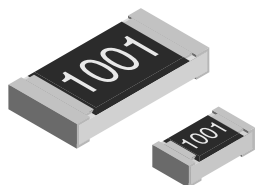




# Thick Film, Rectangular, Precision Resistors



## FEATURES

- Metal glaze on high quality ceramic
- Protective overglaze
- Solder contacts on Ni barrier layer
- Excellent stability in different environmental conditions
- Low temperature coefficient and tight tolerances

## STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE		POWER RATING $P_{70^{\circ}\text{C}}$ W CEC 40401-802/EIA-575	LIMITING ELEMENT VOLTAGE MAX $V_{\cong}$	TEMPERATURE COEFFICIENT ppm/°C	TOLERANCE %	RESISTANCE RANGE $\Omega$	E-SERIES
	INCH	METRIC						
D10P CRCW0402	0402	1005	0.063	50	100 50 25	0.5 0.25, 0.5, 1 0.25, 0.5, 1	10R – 1M0 100R – 1M0 100R – 10K	96 96 96
D11P CRCW0603	0603	1608	0.1	75	100 50 50 25	0.5 0.25 0.5, 1 0.25, 0.5, 1	10R – 10M 100R – 1M0 100R – 10M 100R – 10K	96 96 96 96
D12P CRCW0805	0805	2012	0.125	150	100 50 50 25	0.5 0.25 0.5, 1 0.25, 0.5, 1	10R – 10M 100R – 1M0 100R – 10M 100R – 10K	96 96 96 96
D25P CRCW1206	1206	3216	0.25	200	100 50 50 25	0.5 0.25 0.5, 1 0.25, 0.5, 1	10R – 10M 100R – 1M0 100R – 10M 100R – 10K	96 96 96 96
CRCW1210	1210	3225	0.33	200	100 50	0.5 0.5	100R – 1M0 100R – 1M0	96 96
CRCW1218	1218	3246	1.0	200	100 50	0.5 0.5, 1	100R – 2M2 100R – 2M2	96 96
CRCW2010	2010	5025	0.5	400	100 50	0.5 0.5, 1	10R – 10M 100R – 10M	96 96
CRCW2512	2512	6332	1.0	500	100 50	0.5 0.5, 1	10R – 10M 100R – 10M	96 96

- Ask about further value ranges
- Special terminations for conductive adhesive attachment on request
- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material
- Marking and packaging: see appropriate catalog or web pages

## TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	D10P CRCW0402	D11P CRCW0603	D12P CRCW0805	D25P CRCW1206	CRCW1210	CRCW1218	CRCW2010	CRCW2512
Rated Dissipation at 70°C (CECC 40401   EIA 575)	W	0.063	0.1	0.125	0.25	0.33	1.0	0.5	1.0
Limiting Element Voltage <sup>2)</sup>	$V_{\cong}$	50	75	150	200	200	200	400	500
Insulation Voltage (1 min)	$V_{\text{peak}}$	> 75	> 100	> 200	> 300	> 300	> 300	> 300	> 300
Thermal Resistance	K/W	≤ 870 <sup>1)</sup>	≤ 550 <sup>1)</sup>	≤ 440 <sup>1)</sup>	≤ 220 <sup>1)</sup>	≤ 140 <sup>3)</sup>	<sup>3)</sup>	≤ 88 <sup>3)</sup>	≤ 65 <sup>3)</sup>
Insulation Resistance	$\Omega$				> 10 <sup>9</sup>				
Category Temperature Range	°C	- 55 / + 125							
Failure Rate	h <sup>-1</sup>	0.3 · 10 <sup>-9</sup>							
Weight / 1000pcs	g	0.65	2	5.5	10	16	29.5	25.5	40.5

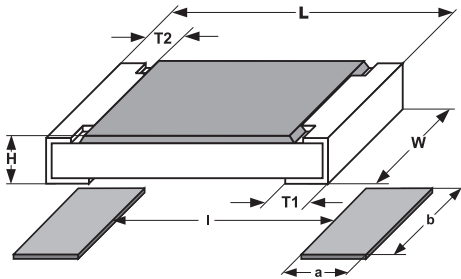
<sup>1)</sup> Measuring conditions in acc. to CECC 40401

<sup>2)</sup> Rated voltage:  $\sqrt{P \times R}$

<sup>3)</sup> Depending on solder pad dimensions

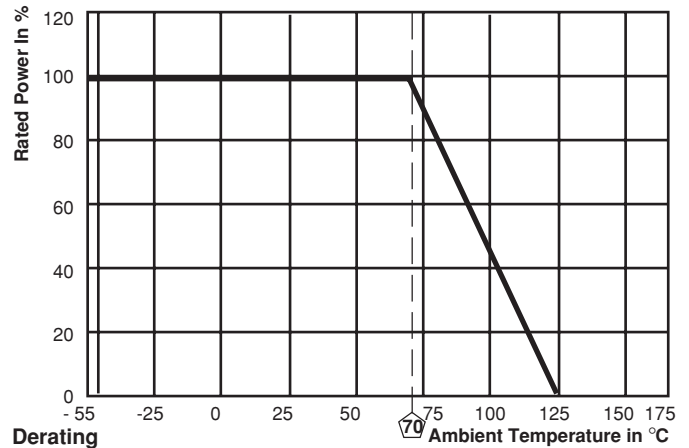
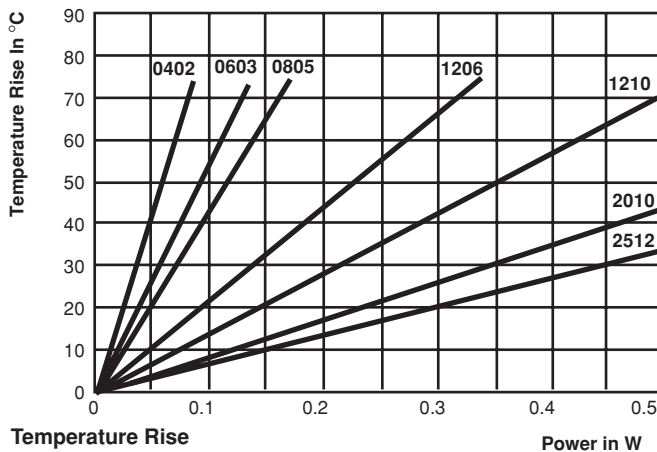
## ORDERING INFORMATION

<b>D-SERIES</b>	<b>D11P MODEL</b>	<b>25 TC ppm/°C</b>	<b>562R RESISTANCE VALUE <math>\Omega</math></b>	<b>0.5 TOLERANCE ± %</b>	<b>PN PACKAGING PN-Papertape 20.000pcs</b>
<b>CRCW-SERIES</b>	<b>CRCW0603 MODEL</b>	<b>25R RESISTANCE VALUE <math>\Omega</math></b>	<b>D TOLERANCE ± %</b>	<b>25 TC* ppm/°C</b>	<b>RT6 PACKAGING PN-Papertape 20,000 pcs</b>
	± 1% = 3 sig. digits, plus multiplier ± 5% = 2 sig. digits, plus multiplier <b>Example:</b> 49R9F = 49.9 $\Omega$ , ± 1% 5R1J = 5.1 $\Omega$ , ± 5% 3011F = 3.01K $\Omega$ , ± 1% 000Z = 0 $\Omega$ Jumper		C = ± 0.25% D = ± 0.5% F = ± 1%	*NOTE: Entering a TC value in this field is optional. If no TC specified by the Customer, the default TC will be highest listed for Tolerance specified.	

**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 <sup>+0.10</sup> / <sub>-0.05</sub>	0.85 ±0.1	0.45 ±0.05	0.3 ±0.2	0.3 ±0.2
0805	2012	2.0 <sup>+0.20</sup> / <sub>-0.10</sub>	1.25 ±0.15	0.45 ±0.05	0.3 <sup>+0.20</sup> / <sub>-0.10</sub>	0.3 ±0.2
1206	3216	3.2 <sup>+0.10</sup> / <sub>-0.20</sub>	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 <sup>+0.10</sup> / <sub>-0.20</sub>	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 ±0.05	0.6 ±0.2	0.6 ±0.2
2512	6332	6.3 ±0.2	3.15 ±0.15	0.6 ±0.05	0.6 ±0.2	0.6 ±0.2

Dimensions 1210 to 2512 and solder-pad dimensions: see standard chip resistors D..CRCW



<b>PERFORMANCE</b>				
TEST	CONDITIONS OF TEST	TEST RESULTS %		
		0402 0603	0805 1206 1210	1218 2010 2512
Endurance Test at 70°C IEC 60115-1 4.25.1	1000 hours at 70°C, 1.5 hours "ON", 0.5 hours "OFF"	≤ ± 1.0	≤ ± 1.5	≤ ± 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	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	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	10 seconds at 260°C solder bath temperature	≤ ± 0.25	≤ ± 0.25	≤ ± 0.5

**HF-CHARACTERISTIC / CURRENT NOISE / NON-LINEARITY AND PACKAGING:**

see standard Chip resistors D...CRCW...

<b>APPLICABLE SPECIFICATIONS</b>
<ul style="list-style-type: none"> <li>• CECC40000 / 40400 / 40401</li> <li>• EN140400 / IEC 60115 – 1</li> <li>• EIA 575</li> <li>• MIL-PRF-55342</li> </ul>