 | 2012 | 0.7 | 1.3 | 1.2 | 0.9 | 1.3 | 1.3 |
| 1206 | 3216 | 0.9 | 1.7 | 2.0 | 1.1 | 1.7 | 2.3 |
| 1210 | 3225 | 0.9 | 2.5 | 2.0 | 1.1 | 2.5 | 2.2 |
| 1218 | 3246 | 1.05 | 4.9 | 1.9 | 1.25 | 4.8 | 1.9 |
| 2010 | 5025 | 1.0 | 2.5 | 3.9 | 1.2 | 2.5 | 3.9 |
| 2512 | 6332 | 1.0 | 3.2 | 5.2 | 1.2 | 3.2 | 5.2 |

PART NUMBER AND PRODUCT DESCRIPTION¹⁾

PART NUMBER: D1208050B5620FP0

D 1 2 0 8 0 5 0 B 5 6 2 0 F P 0

| | | | | | | |
|---------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------|----------------------------------|
| MODEL/SIZE D100402 D110603 D120805 D251206 | SPECIAL CHARACTER 0 = neutral | T.C.R. B = ± 100 ppm/K A = ± 200 ppm/K 0 = Jumper | VALUE 3 digit value 1 digit multiplier MULTIPLIER 7 = *10 ⁻³ 2 = *10 ² 8 = *10 ⁻² 3 = *10 ³ 9 = *10 ⁻¹ 4 = *10 ⁴ 0 = *10 ⁰ 5 = *10 ⁵ 1 = *10 ¹ 6 = *10 ⁶ 0000 = Jumper | TOLERANCE F = ± 1 % J = ± 5 % | PACKAGING²⁾ P0 M0 P5 PZ PN B5 MZ BN MU | SPECIAL up to 2 digits |
|---------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------|----------------------------------|

PRODUCT DESCRIPTION: D12 100 562R 1% P5

| | | | | |
|-------------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------|
| D12 MODEL D10 D11 D12 D25 | 100 TCR ± 100 ppm/K ± 200 ppm/K | 562R RESISTANCE VALUE 49K9 = 49.9 kΩ 5R1 = 5.1 Ω 0R0 = Jumper | 1 % TOLERANCE ± 1 % ± 5 % | P5 PACKAGING ²⁾ P0 M0 P5 PZ PN B5 MZ BN MU |
|-------------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------|

PART NUMBER: CRCW0805562RFKTA

C R C W 0 8 0 5 5 6 2 R F K T A

| | | | | | |
|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| MODEL/SIZE CRCW0402 CRCW0603 CRCW0805 CRCW1206 CRCW1210 CRCW2512 CRCW2010 CRCW2512 | VALUE R = Decimal K = Thousand M = Million 0000 = Jumper | TOLERANCE F = ± 1 % J = ± 5 % Z = Zero Ohm Jumper | T.C.R. K = ± 100 ppm/K N = ± 200 ppm/K S = Jumper or Special | PACKAGING²⁾ TA = RT1 TB = RT5 TC = RT6 TD = RT7 TF = R02 TG = R67 TH = R82 TK = RT9 BA = B27 | SPECIAL up to 2 digits TR = Customer Trimmable |
|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|

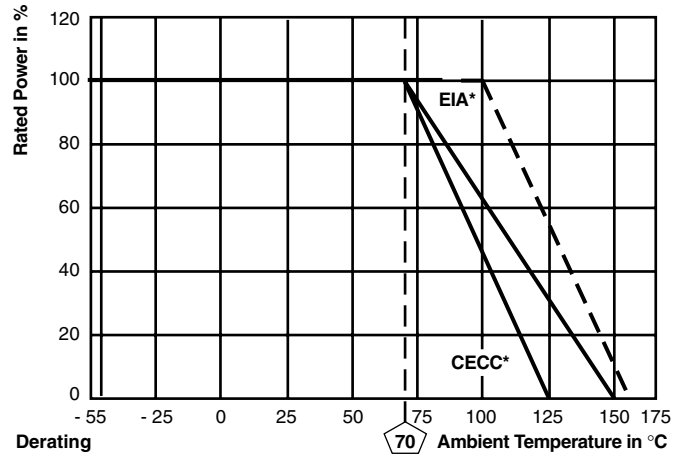
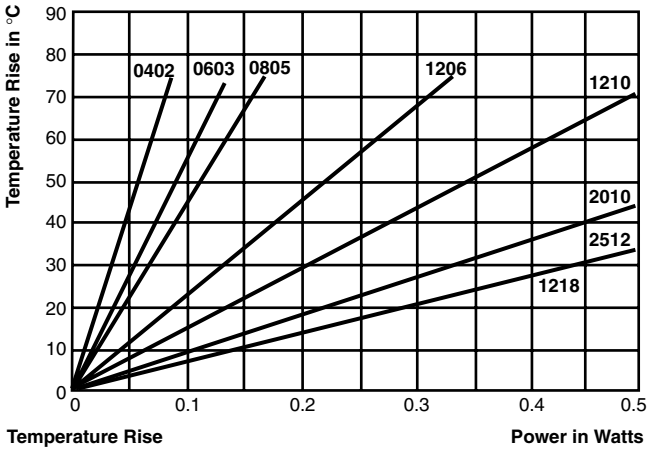
PRODUCT DESCRIPTION: CRCW 0805 5620 F 100 RT1

| | | | | | |
|------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------------|
| CRCW MODEL CRCW | 0805 SIZE 0402 1201 0603 1218 0805 2010 1206 2512 | 5620 RESISTANCE VALUE 685 = 6.8 MΩ 224 = 220 kΩ | F TOLERANCE F = ± 1 % J = ± 5 % Z = Zero Ohm Jumper | 100 T.C.R. ± 100 ppm/K ± 200 ppm/K | RT1 PACKAGING ²⁾ RT1 R67 RT5 R82 RT6 RT9 RT7 B27 R02 |
|------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------------|

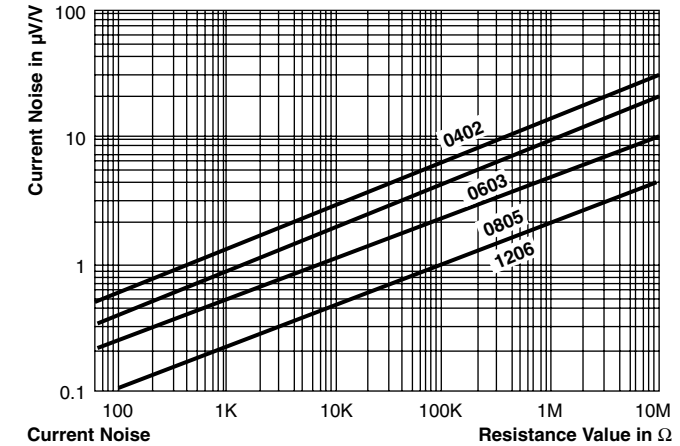
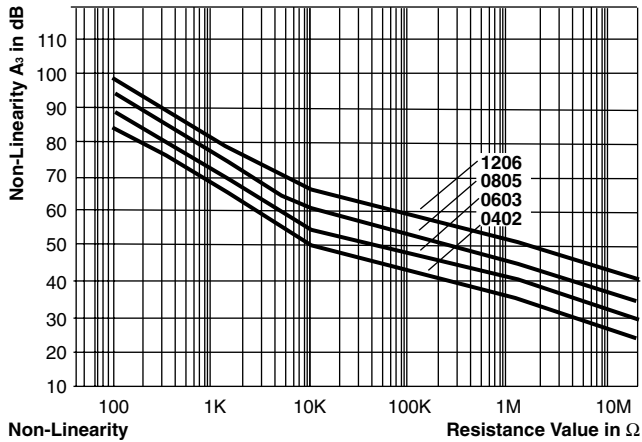
± 1 % = 3 sig.digits, plus multiplier
± 5 % = 2 sig.digits, plus multiplier

Note

1. Preferred way for ordering products is by use of the PART NUMBER.
2. Please refer to table PACKAGING, page 80.

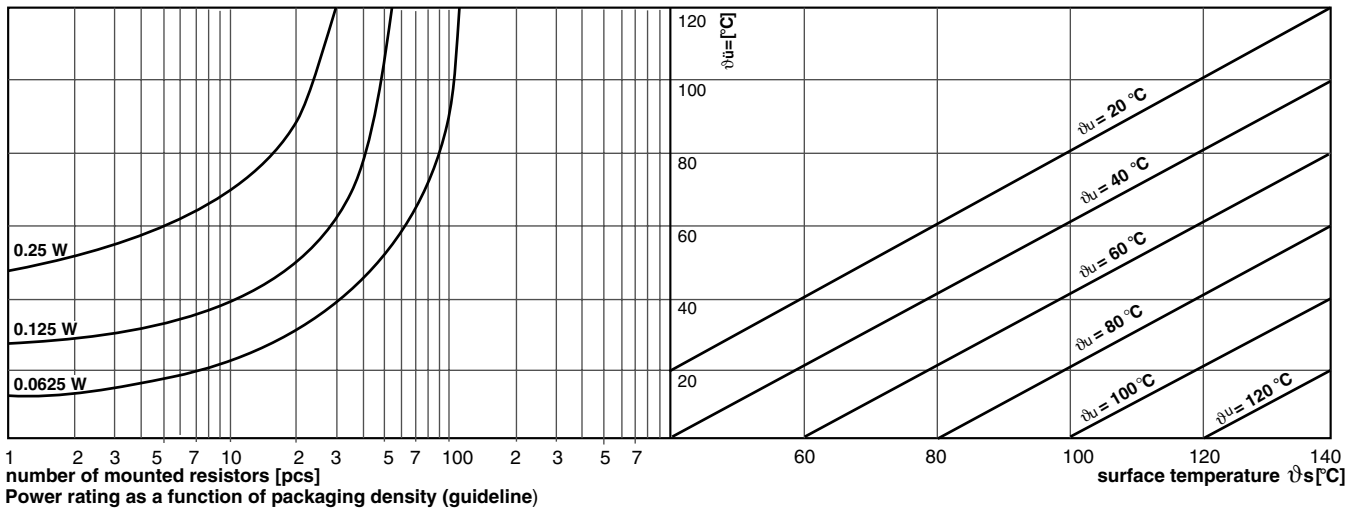
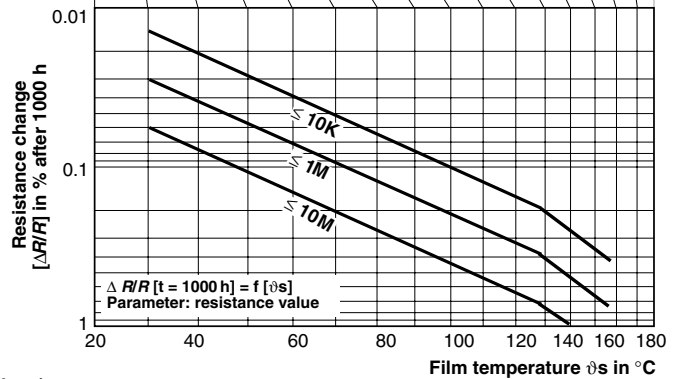
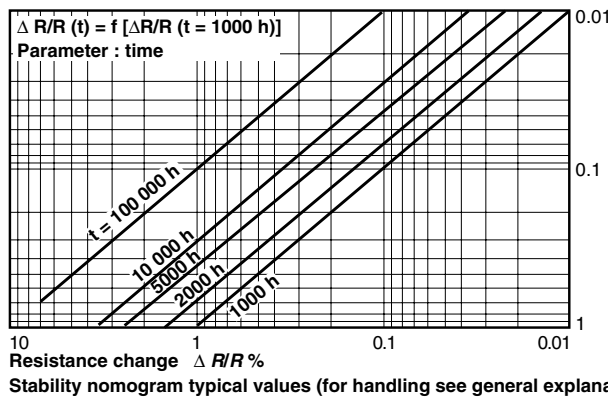
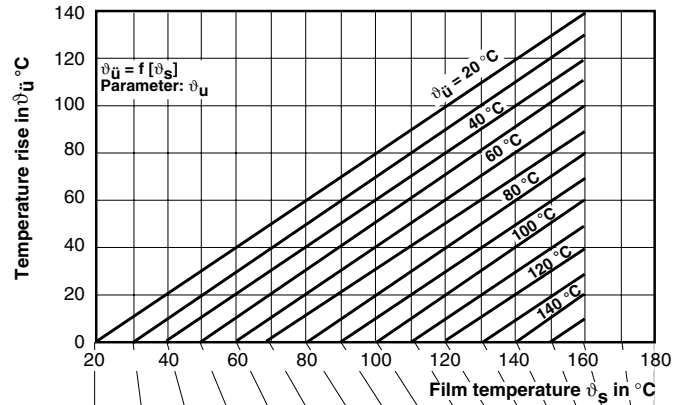
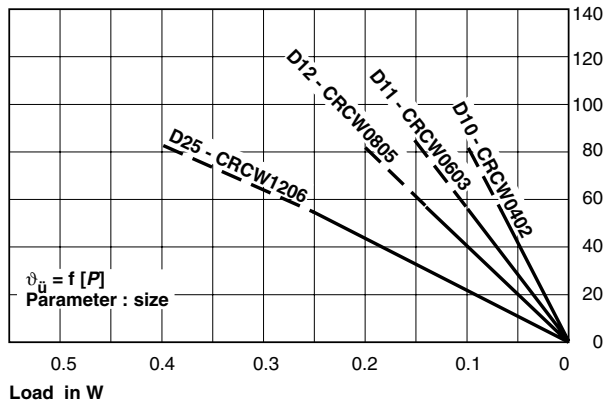


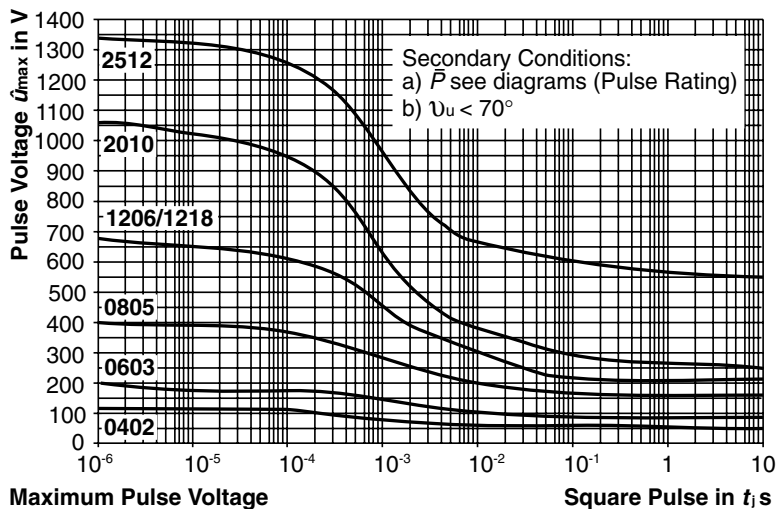
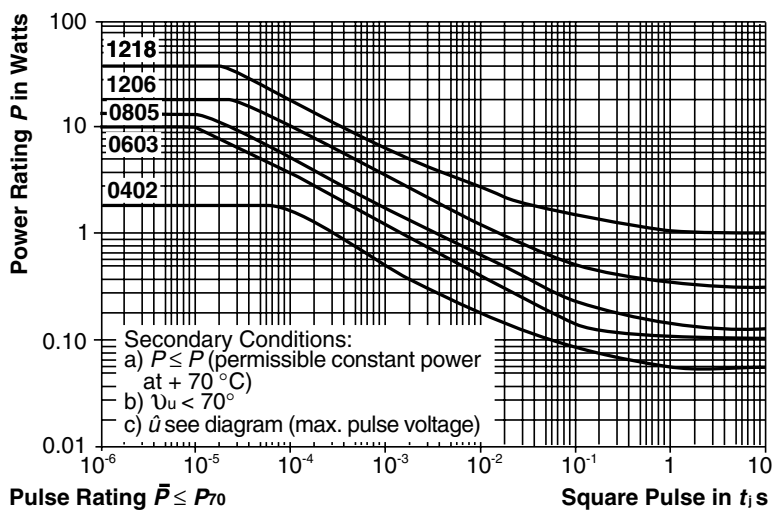
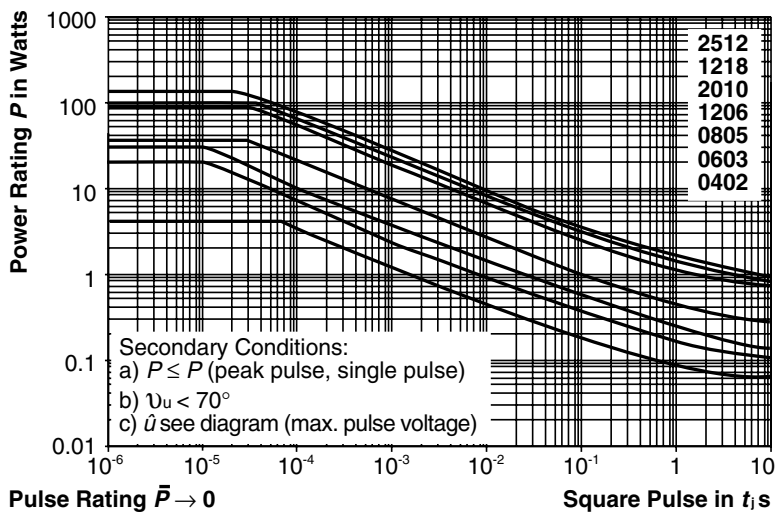
* There are differences in board layout and measurements between CECC and EIA.



| PACKAGING | | | | | | | | |
|-----------------|------------|------------|-------------|-------|---------------------|-----------------------|-----------------------|--------------------|
| MODEL | REEL | | | | BULK | | | |
| | TAPE WIDTH | DIAMETER | PIECES/REEL | PITCH | PACKAGING CODE | | BULK FEEDING MAGAZINE | |
| | | | | | PAPER ¹⁾ | BLISTER ²⁾ | PIECES ¹⁾ | CODE ²⁾ |
| D10 CRCW0402 | 8 mm | 180 mm/7" | 10 000 | 2 mm | P0/TD | | 50 000 | MZ/BA |
| | | 330 mm/13" | 50 000 | 2 mm | PZ/TE | | | |
| D11 CRCW0603 | 8 mm | 180 mm/7" | 5000 | 4 mm | P5/TA | B5/na | 25 000 | MU/BA |
| | | 255 mm/10" | 10 000 | 4 mm | P0/TB | BN/na | | |
| D12 CRCW0805 | 8 mm | 180 mm/7" | 5000 | 4 mm | P5/TA | B5/na | 10 000 | MO/BA |
| | | 255 mm/10" | 10 000 | 4 mm | P0/TB | BN/na | | |
| D25 CRCW1206 | 8 mm | 180 mm/7" | 5000 | 4 mm | P5/TA | B5/na | | |
| | | 255 mm/10" | 10 000 | 4 mm | P0/TB | BN/na | | |
| | | 330 mm/13" | 20 000 | 4 mm | PN/TC | BN/na | | |
| CRCW1210 | 8 mm | 180 mm/7" | 5000 | 4 mm | P5/TA | B5/RG1 | | |
| | | 330 mm/13" | 20 000 | 4 mm | PN/TC | BN/na | | |
| CRCW1218 | 12 mm | 180 mm/7" | 4000 | 4 mm | | TK | | |
| CRCW2010 | 12 mm | 180 mm/7" | 4000 | 4 mm | | TF | | |
| CRCW2512 | 12 mm | 180 mm/7" | 2000 | 8 mm | | B2/TG | | |
| | | | 4000 | 4 mm | | TH | | |

¹⁾ On request
²⁾ European/N.American packaging codes: na = NOT AVAILABLE
 • Further information about packaging: see appropriate catalog or web page.







| PERFORMANCE | | | | |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------|-------------------------------|-------------------------------|
| TEST | CONDITIONS OF TEST | REQUIREMENTS IN %¹⁾ | | |
| | | 0402 0603 | 0805 1206 1210 | 1218 2010 2512 |
| Endurance Test at 70 °C IEC 60115-1 4.25.1; EIA-575 | 1000 hours at 70 °C, 1.5 hours "ON", 0.5 hours "OFF" | ≤ ± 1.0 | ≤ ± 0.5 | ≤ ± 1.0 |
| Endurance at UCT IEC 60115-1 4.25.3 | 1000 hours at 125 °C without load | ≤ ± 1.0 | ≤ ± 0.5 | ≤ ± 1.0 |
| Overload Test IEC 60115-1 4.13; EIA-575 | Short time overload, 2.5 x rated voltage or 2 x limiting element voltage. | ≤ ± 0.25 | ≤ ± 0.25 | ≤ ± 0.5 |
| Thermal Shock IEC 60115-1 4.19; IEC 60068-2-14; EIA-575 | Rapid change between upper and lower category temperature | ≤ ± 0.25 | ≤ ± 0.25 | ≤ ± 0.5 |
| Damp Heat Steady State IEC 60115-1 4.24; IEC 60068-2-3 | 56 days at 40 °C and 93 % relative humidity | ≤ ± 1.0 | ≤ ± 0.5 | ≤ ± 1.0 |
| Resistance to Soldering Heat IEC 60115-1 4.18; IEC 60068-2-20; EIA-575 | 10 seconds at 260 °C solder bath temperature | ≤ ± 0.25 | ≤ ± 0.25 | ≤ ± 0.5 |

¹⁾ Limits for change of resistance at test acc. to CECC

| APPLICABLE SPECIFICATIONS |
|---------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">• CECC40000/40400/40401-004,-006,-007,-802• EN140400/IEC 60115-1• EIA-575 |



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