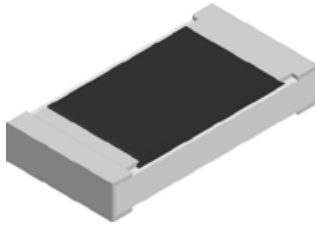


Vishay

Thick Film, Rectangular, Trimmable, Resistor Chips



FEATURES

- Thick film on high quality ceramic
- Solder contacts on Ni barrier layer
- Can be trimmed to required value after insertion
- For applications in precision circuitry where relative tolerances can be compensated by trimming

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE		POWER RATING $P_{70\text{ }^{\circ}\text{C}}$ W	LIMITING ELEMENT VOLTAGE MAX V_{\equiv}	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE Ω	E-SERIES
	INCH	METRIC	CECC 40401-802/EIA-575					
D10TR --- -- --	0402	1005	0.063	50	± 100	$\pm 10; \pm 15; \pm 20$ + 0/- 30	10R - 10M	24
CRCW0402TR								
D11TR --- -- --	0603	1608	0.1	75	± 100	$\pm 10; \pm 15; \pm 20$ + 0/- 30	10R - 10M	24
CRCW0603TR								
D12TR --- -- --	0805	2012	0.125	150	± 100	$\pm 10; \pm 15; \pm 20$ + 0/- 30	10R - 10M	24
CRCW0805TR								
D25TR --- -- --	1206	3216	0.25	200	± 100	$\pm 10; \pm 15; \pm 20$ + 0/- 30	10R - 10M	24
CRCW1206TR							± 200	
CRCW1210TR	1210	3225	0.33	200	± 200	± 15	10R - 4M7	24
CRCW2010TR	2010	5025	0.5	200	± 200	± 15	10R - 4M7	24
CRCW2512TR	2512	6332	1.0	200	± 200	± 15	10R - 4M7	24

- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material
- Values from R10 to R43 with TC500 on request
- Marking: no marking on device, on label only
- Packaging: see appropriate catalog or web page
- Tolerance + 0 ... - 10 % and ± 15 % for D10 to D25 on request

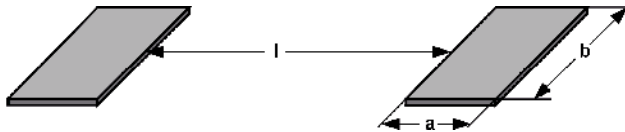
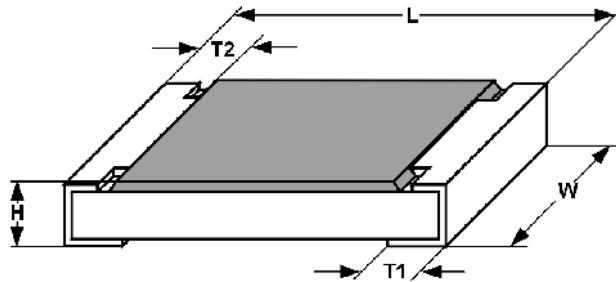
TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	D10TR CRCW0402TR	D11TR CRCW0603TR	D12TR CRCW0805TR	D25TR CRCW1206TR	CRCW1210TR	CRCW2010TR	CRCW2512TR
Rated Dissipation at 70 °C (CECC 40401 EIA 575)	W	0.063	0.1	0.125	0.25	0.33	0.5	1.0
Limiting Element Voltage ²⁾	V_{\equiv}	50	75	150	200	200	200	200
Insulation Voltage (1 min)	V_{peak}	75	100	200	300	300	300	300
Thermal Resistance ¹⁾	K/W	$\leq 870^1)$	$\leq 550^1)$	$\leq 440^1)$	$\leq 220^1)$	$\leq 140^3)$	$\leq 88^3)$	$\leq 65^3)$
Insulation Resistance	Ω	$> 10^9$						
Category Temperature Range	$^{\circ}\text{C}$	- 55 to + 125 (+ 155)						
Weight/1000 pcs	g	0.65	2	5.5	10	16	29.5	40.5

¹⁾ Measuring conditions in acc. to CECC 40401-802

²⁾ Rated voltage: $\sqrt{P \times R}$

³⁾ Depending on solder pad dimensions

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 ^{+0.20} / _{-0.10}	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
2010	5025	5.0 ± 0.15	2.5 ± 0.15	0.6 ± 0.1	0.6 ± 0.25	0.6 ± 0.25
2512	6332	6.3 ± 0.2	3.15 ± 0.15	0.6 ± 0.1	0.6 ± 0.25	0.6 ± 0.25

SIZE		SOLDER PAD DIMENSIONS [in millimeters]					
INCH	METRIC	REFLOW SOLDERING			WAVE SOLDERING		
		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
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

PART NUMBER AND PRODUCT DESCRIPTION
PART NUMBER: D1208051B2509KP0
D 1 2 0 8 0 5 1 B 2 5 0 9 K P 0

MODEL/SIZE	SPECIAL CHARACTER	T.C.	VALUE	TOLERANCE	PACKING	SPECIAL
D100402 D110603 D120805 D251206	I = Customer Trimmable	B = ± 100 ppm/K A = ± 200 ppm/K	3 digit value 1 digit multiplier MULTIPLIER 7 = *10 ⁻³ 2 = *10 ² 8 = *10 ⁻² 3 = *10 ³ 9 = *10 ⁻¹ 4 = *10 ⁴ 0 = *10 ⁰ 5 = *10 ⁵ 1 = *10 ¹ 6 = *10 ⁶	K = ± 10 % L = ± 15 % M = ± 20 % 3 = 0 %/- 30 %	P0 P5 PN B5 BN PZ	up to 2 digits

PRODUCT DESCRIPTION: D12TR 100 25R 10% P5

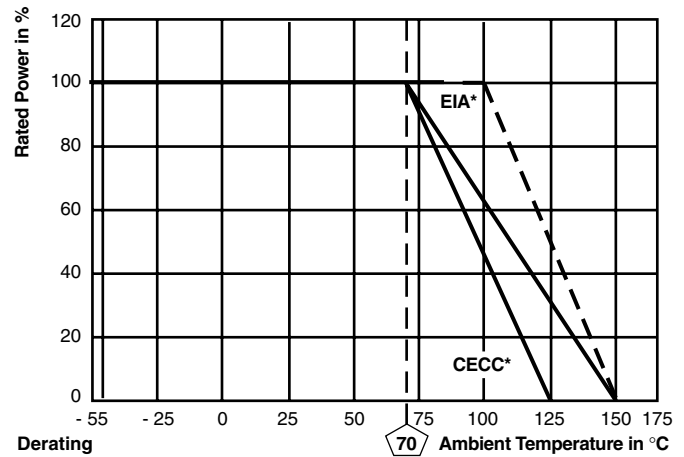
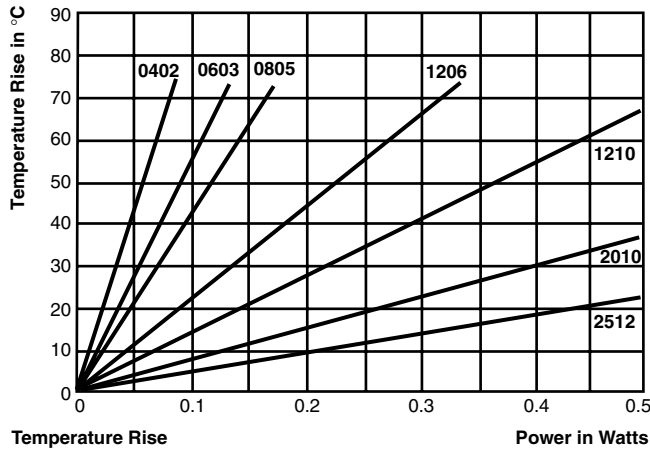
D12TR	100	25R	10 %	P5
MODEL D10TR D11TR D12TR D25TR	TC ± 100 ppm/K ± 200 ppm/K	RESISTANCE VALUE 49K9 = 49.9 kΩ 5R1 = 5.1 Ω	TOLERANCE ± 10 % ± 15 % ± 20 % + 0 %/- 30 %	PACKING ¹⁾ P0 P5 PN B5 BN PZ

PART NUMBER: CRCW080525R0KKTATR
C R C W 0 8 0 5 2 5 R 0 K K T A T R

MODEL/SIZE	VALUE	TOLERANCE	T.C.	PACKING	SPECIAL
CRCW0402 CRCW0603 CRCW0805 CRCW1206 CRCW1210 CRCW2010 CRCW2512	R = Decimal K = Thousand M = Million	K = ± 10 % L = ± 15 % M = ± 20 % W = + 0 %,- 30%	K = ± 100 ppm/K N = ± 200 ppm/K	TA = RT1 TB = RT5 TC = RT6 TD = RT7 TE = RF4 TF = R02 TG = R67 TH = R82	up to 2 digits TR = Customer Trimmable

CRCW0805TR	250	K	100	RT1
MODEL CRCW0402TR CRCW0603TR CRCW0805TR CRCW1206TR CRCW1210TR CRCW2010TR CRCW2512TR	RESISTANCE VALUE 250 = 25R 392 = 3K9 105 = 1M0 ± 5 % = 2 sig.digits, plus multiplier	TOLERANCE K = ± 10 % L = ± 15 % M = ± 20 % W = + 0 %,- 30%	T.C. ± 100 ppm/K ± 200 ppm/K	PACKING ¹⁾ RT1 RF4 RT5 R02 RT6 R67 RT7 R82

NOTE: 1) Please refer to table PACKING, page 3.

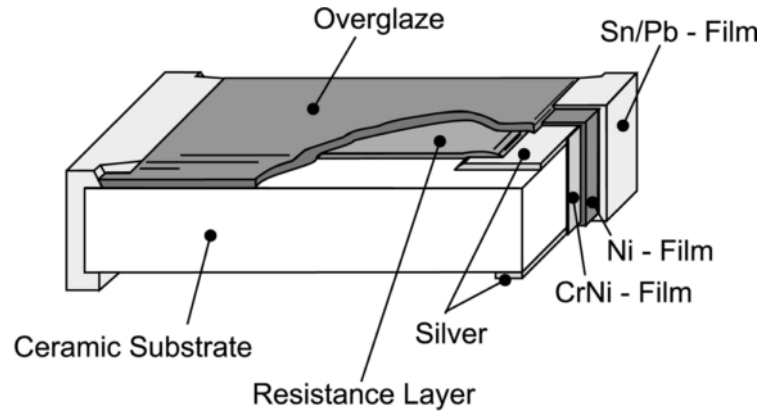


* There are differences in board layout and measurements between CECC and EIA.

PACKING					
MODEL	REEL				
	TAPE WIDTH	DIAMETER	PIECES/REEL	PACKING CODE	
				PAPER ¹⁾	BLISTER ¹⁾
D10TR CRCW0402TR	8 mm	180 mm/7"	10000	P0/RT7	
		330 mm/13"	50000	PZ/RF4	
D11TR CRCW0603TR	8 mm	180 mm/7"	5000	P5/RT1	B5/na
		255 mm/10"	10000	P0/RT5	BN/na
D12TR CRCW0805TR	8 mm	180 mm/7"	5000	P5/RT1	B5/na
		255 mm/10"	10000	P0/RT5	BN/na
D25TR CRCW1206TR	8 mm	180 mm/7"	5000	P5/RT1	B5/na
		255 mm/10"	10000	P0/RT5	BN/na
CRCW1210TR	8 mm	180 mm/7"	5000	P5/RT1	B5/na
		330 mm/13"	20000	PN/RT6	BN/na
CRCW2010TR	12 mm	180 mm/7"	4000		R02
CRCW2512TR	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


Trimming Instructions:

YAG-Laser:

The trimming length should not exceed 50 % of the dimension W (width)

Maximum trimming factor = 1.6

Distance between end termination and trimming cut = 0.2 mm min

Double cut: Distance between two cuts = 0.5 mm min

The laser-cut should be protected with epoxy resins

PERFORMANCE					
TEST	CONDITIONS OF TEST	REQUIREMENTS IN %			
		0402 0603	0805 1206 1210	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	≤ ± 0.5	≤ ± 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	≤ ± 0.5	≤ ± 0.25	≤ ± 0.5	
Thermal Shock IEC 60115-1 4.19; IEC 60068-2-14;	Rapid change between upper and lower category temperature	≤ ± 0.5	≤ ± 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	≤ ± 0.25	≤ ± 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	≤ ± 0.5	≤ ± 0.25	≤ ± 0.5	

1) Limits for change of resistance at test. Data are valid for the non trimmed resistors only. Depending on trimming process some properties can change

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



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