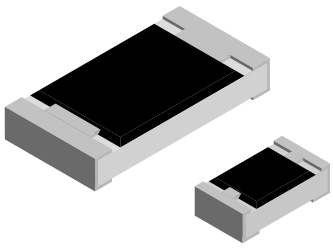
Thick Film, Rectangular, Low Value Resistors



FEATURES

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

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE		POWER RATING	LIMITING ELEMENT	TEMPERATURE	TOLERANCE	RESISTANCE	E-SERIES
	INCH	METRIC	$P_{70°C}$ W CECC 40401-802/EIA-575	VOLTAGE MAX V≦	COEFFICIENT ppm/°C	%	RANGE Ω	
D10LR					400	5	R47 – R91	24
CRCW0402	0402	1005	0.063	$\sqrt{P \times R}$	600	5	R22 – R43	24
D11LR					200	5	R47 – R91	24
CRCW0603	0603	1608	0.1	$\sqrt{P \times R}$	400	5	R10 – R43	24
D12LR					200	5	R47 – R91	24
CRCW0805	0805	2012	0.125	$\sqrt{P \times R}$	300	5	R10 – R43	24
D25LR					300	5	R10 – R43	24
CRCW1206	1206	3216	0.25	$\sqrt{P \times R}$	200	5	R47 – R91	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 for TC100 on request

ORDERING INFORMATION

D-SERIES

D11LR	200	R47	5	P5
MODEL	TC ppm/°C	RESISTANCE VALUE Ω	TOLERANCE ± %	PACKAGING Papertape 5000pcs

CRCW-SERIES

CRCW0603	R47	J	200	RT1
MODEL	RESISTANCE VALUE Ω	TOLERANCE ± %	TC* ppm/°C	PACKAGING Papertape 5000 pcs
	± 1% = 3 sig. digits, plus multiplier ± 5% = 2 sig. digits, plus multiplier **Example:** R36J = 0.36Ω, ± 5% R750F = 0.75Ω, ± 1% R11J = 0.11Ω, ± 5%	J = ± 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	

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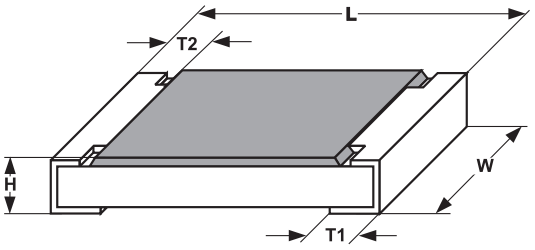
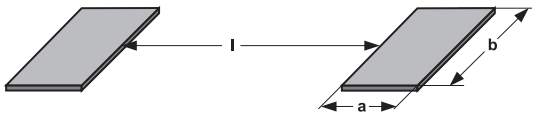
DIMENSIONS



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	0.60 ±0.05	0.6 ±0.2	0.6 ±0.2
2512	6332	6.3±0.2	3.15±0.15	0.60±0.05	0.6±0.2	0.6 ±0.2

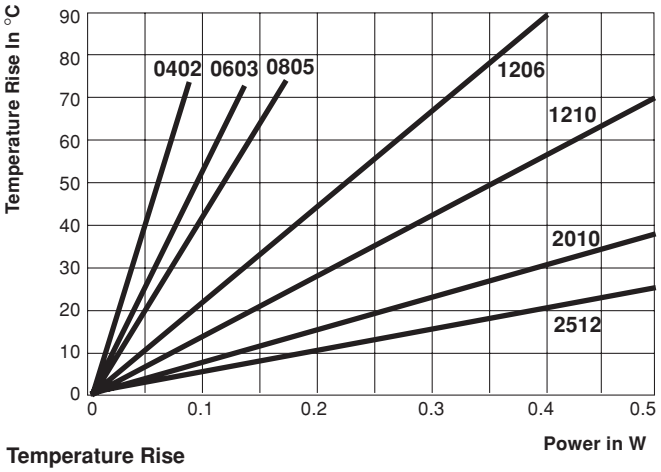


SIZE		SOLDER PAD DIMENSIONS [in millimeters]					
		REFLOW SOLDERING			WAVE SOLDERING		
INCH	METRIC	A	B	L	A	B	L
0402	1005	0.4	0.6	0.5			
0603	1608	0.5	0.9	1.0	0.9	0.9	1.0
0805	2012	0.7	1.3	1.2	0.9	1.3	1.3
1206	3216	0.9	1.7	2.0	1.1	1.7	2.3
1210	3225	0.9	2.5	2.0	1.1	2.5	2.2
1218	3246	1.05	4.9	1.9	1.25	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

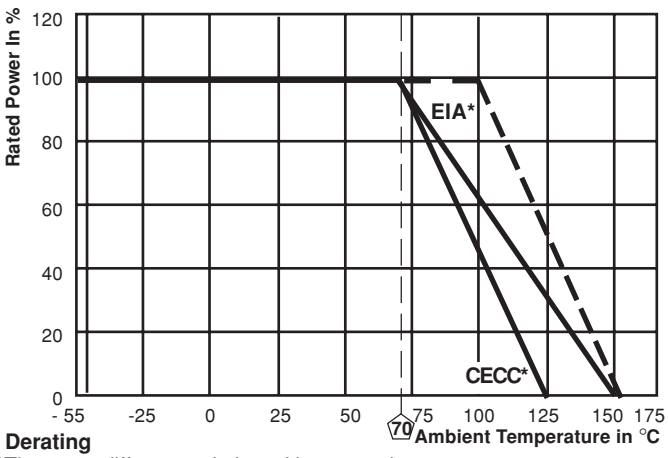
TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	0402	0603	0805	1206	1210	1218	2010	2512
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	$V_{\cong}$	$\sqrt{P \times R}$							
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 / + 125 (+ 155)							
Weight / 1000pcs	g	0.65	2	5.5	10	16	29.5	25.5	40.5

[1)] Measuring conditions in acc. to CECC 40401
[2)] Dependent on solder pad dimensions



Temperature Rise



Derating

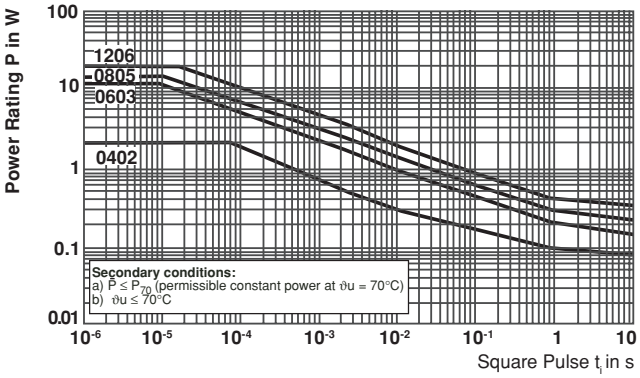
*There are differences in board layout and measurements between CECC and EIA.

PACKAGING

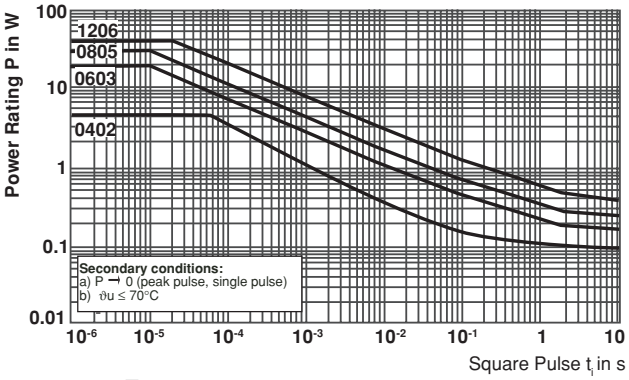
MODEL	REEL				
	TAPE WIDTH	DIAMETER	PIECES / REEL	PACKAGING CODE	
				PAPER[1)]	BLISTER[1)]
D10 CRCW0402	8mm Paper/tape	180mm / 7" 330mm / 13"	10000 50000	P0 / RT7 PZ / RF4	
D11 CRCW0603	8mm Paper-/ Blistertape	180mm / 7" 255mm / 10" 330mm / 13"	5000 10000 20000	P5 / RT1 P0 / RT5 PN / RT6	B5 BN
D12 CRCW0805	8mm Paper-/ Blistertape	180mm / 7" 255mm / 10" 330mm / 13"	5000 10000 20000	P5 / RT1 P0 / RT5 PN / RT6	B5 BN
D25 CRCW1206	8mm Paper-/ Blistertape	180mm / 7" 255mm / 10" 330mm / 13"	5000 10000 20000	P5 / RT1 P0 / RT5 PN / RT6	B5 BN
CRCW1210	8mm Paper/Blistertape	180mm / 7" 330mm / 13"	5000 20000	P5 / RT1 PN / RT6	B5 BN
CRCW1218	12mm Blistertape	180mm / 7"	4000		B4 / RT9
CRCW2010	12mm Blistertape	180mm / 7"	4000		B4 / RO2
CRCW2512	12mm Blistertape	180mm / 7"	2000 4000		B2 / R67 B4 / R82

[1)] European / N. American packaging codes

• Further information about packaging: see appropriate catalog or web page



Pulse Rating $\overline{P} \leq P_{70}$



Pulse Rating $\overline{P} \rightarrow 0$

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"	≤ ± 2 %
Endurance at UCT IEC 60115-1 4.25.3	1000 hours at 125 °C without load	≤ ± 0.5 %
Overload Test IEC 60115-1 4.13	Short time overload for 2 seconds	≤ ± 1 %
Thermal Shock IEC 60115-1 4.19 IEC 60068-2-14	Rapid change between upper and lower category temperature	≤ ± 1 %
Damp Heat Steady State IEC 60115-1 4.24 IEC 60068-2-3	56 days at 40°C and 93% relative humidity	≤ ± 2 %
Resistance to Soldering Heat IEC 60115-1 4.18 IEC 60068-2-20	10 seconds at 260°C solder bath temperature	≤ ± 1 %

1) Limits for change of resistance at test.

APPLICABLE SPECIFICATIONS

- CECC40000 / 40400 / 40401
- IEC 60115 – 1
- EIA 575