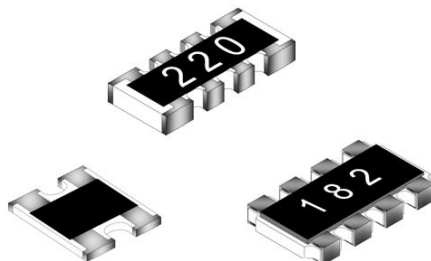




CRA-Series Thick Film Array Chip Resistor Product Specifications

Document No.	S-10-12-02-10
Released Date	2024/12/19
Page No.	1/7

Thick Film Array Chip Resistor — CRA Series



Application

- Entertainment: Stereo, TV tuners, Tape recorder
- Appliance: Air conditioner, Refrigerator
- Computer & relative products: Main board, PDA
- Communication equipment: Cell phone, Fax machine
- Power equipment: Power supply, Illumination equipment
- Measuring instrument: Electric meter, Navigation equipment

Features

- Small size and light weight
- Reduction of assembly costs and matching with placement machines
- Reliability, high quality and fast delivery
- RoHS 2 compliant with exemption 7C-1 and Halogen free products

Parts Number Explanation

Example:

CRA	024R	J	10R0	Q	10	Z
Product Type	Size (Inch)	Resistor Tolerance	Resistor Value	Package	Quantity	Optional
CRA	022R(0402*2) 024R(0402*4) 034R(0603*4) 064R(1206*4)	F : $\pm 1\%$ J : $\pm 5\%$	1R=1R00 10R=10R0 100R=100R 1K=1K00 1M=1M00	P : Paper Taping (034R) Q : Paper Taping (022R 、 024R) E : Embossed Taping	04 : 4000PCS 05 : 5000PCS 10 : 10000PCS	



CRA-Series Thick Film Array Chip Resistor Product Specifications

Document No. S-10-12-02-10

Released Date 2024/12/19

Page No. 2/7

Standard Electrical Specifications

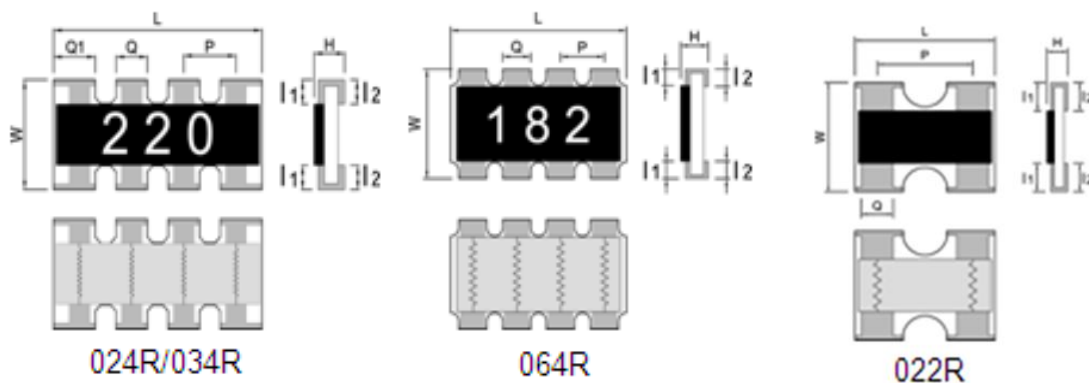
Type \ Item	Rating Power at 70°C	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/°C)	Resistance Range	Operating Temperature
					F(±1%) J(±5%)	
CRA022R	0.063 W	25V	50V	±400	$1\Omega \leq R < 10\Omega$	-55°C ~ +155°C
				±200	$10\Omega \leq R \leq 1M\Omega$	
CRA024R	0.063 W	25V	50V	±400	$1\Omega \leq R < 10\Omega$	
				±200	$10\Omega \leq R \leq 1M\Omega$	
CRA034R	0.1 W	50V	100V	±400	$1\Omega \leq R < 10\Omega$	
				±200	$10\Omega \leq R \leq 1M\Omega$	
CRA064R	0.25 W	200V	400V	±400	$1\Omega \leq R < 10\Omega$	
				±200	$10\Omega \leq R \leq 1M\Omega$	

● For non-standard parts, please contact our sales dept.

● Operating Temperature Range : -55°C ~ +155°C.

Type	022R	024R	034R	064R
Jumper Rated Current	1A			2A

Type Dimension



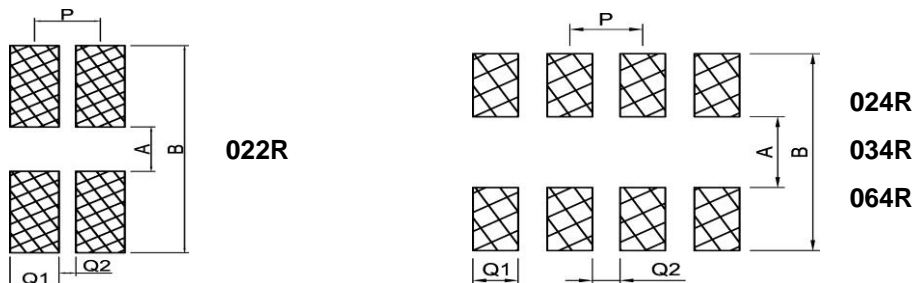
Dimension

Unit: mm

Type	L	W	H	I ₁	I ₂	P	Q	Q1
CRA022R	1.00±0.10	1.00±0.10	0.33±0.05	0.15±0.10	0.25±0.10	0.67±0.10	0.34±0.10	---
CRA024R	2.00±0.10	1.00±0.10	0.40±0.10	0.20±0.10	0.20±0.10	0.50±0.10	0.30±0.10	0.43±0.10
CRA034R	3.20±0.20	1.60±0.15	0.50±0.10	0.30±0.20	0.30±0.20	0.80±0.20	0.50±0.15	0.61±0.10
CRA064R	5.10±0.20	3.10±0.20	0.55±0.15	0.55±0.15	0.55±0.15	1.30±0.20	0.90±0.10	---

General Information

Recommend Land Pattern Design (For Reflow Soldering)



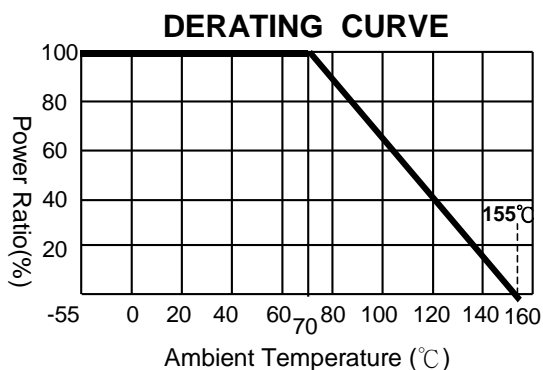
Dimension

Unit: mm

Item	Type	022R	024R	034R	064R
A		0.50	0.50	1.00	2.00
B		2.00	2.00	2.60	4.75
P		0.67	0.50	0.80	1.30
Q1		0.33	0.28	0.40	0.90
Q2		0.34	0.22	0.40	0.375

Performance Characteristics

Power Derating Curve



Power rating or current rating is in the case based on continuous full-load at ambient temperature of 70°C. For operation at ambient temperature in excess of 70°C, the load should be derated in accordance with figure of derating Curve.

Voltage Rating or Current Rating

Resistance Range: $\geq 1\Omega$

Rated Voltage: The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as following:

$$E(RCWV) = \sqrt{P \times R}$$

E=Rated voltage(V)

P=Power rating(W)

R=Nominal resistance(Ω)



CRA-Series Thick Film Array Chip Resistor Product Specifications

Document No. S-10-12-02-10

Released Date 2024/12/19

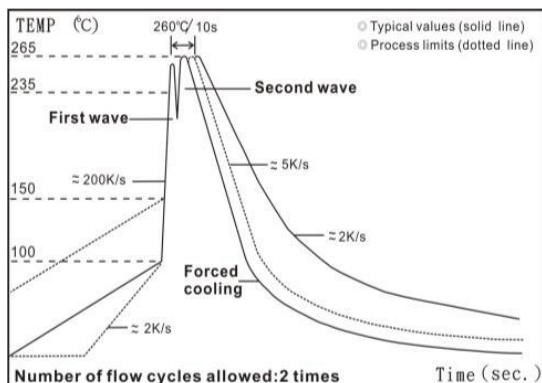
Page No. 4/7

● Reliability Test and Requirement

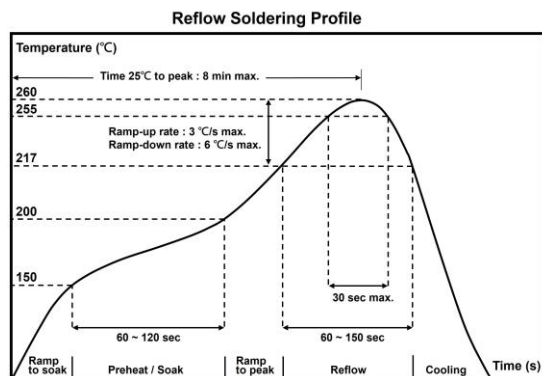
Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS C 5201-1 clause 4.8	-55℃ or +155℃, 25℃ is the reference temperature	Refer to Ratings
Short Time Overload	JIS C 5201-1 clause 4.13	2.5 times RCWV or Max. Overload voltage whichever is less for 5 seconds.	1% : $\pm(1.0\%+0.05\Omega)$ 5% : $\pm(2.0\%+0.10\Omega)$
Leaching	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1	260±5℃ for 30 seconds.	Individual leaching area $\leq 5\%$ Total leaching area $\leq 10\%$
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5℃ for 10 seconds.	1% : $\pm(0.5\%+0.05\Omega)$ 5% : $\pm(1.0\%+0.05\Omega)$
Rapid Change of Temperature	JIS-C-5201-1 4.19 IEC-60115-1 4.19	-55℃ to +155℃, 5 cycles	1% : $\pm(0.5\%+0.05\Omega)$ 5% : $\pm(1.0\%+0.10\Omega)$
Resistance to Solvent	JIS-C-5201-1 4.29	The tested resistor be immersed into isopropyl alcohol of 20~25℃ for 60 secs. Then the resistor is left in the room for 48 hrs.	1% : $\pm(0.5\%+0.05\Omega)$ 5% : $\pm(0.5\%+0.05\Omega)$
Damp Heat with Load	JIS-C-5201-1 4.24 IEC-60115-1 4.24	40±2℃, 90~95% R.H. RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" .	1% : $\pm(1.0\%+0.05\Omega)$ 5% : $\pm(2.0\%+0.05\Omega)$
Load Life (Endurance)	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	70±2℃, RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" .	1% : $\pm(1.0\%+0.05\Omega)$ 5% : $\pm(3.0\%+0.10\Omega)$
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	Apply 100VDC for 1 minute.	$\geq 10G\Omega$
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	Bending once for 5 seconds D : 022R、024R、034R=5mm 064R=3mm	1% and below : $\pm(1.0\%+0.05\Omega)$ 2%、5% : $\pm(1.0\%+0.05\Omega)$

Recommended Customer Soldering Parameters

Wave solder Temperature condition



Solder reflow Temperature condition



Rework temperature (hot air equipment) : 350°C, 3~5seconds

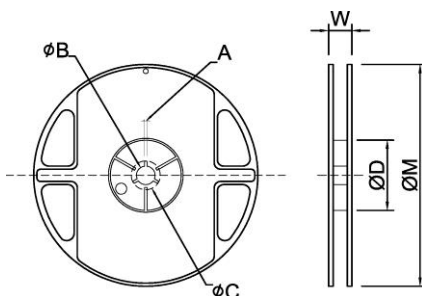
Recommended reflow methods

IR, vapor phase oven, hot air oven

If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

Appendix For SMD Chip Resistor

Packaging Information

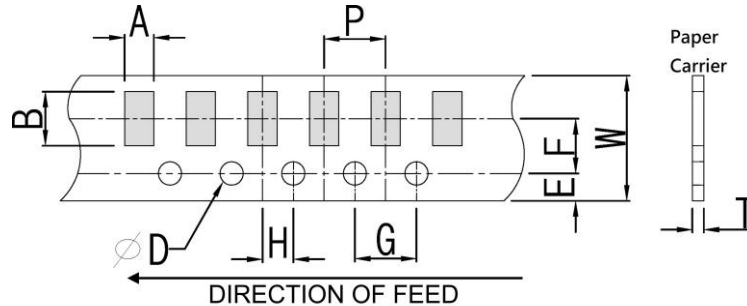


Dimension

Unit: mm

Type	Size		A	ΦB	ΦC	ΦD	W	ΦM
022R/024R	7"	10K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
034R	7"	5K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
064R	7"	4K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	16.0±2.0	178±2.0

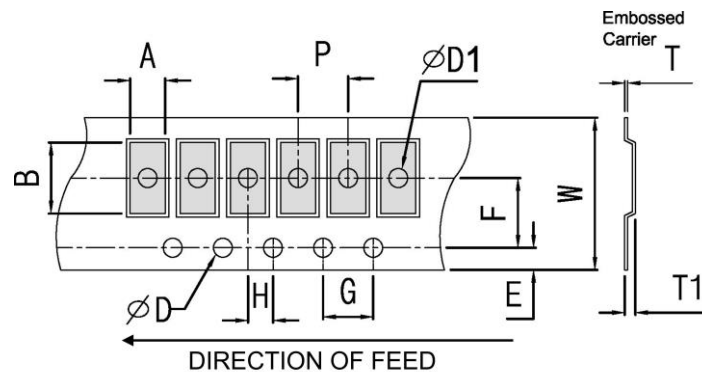
Tapping Specification



Dimension

Unit: mm

Packaging	Type	A	B	W	E	F	G	H	T	ϕD	P
Paper Type	022R	1.25 \pm 0.1	1.25 \pm 0.1	8.0 \pm 0.2	1.75 \pm 0.1	3.5 \pm 0.05	4.0 \pm 0.1	2.0 \pm 0.05	0.45 \pm 0.1	1.50 +0.10 -0	2.0 \pm 0.1
	024R	1.20 \pm 0.1	2.20 \pm 0.1	8.0 \pm 0.2	1.75 \pm 0.1	3.5 \pm 0.05	4.0 \pm 0.1	2.0 \pm 0.05	0.60 \pm 0.1		
	034R	1.90 \pm 0.2	3.50 \pm 0.2	8.0 \pm 0.2	1.75 \pm 0.1	3.5 \pm 0.05	4.0 \pm 0.1	2.0 \pm 0.05	0.75 \pm 0.1		4.0 \pm 0.1



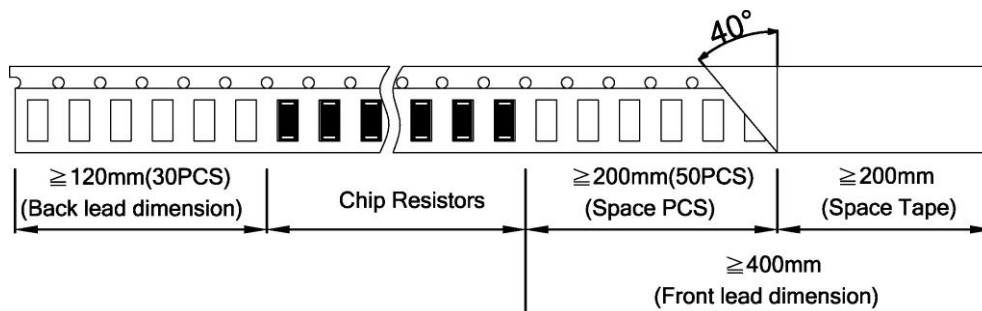
Dimension

Unit: mm

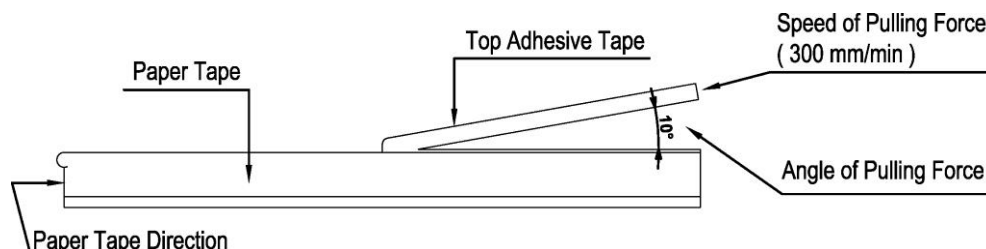
Packaging	Type	A	B	W	E	F	G	H	T	ϕD	$\phi D1$	T1	P
Embossed Type	064R	3.55 \pm 0.2	5.55 \pm 0.2	12 \pm 0.3	1.75 \pm 0.1	5.5 \pm 0.05	4.0 \pm 0.1	2.0 \pm 0.05	0.25 \pm 0.1	1.50 +0.10 -0	1.50 +0.25 -0	0.85 \pm 0.15	4.0 \pm 0.1

Packing Material Data/Storage Data

Front & Back Lead Dimension

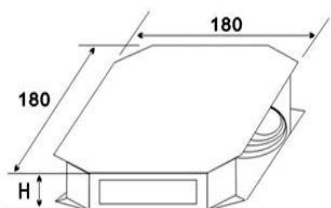


■ Top Adhesive Peel Off Strength : 10~70g

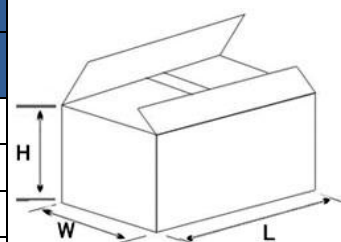


■ Package

Inner Box Size	
Reel	Size H(mm)
1	13
2	24
3	36
5	60
10	113



External Box Size			
Contain (Kpcs)	Length (mm)	Width (mm)	Height (mm)
25K	180	180	60
50K	180	180	110
150K	430	200	200
300K	400	400	200



■ Storage Data :

Storage time at the environment temp: $25\pm 5^{\circ}\text{C}$ & humidity: $60\pm 20\%$ is valid for two years.

■ Equipment Applicable:

Our company's products are produced under low temperature processing applicable to IR reflow surface mounting devices. It is comparatively not applicable to wave soldering which will possibly cause the risk ablating the element protection layer and the front conductor and cause the drift of the resistance value and ablation of the markings.

■ Product Testing Method:

Our products are tested with our company's tapping & testing equipment by using four-feet probe to touch at the back of both electrodes. Supposed different testing points or methods are requested, please advise beforehand and customized-made production is available.