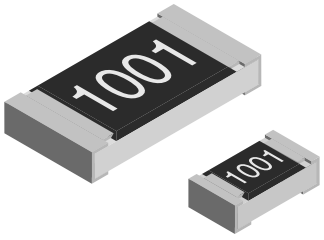
Thick Film, Rectangular, Precision Resistors



FEATURES

- Metal glaze on high quality ceramic
- Protective overglaze
- Solder contacts on Ni barrier layer
- Excellent stability ($|\Delta R/R| \leq \pm 0.5$ % for 1000 h at 70 °C) in different environmental conditions
- Low temperature coefficient (25 ppm/K) and tight tolerances (± 0.25 %)

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE		POWER RATING $P_{70\,°C}$ W	LIMITING ELEMENT VOLTAGE MAX $V_{\cong}$	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE Ω	E-SERIES
	INCH	METRIC	CECC 40401-802/EIA-575					
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[2)]	$V_{\cong}$	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	≤ 870[1)]	≤ 550[1)]	≤ 440[1)]	≤ 220[1)]	≤ 140[3)]	[3)]	≤ 88[3)]	≤ 65[3)]
Insulation Resistance	Ω	$> 10^9$							
Category Temperature Range	°C	- 55 to + 125							
Failure Rate	h^{-1}	$0.3 \bullet 10^{-9}$							
Weight/1000 pcs	g	0.65	2	5.5	10	16	29.5	25.5	40.5

[1)] Measuring conditions in acc. to CECC 40401-802
[2)] Rated voltage: $\sqrt{P \times R}$
[3)] Depending on solder pad dimensions

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PART NUMBER AND PRODUCT DESCRIPTION D-SERIES

PART NUMBERING: D120805PB5620DP0

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

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	**3 digit value** **1 digit multiplier** MULTIPLIER **7** = $*10^{-3}$ **8** = $*10^{-2}$ **9** = $*10^{-1}$ **0** = $*10^{0}$ **1** = $*10^{-1}$ **2** = $*10^{-2}$ **3** = $*10^{-3}$ **4** = $*10^{-4}$ **5** = $*10^{-5}$ **6** = $*10^{-6}$	**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

D12P	100	562R	0.5 %	P5
MODEL	TC	RESISTANCE VALUE	TOLERANCE	PACKING[1)]
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**

[1)] Please refer to table PACKING, page 96.

PART NUMBER AND PRODUCT DESCRIPTION CRCW-SERIES

PART NUMBERING: CRCW080525R0DKTAP

C	R	C	W	0	8	0	5	2	5	R	0	D	K	T	A	P	

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

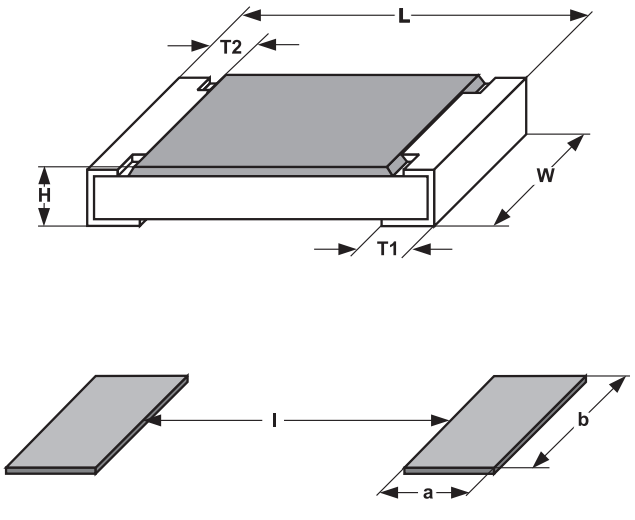
CRCW0805	25R	D	100	RT1
MODEL	RESISTANCE VALUE	TOLERANCE	TC	PACKING[1)]
CRCW0402 CRCW0603 CRCW0805 CRCW1206 CRCW1210 CRCW1218 CRCW2010 CRCW2512	**49R9** = 49.9 Ω **5R1** = 5.1 Ω	**C** = ± 0.25 % **D** = ± 0.5 % **F** = ± 1 %	± **25** ppm/K **± 50** ppm/K ± **100** ppm/K	RT1 RT5 RT6 RT7 R02 R67 R82 RT9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

[1)] Please refer to table PACKING, page 96.

PACKING

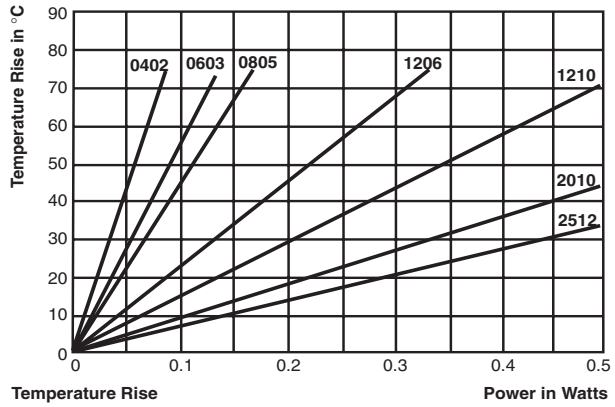
MODEL	REEL						BULK	
	TAPE WIDTH	DIAMETER	PIECES/REEL	PITCH	PACKING CODE		PACKING CODE	
					PAPER	BLISTER	PIECES	CODE
D10P / CRCW0402	8 mm	180 mm/7"	10000	2 mm	P0/RT7		50000	MZ/B27
		330 mm/13"	50000	2 mm	PZ/RF4			
D11P / CRCW0603	8 mm	180 mm/7"	5000	4 mm	P5/RT1	B5	25000	MU/B27
		255 mm/10"	10000	4 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		

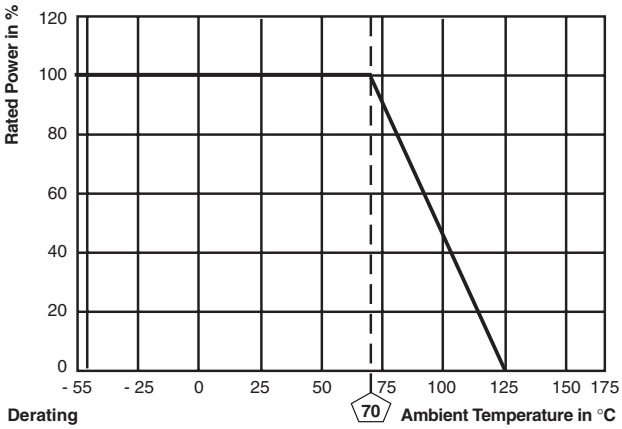
DIMENSIONS



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 $^{+0.10}_{-0.05}$	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

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





PERFORMANCE

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

APPLICABLE SPECIFICATIONS

- CECC40000/40400/40401-802
- EN140400/IEC 60115 - 1
- EIA 575
- MIL-PRF-55342

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