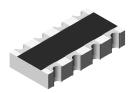


CRA04P

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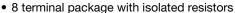
# **Thick Film Chip Resistor Array**

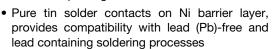


The CRA04P thick film resistor array is constructed on a high grade ceramic body with concave terminations. A small package enables the design of high density circuits. The single component reduces board space, component counts and assembly costs.

#### **FEATURES**

- · Concave terminal array with square corners
- Wide ohmic range: 1R0 to 1M0







COMPLIANT

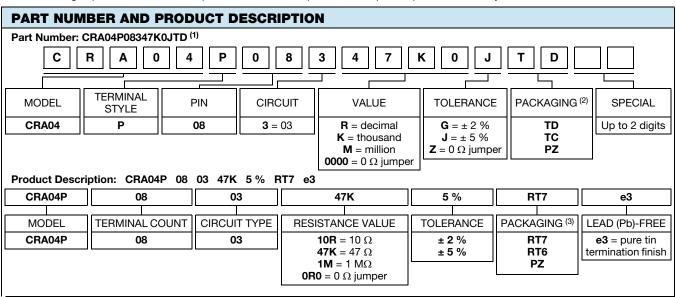
 Material categorization: for definitions of compliance please see <a href="https://www.vishay.com/doc?99912">www.vishay.com/doc?99912</a>

STANDARD ELECTRICAL SPECIFICATIONS									
MODEL	CIRCUIT	POWER RATING  P <sub>70 °C</sub> W	LIMITING ELEMENT VOLTAGE MAX. V≅	TEMPERATURE COEFFICIENT ± ppm/K	TOLERANCE ± %	$\begin{array}{c} \textbf{RESISTANCE} \\ \textbf{RANGE} \\ \Omega \end{array}$	E-SERIES		
	03	0.063	50	100	2	10 to 1M	24		
CRA04P				200	5	1 to 1M	24		
		Zero-Ohm-Resistor: $R_{\text{max.}} = 50 \text{ m}\Omega$ , $I_{\text{max.}} = 1 \text{ A}$							

TECHNICAL SPECIFICATIONS							
PARAMETER	UNIT	CRA04P					
Rated dissipation P <sub>70</sub> <sup>(1)</sup>	W per element	0.063					
Limiting element voltage U <sub>max.</sub> AC/DC	V	50					
Insulation voltage U <sub>ins</sub> (1 min)	V	100					
Insulation resistance	Ω	> 10 <sup>9</sup>					
Category temperature range	°C	- 55 to + 155					

#### Note

(1) Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material



#### Notes

- (1) Preferred way for ordering products is by use of the PART NUMBER
- (2) Please refer to the table PACKAGING, see next page





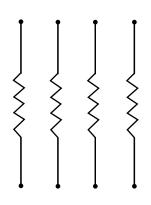
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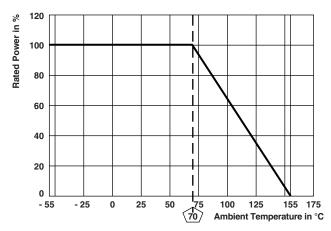
PACKAGING								
		P.		PAC	CKAGING CODE			
MODEL	TAPE WIDTH	DIAMETER	PITCH	PIECES/REEL	PAPER TAPE			
					PART NUMBER	PRODUCT DESCRIPTION		
		180 mm/7"	2 mm	10 000	TD	RT7		
CRA04P	8 mm	330 mm/13"	2 mm	20 000	TC	RT6		
		330 mm/13"	2 mm	50 000	PZ	PZ		

### **CIRCUIT**

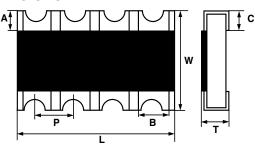
03 Circuit

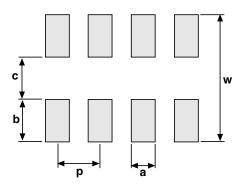


## **DERATING**



### **DIMENSIONS**





PIN NO#	<b>DIMENSIONS</b> in millimeters							
	L	Α	В	С	P <sub>NOM</sub> .	Т	W	
8	2.00	0.20	0.32	0.25	0.50	0.45	1.00	
TOL.	± 0.20	± 0.10	± 0.10	± 0.15	-	± 0.10	± 0.10	

<b>SOLDER PAD DIMENSIONS</b> in millimeters							
	С	w	р	а	b		
WAVE	0.5	1.5	0.5	0.32	0.5		



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EN 60115-1	IEC 60068-2	TEST	PROCEDURE	REQUIREMENTS PERMISSIBLE CHANGE (△R) (1)	
CLAUSE   TEST METHOD		IESI	PROCEDURE	STABILITY CLASS 2 OR BETTER	
	•		Stability for product type:	10 Ω to 1 MΩ	1 Ω to 1 MΩ
			CRA04P	10 75 10 1 10175	1 75 10 1 10175
4.5	-	Resistance	-	± 2 % ± 5 %	
4.7	-	Voltage proof	$U = 1.4 \times U_{ins}$ ; 60 s	No flashover or breakdown	
4.13	-	Short time overload	$U = 2.5 \times \sqrt{P_{70} \times R}$ $\leq 2 \times U_{\text{max}}$ ; Duration according to style	± (0.5 % R + 0.05 Ω)	
4 17 0	E0 /Ta/\	Coldovskility	Solder bath method; Sn60Pb40; non-activated flux; (235 ± 5) °C; (2 ± 0.2) s	Good tinning (≥ 95 % covere no visible damage	
4.17.2	58 (Td)	Solderability	Solder bath method; Sn96.5Ag3Cu0.5; non-activated flux; (245 ± 5) °C; (3 ± 0.3) s	Good tinning (≥ no visible	95 % covered) damage
4.8.4.2	-	Temperature coefficient	(20/- 55/20) °C and (20/125/20) °C	± 100 ppm/K	± 200 ppm/K
4.32	21 (U <sub>U3</sub> )	Shear (adhesion)	45 N	No visible	e damage
4.33	21 (U <sub>U1</sub> )	Substrate bending	Depth 2 mm; 3 times	No visible damage, no open circuit in bent position $\pm$ (0.25 % $R$ + 0.05 $\Omega$ )	
4.19	14 (Na)	Rapid change of temperature	30 min. at - 55 °C; 30 min at 125 °C 5 cycles 1000 cycles	± (0.5 % F ± (1 % R	? + 0.05 Ω) + 0.05 Ω)
4.23	-	Dry heat	-	( 11	,
4.23.2	2 (Ba)	Damp heat, cyclic	125 °C; 16 h		
4.23.3	30 (Db)	Cold	55 °C; ≥ 90 % RH; 24 h; 1 cycle		
4.23.4	1 (Aa)	Low air pressure	- 55 °C; 2 h	± (2 % R + 0.05 Ω)	
4.23.5	13 (M)	- -	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	-	D.C. load	$U = \sqrt{P_{70} \times R}$		
4.25.1	-	Endurance at 70 °C	$U = \sqrt{P_{70} \times R} \le U_{\text{max.}}$ 1.5 h on; 0.5 h off; 70 °C; 1000 h 70 °C; 8000 h		<sup>2</sup> + 0.1 Ω) <sup>2</sup> + 0.1 Ω)
4.18.2	58 (Td)	Resistance to soldering heat	Solder bath method; $(260 \pm 5)$ °C; $(10 \pm 1)$ s	± (0.5 % R + 0.05 Ω)	
4.35	-	Flammability, needle flame test	IEC 60695-11-5; 10 s	No burning after 30 s	
4.24	78 (Cab)	Damp heat, steady state	(40 ± 2) °C; (93 ± 3) % RH; 56 days	± (1 % R	+ 0.05 Ω)
4.25.3	-	Endurance at upper category temperature	155 °C; 1000 h	± (2 % R + 0.1 Ω)	
4.40	-	Electrostatic discharge (human body model)	IEC 61340-3-1; 3 positive and 3 negative discharges; ESD voltage according to style	± (1 % R + 0.05 Ω)	
4.29	45 (XA)	Component solvent resistance	Isopropyl alcohol; 50 °C; method 2	No visible	e 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	$f = 10 \text{ Hz to } 2000 \text{ Hz; x, y, z} \le 1.5 \text{ mm;}$ $A \le 200 \text{ m/s}^2; 10 \text{ sweeps per axis}$	± (0.5 % R + 0.05 Ω)	
4.37	-	Periodic electric overload	$U = \sqrt{15 \times P_{70} \times R} \le 2 \times U_{\text{max.}}$ 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	$\hat{U} = 10 \text{ x } \sqrt{P_{70} \text{ x } R} \le 2 \text{ x } U_{\text{max.}}$ 10 pulses	± (1 % R	+ 0.05 Ω)

#### Note

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, environmental test procedures

Packaging of components is done in paper or blister tapes according to IEC 60286-3.

<sup>(1)</sup> Figures are given for a single element



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