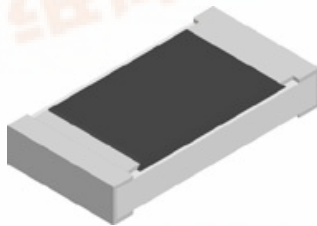


Lead (Pb)-bearing Thick Film, Rectangular, Trimmable Chip Resistors



FEATURES

- Can be trimmed to the required value after insertion
- For applications in precision circuitry where relative tolerances can be compensated by trimming
- SnPb contacts on Ni barrier layer
- Metal glaze on high quality ceramic
- Protective overglaze

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE		POWER RATING $P_{70^{\circ}\text{C}}$ W	LIMITING ELEMENT VOLTAGE MAX V_{Ξ}	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE Ω	E-SERIES
	INCH	METRIC						
D10/CRCW0402-TR	0402	1005	0.063	50	± 100 ± 200	± 10 ± 15 ± 20 $+ 0/- 10$ $+ 0/- 20$ $+ 0/- 30$	10R - 10M R47 - 10M	24
D11/CRCW0603-TR	0603	1608	0.10	75	± 100 ± 200		10R - 10M R47 - 10M	24
D12/CRCW0805-TR	0805	2012	0.125	150	± 100 ± 200		10R - 10M R47 - 10M	24
D25/CRCW1206-TR	1206	3216	0.25	200	± 100 ± 200		10R - 10M R47 - 10M	24
CRCW1210-TR	1210	3225	0.33	200	± 200		10R - 4M7	24
CRCW2010-TR	2010	5025	0.50	200	± 400		10R - 4M7	24
CRCW2512-TR	2512	6332	1.0	200	± 500		10R - 4M7	24

Notes

- These resistors do not feature a limited lifetime when operated within the permissible limits. However, resistance value drift increasing over operating time may result in exceeding a limit acceptable to the specific application, thereby establishing a functional lifetime.
- Marking: No marking on device, on the label only
- Packaging: See appropriate catalog or web pages
- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	D10/ CRCW0402-TR	D11/ CRCW0603-TR	D12/ CRCW0805-TR	D25/ CRCW1206-TR	CRCW1210-TR	CRCW2010-TR	CRCW2512-TR
Rated Dissipation at 70 °C ⁽³⁾	W	0.063	0.1	0.125	0.25	0.33	0.5	1.0
Limiting Element Voltage ⁽²⁾	V_{Ξ}	50	75	150	200	200	400	500
Insulation Voltage (1 min)	V_{peak}	> 75	> 100	> 200	> 300	> 300	> 300	> 300
Thermal Resistance ⁽¹⁾	K/W	≤ 870	≤ 550	≤ 440	≤ 220	≤ 140	≤ 88	≤ 65
Insulation Resistance	Ω	> 10^9						
Category Temperature Range	°C	- 55 to + 155						
Failure Rate	h^{-1}	0.3×10^{-9}						
Weight/1000 pieces	g	0.65	2	5.5	10	16	25.5	40.5

Notes

- ⁽¹⁾ For size 0402 until 1206 the measuring conditions are in acc. to EN 140401-802. For all other sizes the result depends on the solder pad dimensions.
- ⁽²⁾ Rated voltage: $\sqrt{P \times R}$
- ⁽³⁾ The power dissipation on the resistor generates a temperature rise against the local ambient, depending on the heat flow support of the printed-circuit board (thermal resistance). The rated dissipation applies only if the permitted film temperature of 155 °C is not exceeded.

PART NUMBER AND PRODUCT DESCRIPTION

PART NUMBER: CRCW080525R0KKTATR ⁽¹⁾

C	R	C	W	0	8	0	5	2	5	R	0	K	K	T	A	T	R
MODEL		VALUE		TOLERANCE				TCR		PACKAGING ⁽²⁾			SPECIAL				
CRCW0402		R = Decimal		K = ± 10 %				K = ± 100 ppm/K		TA, TB,			up to 2 digits				
CRCW0603		K = Thousand		L = ± 15 %				N = ± 200 ppm/K		TC, TD,			TR = Customer				
CRCW0805		M = Million		M = ± 20 %						TE, TF,			Trimable				
CRCW1206				U = + 0 %/- 10 %						TG, TH,							
CRCW1210				V = + 0 %/- 20 %						TI, TL							
CRCW2010				W = + 0 %/- 30 %													
CRCW2512																	

PRODUCT DESCRIPTION: CRCW0805-TR 250 K 100 RT1

CRCW0805-TR	250	K	100	RT1
MODEL	RESISTANCE VALUE	TOLERANCE	TCR	PACKAGING ⁽²⁾
CRCW0402-TR	250 = 25R	K = ± 10 %	± 100 ppm/K	RT1, RT5,
CRCW0603-TR	392 = 3K9	L = ± 15 %	± 200 ppm/K	RT6, RT7,
CRCW0805-TR	105 = 1M0	M = ± 20 %		RF4, R02,
CRCW1206-TR		U = + 0 %/- 10 %		R67, R82,
CRCW1210-TR		V = + 0 %/- 20 %		RG1, R20
CRCW2010-TR		W = + 0 %/- 30 %		
CRCW2512-TR				

Notes

⁽¹⁾ Preferred way for ordering products is by use of the PART NUMBER

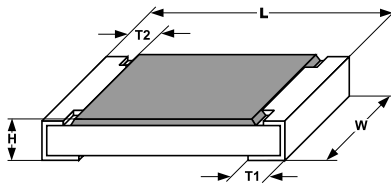
⁽²⁾ Please refer to table PACKAGING, see below

PACKAGING

MODEL	REEL							
	TAPE WIDTH	DIAMETER	PITCH	PIECES/REEL	PACKING CODE			
					PART NUMBER		PRODUCT DESC.	
					PAPER	BLISTER	PAPER	BLISTER
D10/CRCW0402-TR	8 mm	180 mm/7"	2 mm	10 000	TD		RT7	
		330 mm/13"	2 mm	50 000	TE		RF4	
D11/CRCW0603-TR	8 mm	180 mm/7"	4 mm	5000	TA	TI	RT1	RG1
		285 mm/11.25"	4 mm	10 000	TB		RT5	
		330 mm/13"	4 mm	20 000	TC	TL	RT6	RG20
D12/CRCW0805-TR	8 mm	180 mm/7"	4 mm	5000	TA	TI	RT1	RG1
		285 mm/11.25"	4 mm	10 000	TB		RT5	
		330 mm/13"	4 mm	20 000	TC	TL	RT6	RG20
D25/CRCW1206TR	8 mm	180 mm/7"	4 mm	5000	TA	TI	RT1	RG1
		285 mm/11.25"	4 mm	10 000	TB		RT5	
		330 mm/13"	4 mm	20 000	TC	TL	RT6	RG20
CRCW1210TR	12 mm	180 mm/7"	4 mm	5000	TA		RT1	
		330 mm/13"	4 mm	20 000	TC		RT6	
CRCW2010TR	12 mm	180 mm/7"	4 mm	4000		TF		R02
CRCW2512TR	12 mm	180 mm/7"	8 mm	2000		TG		R67
			4 mm	4000		TH		R82

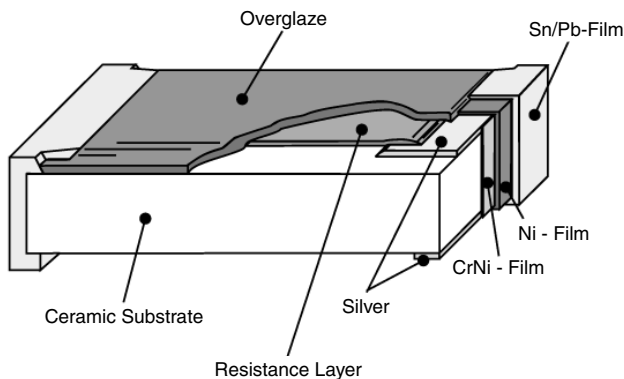
Vishay D../CRCW....-TR 供应 (Pb)-bearing Thick Film, Rectangular, Trimmable Chip Resistors

DIMENSIONS



SIZE		DIMENSIONS [in millimeters]					SOLDER PAD DIMENSIONS [in millimeters]					
							REFLOW SOLDERING			WAVE SOLDERING		
INCH	METRIC	L	W	H	T1	T2	a	b	l	a	b	l
0402	1005	1.0 ± 0.05	0.5 ± 0.05	0.35 ± 0.05	0.25 ± 0.05	0.2 ± 0.1	0.4	0.6	0.5			
0603	1608	1.55 ^{+0.10} _{-0.05}	0.85 ± 0.1	0.45 ± 0.05	0.3 ± 0.2	0.3 ± 0.2	0.5	0.9	1.0	0.9	0.9	1.0
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	0.7	1.3	1.2	0.9	1.3	1.3
1206	3216	3.2 ^{+0.10} _{-0.20}	1.6 ± 0.15	0.55 ^{+0.05} _{-0.10}	0.45 ± 0.2	0.4 ± 0.2	0.9	1.7	2.0	1.1	1.7	2.3
1210	3225	3.2 ± 0.2	2.5 ± 0.2	0.55 ± 0.05	0.45 ± 0.2	0.4 ± 0.2	0.9	2.5	2.0	1.1	2.5	2.2
2010	5025	5.0 ± 0.15	2.5 ± 0.15	0.6 ± 0.1	0.6 ± 0.2	0.6 ± 0.2	1.0	2.5	3.9	1.2	2.5	3.9
2512	6332	6.3 ± 0.2	3.15 ± 0.15	0.6 ± 0.1	0.6 ± 0.2	0.6 ± 0.2	1.0	3.2	5.2	1.2	3.2	5.2

TRIMMING INSTRUCTIONS



YAG-Laser:

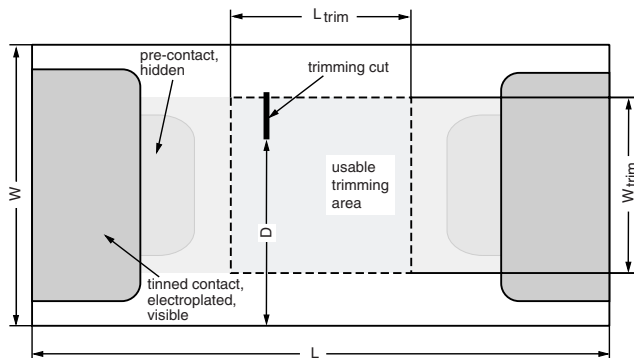
Maximum trimming factor =
1.6 for an I-cut and 1.8 for a L-cut

Double cut:

Distance between two cuts = 0.5 mm min

The laser-cut should be protected with epoxy resins

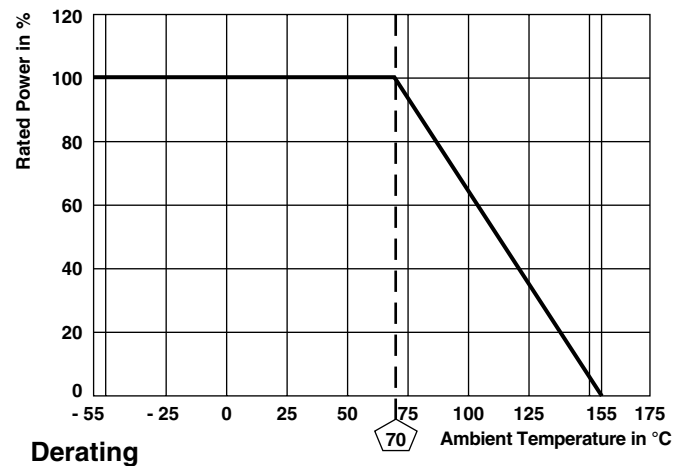
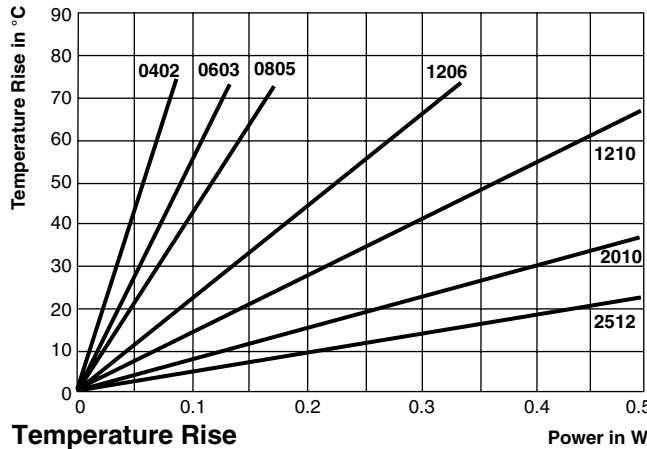
PERMISSIBLE TRIMMING AREA



DIMENSIONS OF THE PERMISSIBLE					
MODEL	L	W	L _{trim}	W _{trim}	D
D10/CRCW0402-TR ⁽¹⁾	1.0	0.5	≤ 0.25	0.27	≥ 0.25
D11/CRCW0603-TR ⁽¹⁾	1.55	0.85	≤ 0.425	0.5	≥ 0.425
D12/CRCW0805-TR	2.0	1.25	≤ 0.625	0.85	≥ 0.625
D25/CRCW1206-TR	3.2	1.6	≤ 0.8	1.0	≥ 0.8
CRCW1210-TR	3.2	2.5	≤ 1.25	1.6	≥ 1.25
CRCW2010-TR	5.0	2.5	≤ 1.25	1.9	≥ 1.25
CRCW2512-TR	6.3	3.15	≤ 1.575	2.4	≥ 1.575

Note

⁽¹⁾ Single cut only



TEST PROCEDURES AND REQUIREMENTS

EN 60115-1

TEST (clause)	CONDITIONS OF TEST	REQUIREMENTS PERMISSIBLE CHANGE ($\Delta R/R$) ⁽¹⁾	
		STABILITY CLASS 1 OR BETTER	STABILITY CLASS 2 OR BETTER
	Stability for product types: D../CRCW....-TR e3	10R - 10M	R47 - 10M
Resistance (4.5)	-	$\pm 10; \pm 15; \pm 20; + 0/- 30 \%$	
Temperature coefficient (4.8.4.2)	20/- 55/20 °C and 20/125/20 °C	$\pm 100 \text{ ppm/K}$	$\pm 200 \text{ ppm/K}$
Overload (4.13)	$U = 2.5 \times (P_{70} \times R)^{1/2}$ $\leq 2 \times U_{\max.}$; Duration: according to the style	$\pm (0.25 \% R + 0.05 \Omega)$	$\pm (0.5 \% R + 0.05 \Omega)$
Solderability (4.17.5)	Aging 4 h at 155 °C, dryheat Solder bath method; 235 °C; 2 s Visual examination	Good tinning ($\geq 95 \%$ covered) no visible damage	
Resistance to soldering heat (4.18.2)	Solder bath method; (260 $\pm$ 5) °C; (10 $\pm$ 1) s	$\pm (0.25 \% R + 0.05 \Omega)$	$\pm (0.5 \% R + 0.05 \Omega)$
Rapid change of temperature (4.19)	30 min at LCT = - 55 °C; 30 min at UCT = 125 °C; 5 cycles	$\pm (0.25 \% R + 0.05 \Omega)$	$\pm (0.5 \% R + 0.05 \Omega)$
Damp heat, steady state (4.24)	(40 $\pm$ 2) °C; 56 days; (93 $\pm$ 3) % RH	$\pm (1 \% R + 0.05 \Omega)$	$\pm (2 \% R + 0.1 \Omega)$
Climatic sequence (4.23)	16 h at UCT = 125 °C; 1 cycle at 55 °C; 2 h at LCT = - 55 °C; 1 h/1 kPa at 15 °C to 35 °C; 5 cycles at 55 °C $U = (P_{70} \times R)^{1/2}$ $U = U_{\max.}$; whichever is less severe	$\pm (1 \% R + 0.05 \Omega)$	$\pm (2 \% R + 0.1 \Omega)$
Endurance at 70 °C (4.25.1)	$U = (P_{70} \times R)^{1/2}$ $U = U_{\max.}$; whichever is less severe 1.5 h on; 0.5 h off; 70 °C; 1000 h	$\pm (1 \% R + 0.05 \Omega)$	$\pm (2 \% R + 0.1 \Omega)$
Extended endurance (4.25.1.8)	Duration extended to 8000 h	$\pm (2 \% R + 0.1 \Omega)$	$\pm (4 \% R + 0.1 \Omega)$
Endurance at upper category temperature (4.25.3)	UCT = 125 °C; 1000 h	$\pm (1 \% R + 0.05 \Omega)$	$\pm (2 \% R + 0.1 \Omega)$

Note

⁽¹⁾ Data is valid for non trimmed resistors only. Depending on the trimming process some properties can change.

APPLICABLE SPECIFICATIONS

- EN 60115-1 Generic Specification
- EN 140400 Sectional Specification
- EN 140401-802 Detail Specification
- IEC 60068-2-X Variety of environmental test procedures
- IEC 60286-3 Packaging of SMD components

Disclaimer

All product specifications and data are subject to change without notice.

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