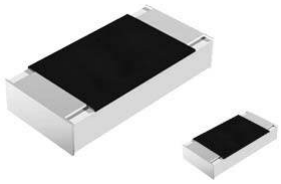
High Voltage (up to 0.5 kV) Thick Film Chip Resistors



FEATURES

- High operating voltage (up to 500 V)
- Pure tin solder contacts on Ni barrier layer provides compatibility with lead (Pb)-free and lead containing soldering processes
- Metal glaze on high quality ceramic
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	CASE SIZE INCH	CASE SIZE METRIC	POWER RATING P_{70} W	LIMITINGELEMENT VOLTAGE $U_{MAX.}$ AC_{RMS}/DC V	TEMPERATURE COEFFICIENT ± ppm/K	TOLERANCE ± %	RESISTANCE RANGE Ω	SERIES
RCV0805 e3	0805	RR 2012M	0.125	400	100	1	100K to 10M	E24; E96
					200	5		E24
RCV1206 e3	1206	RR 3216M	0.25	500	100	1	100K to 10M	E24; E96
					200	5		E24

Notes

- These resistors do not feature a lifetime limitation when operated within the limits of rated dissipation, permissible operating voltage and permissible film temperature. However, the resistance typically increases due to the resistor's film temperature over operating time, generally known as drift. The drift may exceed the stability requirements of an individual application circuit and thereby limits the functional lifetime.
- No marking.
- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material.

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	RCV0805	RCV1206
Rated dissipation P_{70} (1)	W	0.125	0.25
Limiting element voltage $U_{max.}$ AC_{RMS}/DC	V	400	500
Insulation voltage $U_{ins.}$ (1 min)	V	> 500	
Voltage coefficient of resistance chart	ppm/V	25	
Insulation resistance	Ω	$> 10^9$	
Operating temperature range	°C	- 55 to + 155	
Weight	mg	5.5	10

Note

(1) The power dissipation on the resistors 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: RCV1206100KFKEA

R	C	V	1	2	0	6	1	0	0	K	F	K	E	A

MODEL	RESISTANCE	TOLERANCE	TCR	PACKAGING
RCV0805 **RCV1206**	**K** = Thousand **M** = Million	**F** = ± 1 % **J** = ± 5 %	**K** = ± 100 ppm/K **N** = ± 200 ppm/K	**EA, EB, EC**

Product Description: RCV1206 100 100K 1 % ET1 e3

RCV1206	100	100K	1 %	ET1	e3
MODEL	TCR	RESISTANCE	TOLERANCE	PACKAGING	LEAD (Pb)-FREE
RCV0805 **RCV1206**	± **100** ppm/K ± **200** ppm/K	**100K** = 100 kΩ **10M** = 10 MΩ	± **1 %** ± **5 %**	**ET1, ET5, ET6**	**e3** = Pure tin termination finish

For technical questions, contact: thickfilmchip@vishay.com

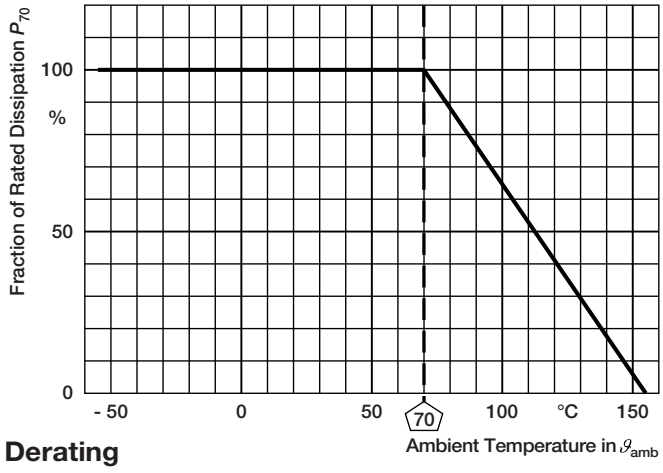
PACKAGING

MODEL	CODE	QUANTITY	CARRIER TAPE	WIDTH	PITCH	REEL DIAMETER
RCV0805	EA = ET1	5000	Paper tape acc. to IEC 60068-3 Type I	8 mm	4 mm	180 mm/7"
	EB = ET5	10 000				285 mm/11.25"
	EC = ET6	20 000				330 mm/13"
RCV1206	EA = ET1	5000				180 mm/7"
	EB = ET5	10 000				285 mm/11.25"
	EC = ET6	20 000				330 mm/13"

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
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	0.45 ± 0.2	0.4 ± 0.2	0.9	1.7	2.0	1.1	1.7	2.3

FUNCTIONAL PERFORMANCE



Derating

TEST PROCEDURES AND REQUIREMENTS

EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS PERMISSIBLE CHANGE (ΔR)	
			Stability for product types:	100 kΩ to 10 MΩ	
			RCV e3		
4.5	-	Resistance	-	± 1 %	± 5 %
4.13	-	Short time overload	$U = 2.5 \times \sqrt{P_{70} \times R}$ ≤ 2 x $U_{max.}$; 5 s	± (0.25 % R + 0.05 Ω)	± (0.5 % R + 0.05 Ω)
4.17.2	58 (Td)	Solderability	Solder bath method; Sn60Pb40 non-activated flux; (235 ± 5) °C (2 ± 0.2) s	Good tinning (≥ 95 % covered); no visible damage	
			Solder bath method; Sn96.5Ag3Cu0.5 non-activated flux; (245 ± 5) °C (3 ± 0.3) s	Good tinning (≥ 95 % covered); no visible damage	
4.8.4.2	-	Temperature coefficient	(20/- 55/20) °C and (20/155/20) °C	± 100 ppm/K	± 200 ppm/K
4.32	21 (Uu_3)	Shear (adhesion)	205 N	No visible damage	
4.33	21 (Uu_1)	Substrate bending	Depth 2 mm; 3 times	No visible damage, no open circuit in bent position ± (0.25 % R + 0.05 Ω)	
4.19	14 (Na)	Rapid change of temperature	30 min. at - 55 °C; 30 min. at 125 °C		
			5 cycles	± (0.25 % R + 0.05 Ω)	± (0.5 % R + 0.05 Ω)
			1000 cycles	± (1 % R + 0.05 Ω)	± (1 % R + 0.05 Ω)
4.23	-	Climatic sequence:	-		
4.23.2	2 (Ba)	Dry heat	125 °C; 16 h		
4.23.3	30 (Db)	Damp heat, cyclic	55 °C; ≥ 90 % RH 24 h; 1 cycle		
4.23.4	1 (Aa)	Cold	- 55 °C; 2 h	± (1 % R + 0.05 Ω)	± (2 % R + 0.1 Ω)
4.23.5	13 (M)	Low air pressure	1 kPa; (25 ± 10) °C; 1 h		
4.23.6	30 (Db)	Damp heat, cyclic	55 °C; . 90 % RH 24 h; 5 cycle		
4.23.7	-	DC load	$U = \sqrt{P_{70} \times R}$		
4.25.1	-	Endurance at 70 °C	$U = \sqrt{P_{70} \times R} \leq U_{max.}$; 1.5 h on; 0.5 h off;		
			70 °C; 1000 h	± (1 % R + 0.05 Ω)	± (2 % R + 0.1 Ω)
			70 °C; 8000 h	± (2 % R + 0.1 Ω)	± (4 % R + 0.1 Ω)
4.18.2	58 (Td)	Resistance to soldering heat	Solder bath method (260 ± 5) °C; (10 ± 1) s	± (0.25 % R + 0.05 Ω)	± (0.5 % R + 0.05 Ω)
4.24	78 (Cab)	Damp heat, steady state	(40 ± 2) °C; (93 ± 3) % RH; 56 days	± (1 % R + 0.05 Ω)	± (2 % R + 0.05 Ω)
4.25.3	-	Endurance at upper category temperature	155 °C; 1000 h	± (1 % R + 0.05 Ω)	± (2 % R + 0.05 Ω)

TEST PROCEDURES AND REQUIREMENTS					
EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS PERMISSIBLE CHANGE (ΔR)	
			Stability for product types:	100 kΩ to 10 MΩ	
			RCV e3		
4.40	-	Electrostatic discharge (human body model)	IEC 61340-3-1; 3 pos. + 3 neg. discharges; ESD voltage acc. to style	± (1 % R + 0.05 Ω)	
4.29	45 (XA)	Component solvent resistance	Isopropyl alcohol; 50 °C; method 2	No visible damage	
4.30	45 (XA)	Solvent resistance of marking	Isopropyl alcohol; 50 °C; method 1, toothbrush	Marking legible, no visible damage	
4.22	6 (Fc)	Vibration, endurance by sweeping	f = 10 Hz to 2000 Hz; x, y, z ≤ 1.5 mm; A ≤ 200 m/s^2; 10 sweeps per axis	± (0.25 % R + 0.05 Ω)	± (0.5 % R + 0.05 Ω)
4.37	-	Periodic electric overload	$U = \sqrt{15 \times P_{70} \times R}$ ≤ 2 x $U_{max.}$; 0.1 s on; 2.5 s off; 1000 cycles	± (1 % R + 0.05 Ω)	
4.27	-	Single pulse high voltage overload, 10 µs/700 µs	$\hat{U} = 10 \times \sqrt{P_{70} \times R}$ ≤ 2 x $U_{max.}$; 10 pulses	± (1 % R + 0.05 Ω)	

All tests are carried out in accordance with the following specifications:

- EN 60115-1, generic specification
- EN 140400, sectional specification
- EN 140401-802, detail specification
- IEC 60068-2-x, environmental test procedures

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