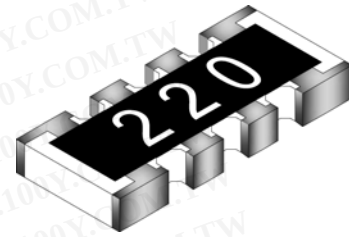
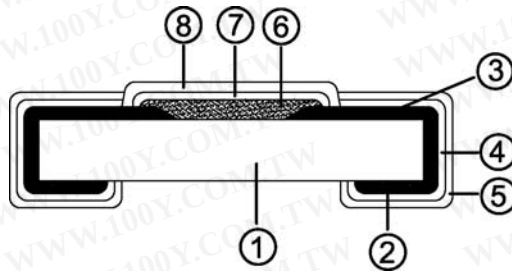


Thick Film Array Chip Resistor—CRA Series



Construction



1	Alumina Substrate	5	External Electrode (Sn)
2	Bottom Electrode (Ag)	6	Resistor Layer (RuO ₂)
3	Top Electrode (Ag/Pd)	7	Primary Overcoat (Glass)
4	Barrier Layer (Ni)	8	Secondary Overcoat (Epoxy)

Application

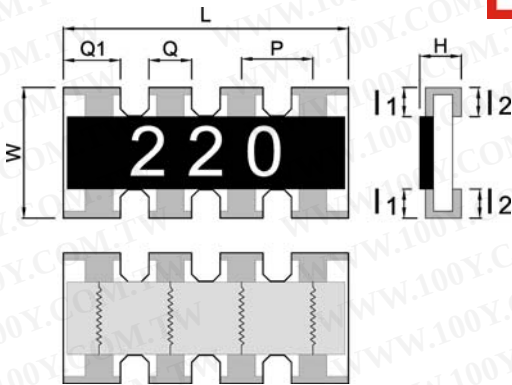
- Entertainment: Stereo, TV tuners, Tape recorder
- Appliance: Air conditioner, Refrigerator
- Computer & relative products: Main board, PDA
- Communication equipment: Cell phone, Fax machine
- Power equipment: Power supply, Illumination equipment
- Measuring instrument: Electric meter, Navigation equipment

Features

- Small size and light weight
- Reduction of assembly costs and matching with placement machines
- Reliability, high quality and fast delivery

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Type Dimension



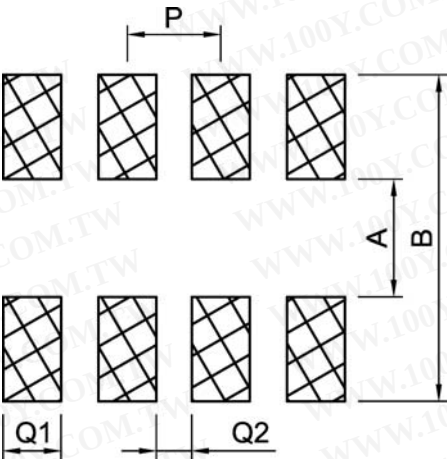
Dimension								Unit: mm
TYPE	L	W	H	I ₁	I ₂	P	Q	Q1
CRA034R	3.20±0.20	1.60±0.15	0.50±0.10	0.30±0.20	0.30±0.20	0.80±0.20	0.50±0.15	0.61±0.10

Standard Electrical Specifications

Item Type	Rating Power at 70℃	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/℃)	Resistance Range	Operating Temperature
					F(±1%) J(±5%)	
CRR034R	0.1 W	50V	100V	0~+400	1Ω~9.9Ω	-55℃ ~ +155℃
				±200	10Ω~1MΩ	

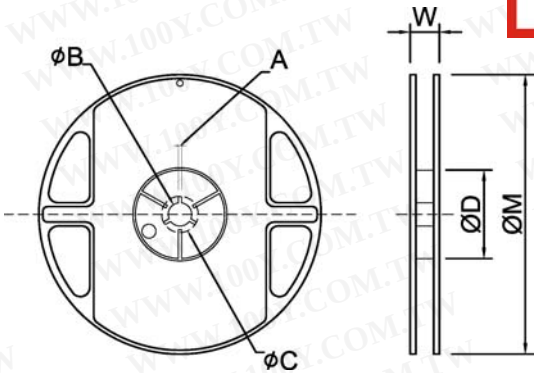
Type	034R
Jumper Rated Current	1A

Recommend Land Pattern Design (For Reflow Soldering)



Dimension		Unit: mm
Type	CRA034R	
Item		
A	1.00	
B	2.60	
P	0.80	
Q1	0.40	
Q2	0.40	

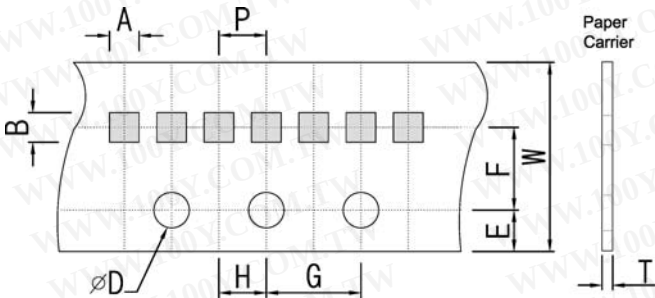
Packaging



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Dimension		Unit: mm						
TYPE	SIZE	A	ϕB	ϕC	ϕD	W	ϕM	
CRA034R	7"	5K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0

Tapping Specification

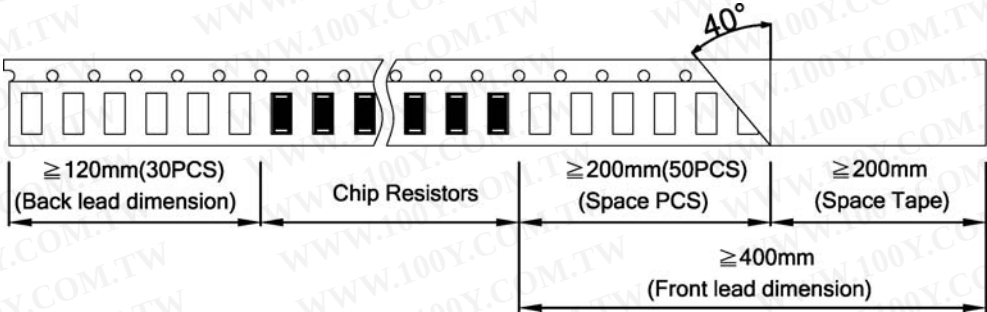


Dimension		Unit: mm									
Packaging	Type	A	B	W	E	F	G	H	T	ϕD	P
Paper Type	CRA034R	1.90±0.20	3.45±0.20	8.0±0.20	1.75±0.10	3.5±0.05	4.0±0.10	2.0±0.05	0.75±0.10	1.50±0.10	4.0±0.1

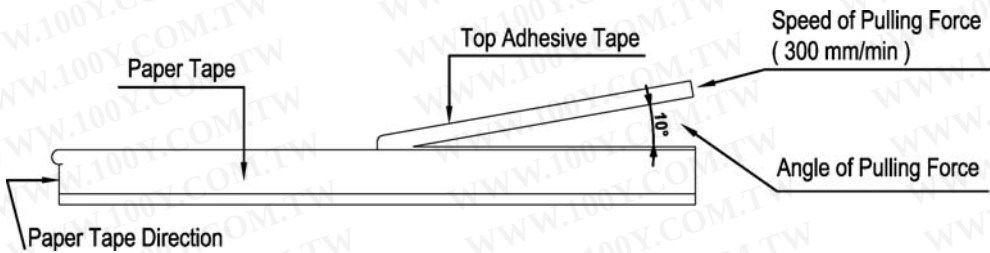
■ Packing Material Data/Storage Data

■ Front & Back Lead Dimension

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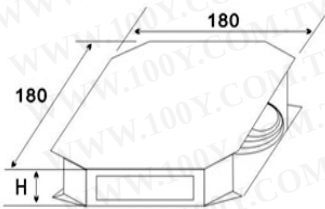


■ Top Adhesive Peel Off Strength : 10~70g

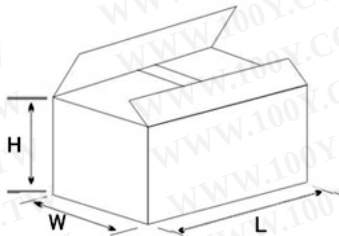


■ Package

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



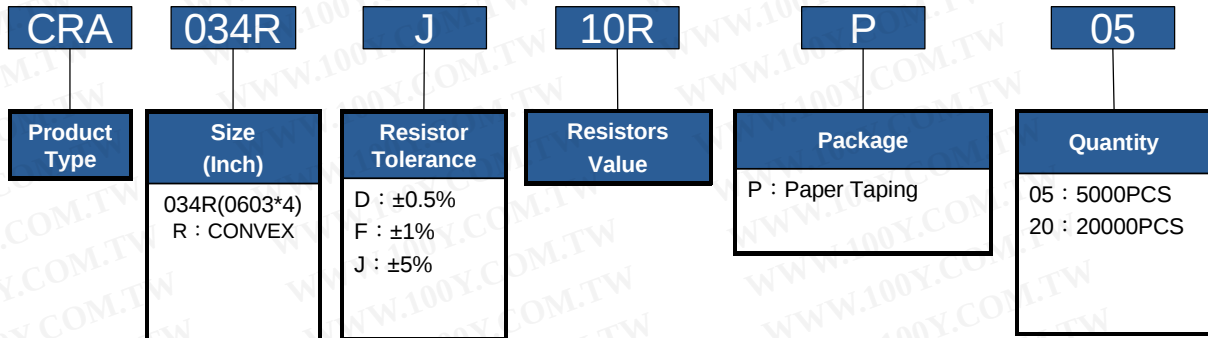
■ Storage Data :

Storage time at the environment temp: 25±5℃ & humidity: 50±20% is valid for one year from the date of delivery.

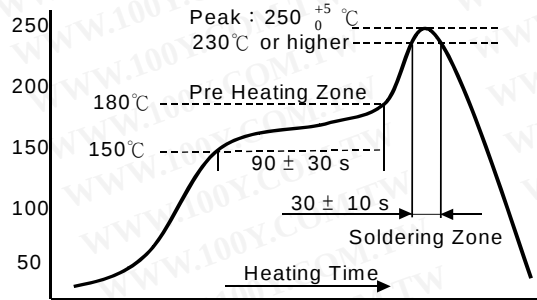
Parts Number Explanation

Example:

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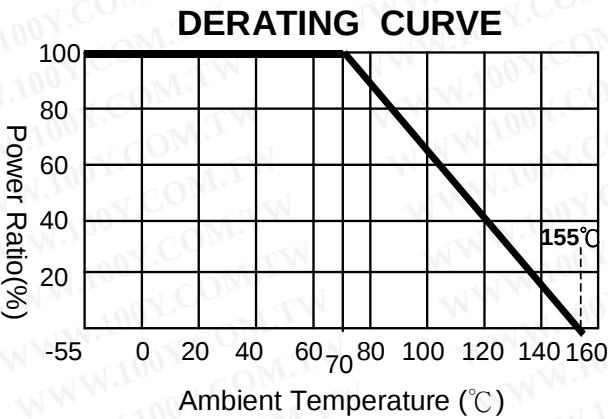


Test Procedures and Requirements

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS C 5201-1 clause 4.8	-55°C ~ +155°C, 20°C is the reference temperature	Refer to Ratings
Short Time Overload	JIS C 5201-1 clause 4.13	General : 2.5 times RCWV or Max. Overload voltage for 5 seconds. High Power : 2.5 times RCWV or Max. Overload voltage for 2 seconds.	±1 : ±(1.0%+0.05Ω) ±5 : ±(2.0%+0.1Ω)
IR Reflow	Sony SS-00254	 Peak : 250⁺⁵₀ °C 230°C or higher Pre Heating Zone 180°C 150°C 90 ± 30 s 30 ± 10 s Soldering Zone Heating Time	±1 : ±(1.0%+0.05Ω) ±5 : ±(1.0%+0.05Ω)
Leaching	Sony SS-00254-9	260±5°C for 30 seconds.	>95% Coverage
Soldering Heat	JIS C 5201-1 clause 4.18	260±5°C for 10 seconds.	±1 : ±(0.5%+0.05Ω) ±5 : ±(1.0%+0.05Ω)
Temperature Cycling	JIS C 5201-1 clause 4.19	-55°C to +155°C, 5 cycles	0.1%、0.5%、1% : ±(0.5%+0.05Ω) 2%、5% : ±(1.0%+0.10Ω)
Electric Iron	Sony SS-00254-5	Preheating temperature : 350±5°C Electric iron preheating time : 3+1/-0 sec	±1 : ±(1.0%+0.05Ω) ±5 : ±(1.0%+0.05Ω)
Resistance to Solvent	JIS C 5201-1 clause 4.29	The tested resistor be immersed into isopropyl alcohol of 20~25°C for 60 secs. Then the resistor is left in the room for 48 hrs.	±1 : ±(0.5%+0.05Ω) ±5 : ±(0.5%+0.05Ω)
Load Life in Humidity	JIS C 5201-1 clause 4.24	40±2°C, 90~95% R.H. or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	0.1%、0.5%、1% : ±(0.5%+0.05Ω) 2%、5% : ±(2.0%+0.05Ω)
Load Life (Endurance)	JIS C 5201-1 clause 4.25	70±2°C, or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	0.1%、0.5%、1% : ±(1.0%+0.05Ω) 2%、5% : ±(3.0%+0.10Ω)
Insulation Resistance	JIS C 5201-1 clause 4.6	Max. Overload voltage for 1 minute.	≥10GΩ

Performance Characteristics

Power Derating Curve



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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

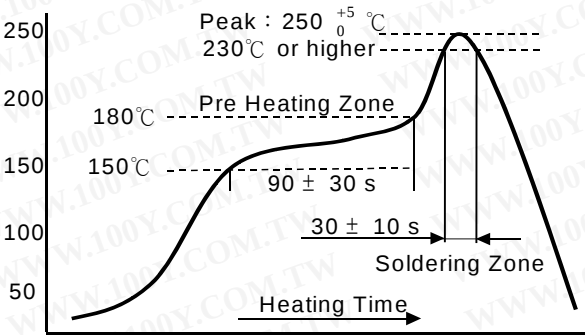
Resistance Range: $\geq 1\Omega$
Rated Voltage: The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as following:

$E = \sqrt{P \times R}$
E=Rated voltage(V)
P=Power rating(W)
R=Nominal resistance(Ω)

Operation and Storage Temperature

	MIN	MAX
Operation temperature	-55℃	70℃
Storage temperature	20℃	30℃
Storage humidity	30%	70%

Soldering Profile



■ Equipments 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 equipments 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.

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Standard Resistance Values in a Decade

Marking code:

1%: marking code, please refer to E96 and E24 data form as below

Ex: 120K, The marking code is 1203 in E24

121K, The marking code is 1213 in E96

5%: marking code, please refer to E24 data form as below

Ex: 120K, The marking code is 124 in E24

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E192	E96	E48	E192	E96	E48	E192	E96	E48	E192	E96	E48	E192	E96	E48
100	100	100	169	169	169	287	287	287	487	487	487	825	825	825
101			172			291			493			835		
102	102		174	174		294	294		499	499		845	845	
104			176			298			505			856		
105	105	105	178	178	178	301	301	301	511	511	511	866	866	866
106			180			305			517			876		
107	107		182	182		309	309		523	523		887	887	
109			184			312			530			898		
110	110	110	187	187	187	316	316	316	536	536	536	909	909	909
111			189			320			542			920		
113	113		191	191		324	324		549	549		931	931	
114			193			328			556			942		
115	115	115	196	196	196	332	332	332	562	562	562	953	953	953
117			198			336			569			965		
118	118		200	200		340	340		576	576		976	976	
120			203			344			583			988		
121	121	121	205	205	205	348	348	348	590	590	590			
123			208			352			597					
E24	E12	E6	E3	124	124	210	210		357	357	604	604		
10	10	10	10	126		213			361		612			
11				127	127	215	215	215	365	365	619	619	619	
12	12			129		218			370		626			
13				130	130	221	221		374	374	634	634		
15	15	15		132		223			379		642			
16				133	133	226	226	226	383	383	649	649	649	
18	18			135		229			388		657			
20				137	137	232	232		392	392	665	665		
22	22	22	22	138		234			397		673			
24				140	140	237	237	237	402	402	681	681	681	
27	27			142		240			407		690			
30				143	143	243	243		412	412	698	698		
33	33	33		145		246			417		706			
36				147	147	249	249	249	422	422	715	715	715	
39	39			149		252			427		723			
43				150	150	255	255		432	432	732	732		
47	47	47	47	152		258			437		741			
51				154	154	261	261	261	442	442	750	750	750	
56	56			156		264			448		759			
62				158	158	267	267		453	453	768	768		
68	68	68		160		271			459		777			
75				162	162	274	274	274	464	464	787	787	787	
82	82			164		277			470		796			
91				165	165	280	280		475	475	806	806		
				167		284			481		816			

According to IEC publication 63