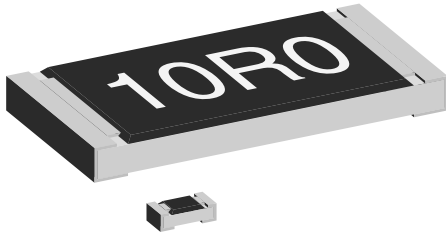


Automotive Grade Lead (Pb)-free Thick Film, Rectangular Chip Resistors



FEATURES

- Metal glaze on high quality ceramic with protective overglaze
- Sulfur resistant
- Superior resistance against H₂S-atmosphere than standard Ag contacts
- Excellent stability ($\Delta R/R \leq \pm 0.5\%$ for 1000 h at 70 °C) different environmental conditions
- High volume product suitable for commercial and special applications
- Metal glaze on high quality ceramic
- Protective overglaze
- Lead (Pb)-free solder contacts on Ni barrier layer
- Pure tin plating provides compatibility with lead (Pb)-free and lead containing soldering processes
- Compatible with "Restriction of the use of Hazardous Substances" (RoHS) directive 2002/95/EC (issue 2004)
- Automotive Grade = sulfur resistant



STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE		POWER RATING $P_{70\text{ }^\circ\text{C}}$ W	LIMITING ELEMENT VOLTAGE MAX V _≡	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE Ω	E-SERIES
	INCH	METRIC	CECC 40401-802/EIA-575					
RCA0402	0402	1005	0.063	50	± 50 ± 100 ± 100 ± 200 ± 200	± 0.5, ± 1 ± 0.5 ± 1 ± 1	100R - 1M0 10R - 1M0 10R - 5M6 1R0 - 9R76 1R0 - 10M	24 + 96 24 + 96 24 + 96 24 + 96 24
RCA0603	0603	1608	0.10	75	± 50 ± 100 ± 200 ± 200	± 0.5, ± 1 ± 0.5, ± 1 ± 1 ± 5	100R - 10M 10R - 10M 1R0 - 9R76 1R0 - 10M	24 + 96 24 + 96 24 + 96 24
RCA0805	0805	2012	0.125	150	± 50 ± 100 ± 100 ± 200	± 0.5, ± 1 ± 0.5 ± 1 ± 5	100R - 10M 10R - 10M 1R0 - 10M 1R0 - 10M	24 + 96 24 + 96 24 + 96 24
RCA1206	1206	3216	0.25	200	± 50 ± 100 ± 100 ± 200	± 0.5, ± 1 ± 0.5 ± 1 ± 5	100R - 10M 10R - 10M 1R0 - 10M 1R0 - 10M	24 + 96 24 + 96 24 + 96 24
RCA1210	1210	3225	0.33	200	± 50 ± 100 ± 100 ± 200	± 0.5, ± 1 ± 0.5 ± 1 ± 5	100R - 1M0 100R - 1M0 1R0 - 1M0 1R0 - 1M0	24 + 96 24 + 96 24 + 96 24
RCA1218	1218	3246	1.0	200	± 50 ± 100 ± 100 ± 200	± 0.5, ± 1 ± 0.5 ± 1 ± 5	100R - 2M2 100R - 2M2 1R0 - 2M2 1R0 - 2M2	24 + 96 24 + 96 24 + 96 24
RCA2010	2010	5025	0.50	400	± 50 ± 100 ± 100 ± 200	± 0.5, ± 1 ± 0.5 ± 1 ± 5	100R - 10M 10R - 10M 1R0 - 10M 1R0 - 10M	24 + 96 24 + 96 24 + 96 24
RCA2512	2512	6332	1.0	500	± 50 ± 100 ± 100 ± 200	± 0.5, ± 1 ± 0.5 ± 1 ± 5	100R - 10M 10R - 10M 1R0 - 10M 1R0 - 10M	24 + 96 24 + 96 24 + 96 24

Notes

- Ask about further value ranges
- Marking and 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



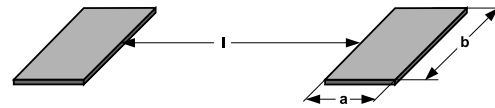
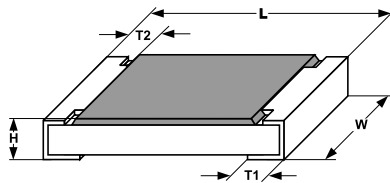
Automotive Grade
Lead (Pb)-free Thick Film, Rectangular Chip Resistors

TECHNICAL SPECIFICATIONS									
PARAMETER	UNIT	RCA0402	RCA0603	RCA0805	RCA1206	RCA1210	RCA1218	RCA2010	RCA2512
Rated Dissipation at 70 °C (CECC 40401 EIA 575)	W	0.063	0.10	0.125	0.25	0.33	1.0	0.5	1.0
Limiting Element Voltage ²⁾	V _≡	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 (+ 155)							
Failure Rate	h ⁻¹	0.3 × 10 ⁻⁹							
Weight/1000 pcs	g	0.65	2	5.5	10	16	29.5	25.5	40.5

Notes

1. Measuring conditions in acc. to CECC 40401 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	0.2 ± 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

PART NUMBER AND PRODUCT DESCRIPTION RCA.... e3 - SERIES

PART NUMBERING: RCA080510K0FKEA

R C A 0 8 0 5 1 0 K 0 F K E A

MODEL	SIZE	VALUE	TOLERANCE	TCR	PACKAGING	SPECIAL
RCA	0402 1210 0603 1218 0805 2010 1206 2512	R = decimal K = thousand M = million 1K32 = 1.32 kΩ 10R0 = 10 Ω 0000 = Jumper	D = ± 0.5 % F = ± 1.0 % J = ± 5.0 %	H = ± 50 ppm/K K = ± 100 ppm/K N = ± 200 ppm/K	EA = ET1 EG = E67 EB = ET5 EH = E82 EC = ET6 EK = ET9 ED = ET7 EY = E27 EE = EF4	up to 2 digits

PRODUCT DESCRIPTION: RCA0805 10K 1% 100 ET1 e3

RCA0805	10K	1 %	100	ET1	e3
MODEL	RESISTANCE VALUE	TOLERANCE	TCR	PACKAGING ¹⁾	LEAD (Pb)-FREE
RCA0402 RCA1210 RCA0603 RCA1218 RCA0805 RCA2010 RCA1206 RCA2512	49R9 = 49.9 Ω 3011 = 3.01 kΩ	± 0.5 % ± 1 % ± 5 %	± 50 ppm/K ± 100 ppm/K ± 200 ppm/K	ET1 E67 ET5 E82 ET6 ET9 ET7 E27 EF4	e3 = Pure Tin Termination Finish
± 1 % = 3 sig. digits, plus multiplier ± 5 % = 2 sig. digits, plus multiplier					

Notes

1. Please refer to table PACKAGING, on page 122. • Preferred way for ordering products is by use of the PART NUMBER.

PACKAGING								
MODEL	REEL					BULK		
	TAPE WIDTH	DIAMETER	PIECES/REEL	PITCH	PACKING CODE		BULK FEEDING MAGAZINE PIECES/MAGAZINE	
					PAPER	BLISTER	PIECES	CODE
RCA0402	8 mm	180 mm/7"	10 000	2 mm	ET7		50 000	E27
		330 mm/13"	50 000	2 mm	EF4			
RCA0603	8 mm	180 mm/7"	5000	4 mm	ET1		25 000	E27
		255 mm/10"	10 000	4 mm	ET5			
		330 mm/13"	20 000	4 mm	ET6			
RCA0805	8 mm	180 mm/7"	5000	4 mm	ET1		10 000	E27
		255 mm/10"	10 000	4 mm	ET5			
		330 mm/13"	20 000	4 mm	ET6			
RCA1206	8 mm	180 mm/7"	5000	4 mm	ET1			
		255 mm/10"	10 000	4 mm	ET5			
		330 mm/13"	20 000	4 mm	ET6			
RCA1210	8 mm	180 mm/7"	5000	4 mm	ET1			
		330 mm/13"	20 000	4 mm	ET6			
RCA1218	12 mm	180 mm/7"	4000	4 mm		ET9		
RCA2010	12 mm	180 mm/7"	4000	4 mm		E02		
RCA2512	12 mm	180 mm/7"	2000	8 mm		E67		
			4000	4 mm		E82		

Automotive Grade
Lead (Pb)-free Thick Film, Rectangular Chip Resistors

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	≤ ± 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 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

Note

1. For more details please refer to datasheet D../CRCW.



Disclaimer

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

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.