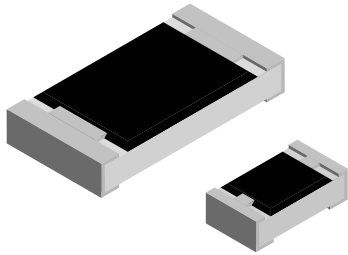


Thick Film, Rectangular, Low Value Resistors



FEATURES

- Special metal glaze on high quality ceramic
- Protective overglaze
- Solder contacts on Ni barrier layer
- Extremely low resistance values (0.1 Ω)
- Suitable for current sensors and shunts

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE		POWER RATING P _{70 °C} W	LIMITING ELEMENT VOLTAGE MAX V _≅	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE Ω	E-SERIES
	INCH	METRIC	CECC 40401-802/EIA-575					
D10LR CRCW0402	0402	1005	0.063	$\sqrt{P \times R}$	± 400 ± 600	± 5 ± 5	R47 - R91 R22 - R43	24 24
D11LR CRCW0603	0603	1608	0.1	$\sqrt{P \times R}$	± 200 ± 400	± 5 ± 5	R47 - R91 R10 - R43	24 24
D12LR CRCW0805	0805	2012	0.125	$\sqrt{P \times R}$	± 200 ± 300	± 5 ± 5	R47 - R91 R10 - R43	24 24
D25LR CRCW1206	1206	3216	0.25	$\sqrt{P \times R}$	± 300 ± 200	± 5 ± 5	R10 - R43 R47 - R91	24 24
CRCW1210	1210	3225	0.33	$\sqrt{P \times R}$	± 200	± 5	R10 - R91	24
CRCW1218	1218	3246	1.0	$\sqrt{P \times R}$	± 200	± 5	R10 - R91	24
CRCW2010	2010	5025	0.5	$\sqrt{P \times R}$	± 200	± 5	R10 - R91	24
CRCW2512	2512	6332	1.0	$\sqrt{P \times R}$	± 200	± 5	R10 - R91	24

- Ask about further value ranges
- Marking and packaging: see appropriate catalog or web page
- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material
- 1 % tolerance on request

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	0402	0603	0805	1206	1210	1218	2010	2512
Rated Dissipation at 70 °C	W	0.063	0.1	0.125	0.25	0.33	1.0	0.5	1.0
Limiting Element Voltage	V _≅	$\sqrt{P \times R}$							
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 ²⁾	²⁾	≤ 88 ²⁾	≤ 45 ²⁾
Insulation Resistance	Ω	> 10 ⁹							
Category Temperature Range	°C	- 55 to + 125 (+ 155)							
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⁾ Dependent on solder pad dimensions

PART NUMBER AND PRODUCT DESCRIPTION D-SERIES

PART NUMBERING: D1004020A4707JP0LR

D	1	0	0	4	0	2	0	A	4	7	0	7	J	P	0	L	R
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MODEL/SIZE	SPECIAL CHARACTER	TC	VALUE	TOLERANCE	PACKING	SPECIAL
D100402 D110603 D120805 D251206	0 = Neutral	A = ± 200 ppm/K 8 = ± 300 ppm/K 7 = ± 400 ppm/K T = ± 600 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	J = ± 5 %	P5 P0 PN PZ B5 BN	up to 2 digits LR = Low Value

PRODUCT DESCRIPTION: D11LR 200 R47 5 % P5

D11LR	200	R47	5%	P5
MODEL	TC	RESISTANCE VALUE	TOLERANCE	PACKING ¹⁾
D10LR D11LR D12LR D25LR	± 200 ppm/K ± 300 ppm/K ± 400 ppm/K ± 600 ppm/K	R10 = 0.1 Ω R91 = 0.91 Ω	± 5 %	P5 P0 PN PZ B5

¹⁾ Please refer to table PACKING, page 3.

PART NUMBER AND PRODUCT DESCRIPTION CRCW-SERIES

PART NUMBERING: CRCW0805R470JNTALR

C	R	C	W	0	8	0	5	R	4	7	0	J	N	T	A	L	R
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MODEL/SIZE	VALUE	TOLERANCE	TC	PACKING	SPECIAL
CRCW0402 CRCW0603 CRCW0805 CRCW1206 CRCW1210 CRCW1218 CRCW2010 CRCW2512	R = Decimal	J = ± 5 %	N = ± 200 ppm/K M = ± 300 ppm/K Q = ± 400 ppm/K T = ± 600 ppm/K	TA = RT1 TB = RT5 TC = RT6 TD = RT7 TF = R02 TG = R67 TH = R82 TK = RT9	up to 2 digits LR = Low Value

PRODUCT DESCRIPTION: CRCW0402 R47 J 400 RT1

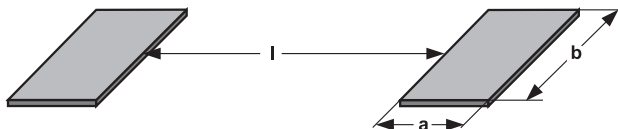
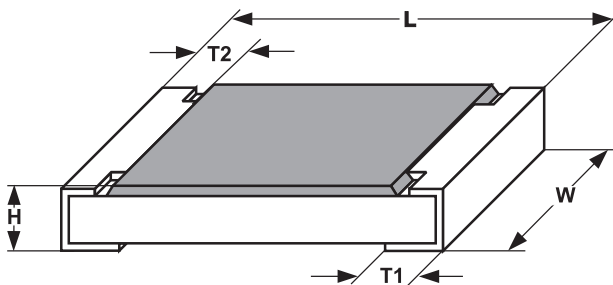
CRCW0402	R47	J	400	RT1
MODEL	RESISTANCE VALUE	TOLERANCE	TC	PACKING ¹⁾
CRCW0402 CRCW0603 CRCW0805 CRCW1206 CRCW1210 CRCW1218 CRCW2010 CRCW2512	R10 = 0.1 Ω R91 = 0.91 Ω	J = ± 5 %	± 200 ppm/K ± 300 ppm/K ± 400 ppm/K ± 600 ppm/K	RT1 RT5 RT6 RT7 R02 R67 R82 RT9

¹⁾ Please refer to table PACKING, page 3.

PACKING					
MODEL	REEL				
	TAPE WIDTH	DIAMETER	PIECES/REEL	PACKING CODE	
				PAPER ¹⁾	BLISTER ¹⁾
D10LR CRCW0402	8 mm	180 mm/7" 330 mm/13"	10000	P0/RT7	
			50000	PZ/RF4	
D11LR CRCW0603	8 mm	180 mm/7" 255 mm/10" 330 mm/13"	5000	P5/RT1	B5
			10000	P0/RT5	
			20000	PN/RT6	BN
D12LR CRCW0805	8 mm	180 mm/7" 255 mm/10" 330 mm/13"	5000	P5/RT1	B5
			10000	P0/RT5	
			20000	PN/RT6	BN
D25LR CRCW1206	8 mm	180 mm/7" 255 mm/10" 330 mm/13"	5000	P5/RT1	B5
			10000	P0/RT5	
			20000	PN/RT6	BN
CRCW1210	8 mm	180 mm/7" 330 mm/13"	5000 20000	P5/RT1 PN/RT6	B5 BN
CRCW1218	12 mm	180 mm/7"	4000		RT9
CRCW2010	12 mm	180 mm/7"	4000		R02
CRCW2512	12 mm	180 mm/7"	2000		R67
			4000		R82

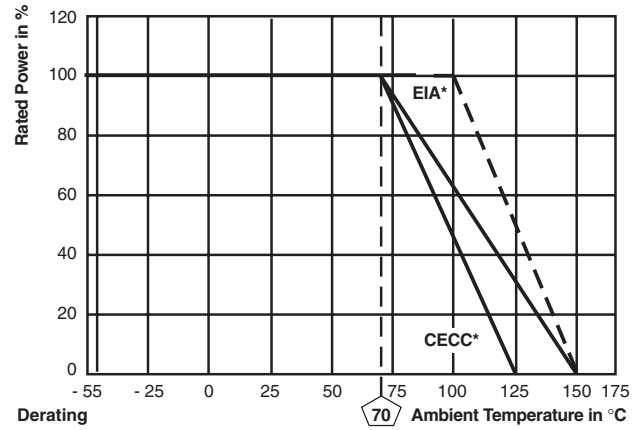
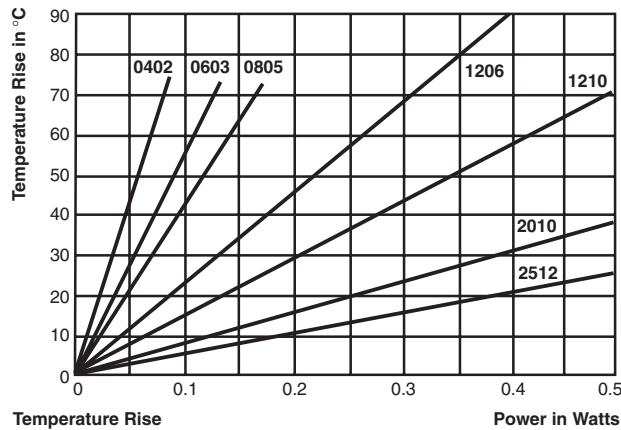
¹⁾ European/N. American packing codes
 • Further information about packing: see appropriate catalog or web page

DIMENSIONS

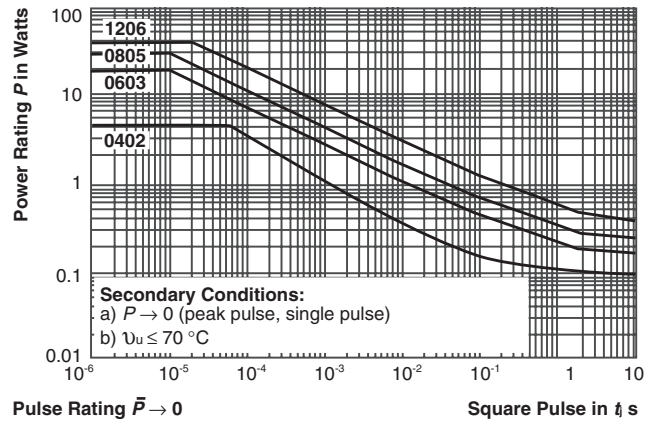
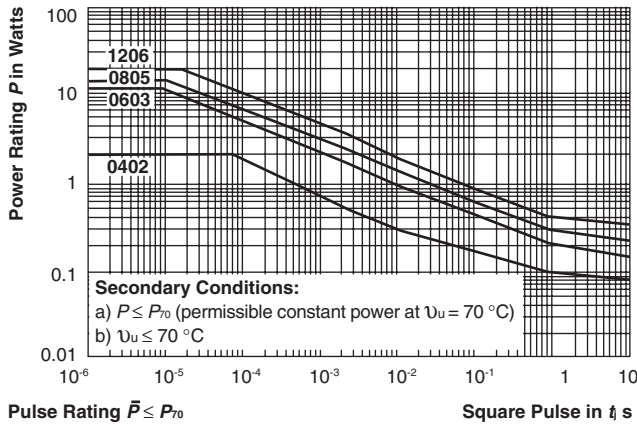


SIZE		DIMENSIONS [in millimeters]				
INCH	METRIC	L	W	H	T1	T2
0402	1005	1.0 ± 0.05	0.5 ± 0.05	0.35 ± 0.05	0.25 ^{+0.05} / _{-0.10}	0.2 ± 0.1
0603	1608	1.55 ^{+0.10} / _{-0.05}	0.85 ± 0.1	0.45 ± 0.05	0.3 ± 0.2	0.3 ± 0.2
0805	2012	2.0 ^{+0.20} / _{-0.10}	1.25 ± 0.15	0.45 ± 0.05	0.3 ^{+0.20} / _{-0.10}	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]					
		REFLOW SOLDERING			WAVE SOLDERING		
INCH	METRIC	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



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



PERFORMANCE		
TEST	CONDITIONS OF TEST	REQUIREMENTS ¹⁾
Endurance Test at 70 °C IEC 60115-1 4.25.1	1000 hours at 70 °C, 1.5 hours "ON", 0.5 hours "OFF"	$\leq \pm 2 \%$
Endurance at UCT IEC 60115-1 4.25.3	1000 hours at 125 °C without load	$\leq \pm 0.5 \%$
Overload Test IEC 60115-1 4.13	Short time overload for 2 seconds	$\leq \pm 1 \%$
Thermal Shock IEC 60115-1 4.19; IEC 60068-2-14;	Rapid change between upper and lower category temperature	$\leq \pm 1 \%$
Damp Heat Steady State IEC 60115-1 4.24; IEC 60068-2-3	56 days at 40 °C and 93 % relative humidity	$\leq \pm 2 \%$
Resistance to Soldering Heat IEC 60115-1 4.18; IEC 60068-2-20	10 seconds at 260 °C solder bath temperature	$\leq \pm 1 \%$

¹⁾ Limits for change of resistance at test

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



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