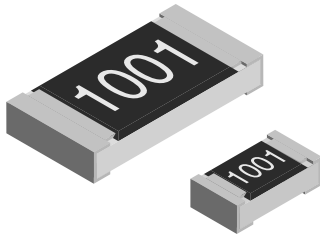


## Thick Film, Rectangular, Precision Resistors



### 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	LIMITING ELEMENT VOLTAGE MAX $V_{\Xi}$	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE $\Omega$	E-SERIES
	INCH	METRIC	CECC 40401-802/EIA-575					
D10P CRCW0402	0402	1005	0.063	50	$\pm 100$ $\pm 50$ $\pm 25$	$\pm 0.5$ $\pm 0.25; \pm 0.5; \pm 1$ $\pm 0.25; \pm 0.5; \pm 1$	10R - 1M0 100R - 1M0 100R - 10K	96 96 96
D11P CRCW0603	0603	1608	0.1	75	$\pm 100$ $\pm 50$ $\pm 50$ $\pm 25$	$\pm 0.5$ $\pm 0.25$ $\pm 0.5; \pm 1$ $\pm 0.25; \pm 0.5; \pm 1$	10R - 10M 100R - 1M0 100R - 10M 100R - 10K	96 96 96 96
D12P CRCW0805	0805	2012	0.125	150	$\pm 100$ $\pm 50$ $\pm 50$ $\pm 25$	$\pm 0.5$ $\pm 0.25$ $\pm 0.5; \pm 1$ $\pm 0.25; \pm 0.5; \pm 1$	10R - 10M 100R - 1M0 100R - 10M 100R - 10K	96 96 96 96
D25P CRCW1206	1206	3216	0.25	200	$\pm 100$ $\pm 50$ $\pm 50$ $\pm 25$	$\pm 0.5$ $\pm 0.25$ $\pm 0.5; \pm 1$ $\pm 0.25; \pm 0.5; \pm 1$	10R - 10M 100R - 1M0 100R - 10M 100R - 10K	96 96 96 96
CRCW1210	1210	3225	0.33	200	$\pm 100$ $\pm 50$	$\pm 0.5$ $\pm 0.5$	100R - 1M0 100R - 1M0	96 96
CRCW1218	1218	3246	1.0	200	$\pm 100$ $\pm 50$	$\pm 0.5$ $\pm 0.5; \pm 1$	100R - 2M2 100R - 2M2	96 96
CRCW2010	2010	5025	0.5	400	$\pm 100$ $\pm 50$	$\pm 0.5$ $\pm 0.5; \pm 1$	10R - 10M 100R - 10M	96 96
CRCW2512	2512	6332	1.0	500	$\pm 100$ $\pm 50$	$\pm 0.5$ $\pm 0.5; \pm 1$	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>	$V_{\Xi}$	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	$\leq 870^1)$	$\leq 550^1)$	$\leq 440^1)$	$\leq 220^1)$	$\leq 140^3)$	<sup>3)</sup>	$\leq 88^3)$	$\leq 65^3)$
Insulation Resistance	$\Omega$	> $10^9$							
Category Temperature Range	°C	- 55 to + 125							
Failure Rate	$\text{h}^{-1}$	$0.3 \cdot 10^{-9}$							
Weight/1000 pcs	g	0.65	2	5.5	10	16	29.5	25.5	40.5

<sup>1)</sup> Measuring conditions in acc. to CECC 40401-802

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

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



### PART NUMBER AND PRODUCT DESCRIPTION D-SERIES

**PART NUMBERING: D120805FB5620DP0**

<b>D</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>5</b>	<b>F</b>	<b>B</b>	<b>5</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>D</b>	<b>P</b>	<b>0</b>		
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MODEL/SIZE	SPECIAL CHARACTER	TC	VALUE	TOLERANCE	PACKING	SPECIAL
D100402 D110603 D120805 D251206	F = P (Precision)	D = ± 25 ppm/K C = ± 50 ppm/K B = ± 100 ppm/K	<b>3 digit value</b> <b>1 digit multiplier</b>  MULTIPLIER 7 = *10 <sup>-3</sup> 8 = *10 <sup>-2</sup> 9 = *10 <sup>-1</sup> 0 = *10 <sup>0</sup> 1 = *10 <sup>-1</sup> 2 = *10 <sup>-2</sup> 3 = *10 <sup>-3</sup> 4 = *10 <sup>-4</sup> 5 = *10 <sup>-5</sup> 6 = *10 <sup>-6</sup>	C = ± 0.25 % D = ± 0.5 % F = ± 1 %	P0 P5 PN MZ MU M0 PZ B5 BN	up to 2 digits

**PRODUCT DESCRIPTION: D12P 100 562R 0.5 % P5**

<b>D12P</b>	<b>100</b>	<b>562R</b>	<b>0.5 %</b>	<b>P5</b>
MODEL	TC	RESISTANCE VALUE	TOLERANCE	PACKING <sup>1)</sup>
D10P D11P D12P D25P	± 25 ppm/K ± 50 ppm/K ± 100 ppm/K	49R9 = 49.9 Ω 5R1 = 5.1 Ω	± 0.25 % ± 0.5 % ± 1 %	P0 M0 P5 PZ PN B5 MZ BN MU

<sup>1)</sup> Please refer to table PACKING, page 96.

### PART NUMBER AND PRODUCT DESCRIPTION CRCW-SERIES

**PART NUMBERING: CRCW080525R0DKTAP**

<b>C</b>	<b>R</b>	<b>C</b>	<b>W</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>5</b>	<b>R</b>	<b>0</b>	<b>D</b>	<b>K</b>	<b>T</b>	<b>A</b>	<b>P</b>	
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MODEL/SIZE	VALUE	TOLERANCE	TC	PACKING	SPECIAL
CRCW0402 CRCW0603 CRCW0805 CRCW1206 CRCW1210 CRCW1218 CRCW2010 CRCW2512	R = Decimal K = Thousand M = Million	C = ± 0.25 % D = ± 0.5 % F = ± 1 %	E = ± 25 ppm/K H = ± 50 ppm/K K = ± 100 ppm/K	TA = RT1 TB = RT5 TC = RT6 TD = RT7 TF = R02 TG = R67 TH = R82 TK = RT9 BA = B27	up to 2 digits P = Precision

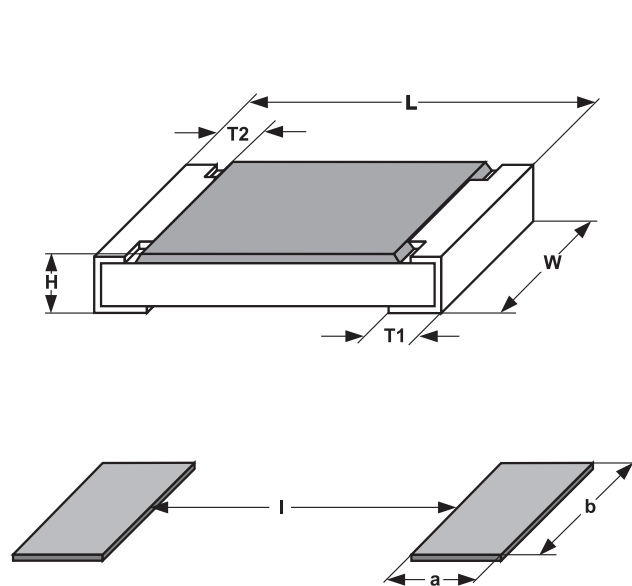
**PRODUCT DESCRIPTION: CRCW 0805 25R D 100 RT1**

<b>CRCW0805</b>	<b>25R</b>	<b>D</b>	<b>100</b>	<b>RT1</b>
MODEL	RESISTANCE VALUE	TOLERANCE	TC	PACKING <sup>1)</sup>
CRCW0402 CRCW0603 CRCW0805 CRCW1206 CRCW1210 CRCW1218 CRCW2010 CRCW2512	49R9 = 49.9 Ω 5R1 = 5.1 Ω	C = ± 0.25 % D = ± 0.5 % F = ± 1 %	± 25 ppm/K ± 50 ppm/K ± 100 ppm/K	RT1 RT5 RT6 RT7 R02 R67 R82 RT9 B27

<sup>1)</sup> Please refer to table PACKING, page 96.

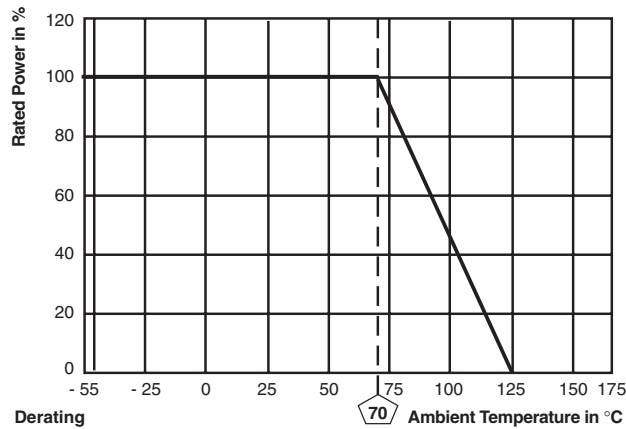
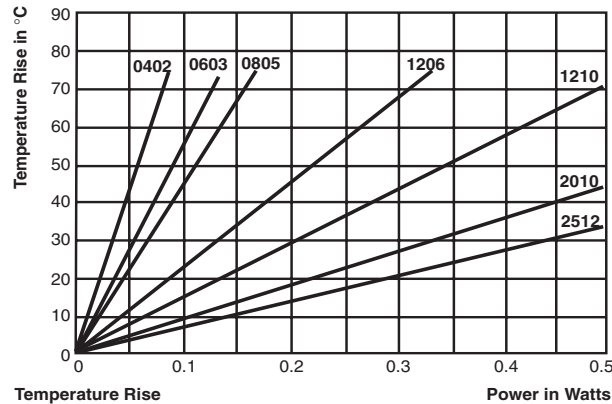
PACKING								
MODEL	REEL				PACKING CODE		BULK	
	TAPE WIDTH	DIAMETER	PIECES/REEL	PITCH	PAPER	BLISTER	PIECES	CODE
D10P CRCW0402	8 mm	180 mm/7"	10000	2 mm	P0/RT7		50000	MZ/B27
		330 mm/13"	50000	2 mm	PZ/RF4			
D11P CRCW0603	8 mm	180 mm/7"	5000	4 mm	P5/RT1	B5	25000	MU/B27
		255 mm/10"	10000	4 mm	P0/RT5			
		330 mm/13"	20000	4 mm	PN/RT6	BN		
D12P CRCW0805	8 mm	180 mm/7"	5000	4 mm	P5/RT1	B5	10000	MO/B27
		255 mm/10"	10000	4 mm	P0/RT5			
		330 mm/13"	20000	4 mm	PN/RT6	BN		
D25P CRCW1206	8 mm	180 mm/7"	5000	4 mm	P5/RT1	B5		
		255 mm/10"	10000	4 mm	P0/RT5			
		330 mm/13"	20000	4 mm	PN/RT6	BN		
CRCW1210	8 mm	180 mm/7"	5000	4 mm	P5/RT1	B5		
		330 mm/13"	20000	4 mm	PN/RT6	BN		
CRCW1218	12 mm	180 mm/7"	4000	4 mm		B4/RT9		
CRCW2010	12 mm	180 mm/7"	4000	4 mm		B4/R02		
CRCW2512	12 mm	180 mm/7"	2000	8 mm		B2/R67		
			4000	4 mm		B4/R82		

**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 ± 0.1	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

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

<b>APPLICABLE SPECIFICATIONS</b>
<ul style="list-style-type: none"> <li>• CECC40000/40400/40401-802</li> <li>• EN140400/IEC 60115 - 1</li> <li>• EIA 575</li> <li>• MIL-PRF-55342</li> </ul>



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