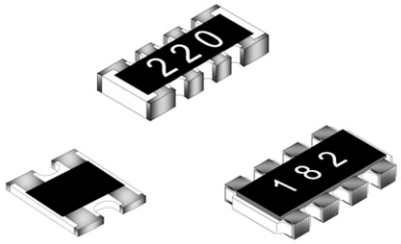
■ Anti-Sulfur Array Chip Resistor — STA Series



■ Application

— Industrial Control, System Sensor, Netcom Station

— Navigation Equipment

— Measuring Instrument

— Telecommunication Equipment, Railway Semaphore System

■ Features

— Small Size and Light Weight

— Reliability, High Quality

— Excellent Resistance to Vulcanization (ASTM-B-809-95 & EIA-977 Specification)

■ Parts Number Explanation

■ Example:

STA	024R	J	10R0	Q	10	Z
Product Type	Size (Inch)	Resistor Tolerance	Resistor Value	Package	Quantity	Optional
STA	022R(0402*2) 024R(0402*4) 034R(0603*4) 064R(1206*4)	F：±1% J：±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	Z：60℃ A：105℃ (With AEC-Q200 compatible)

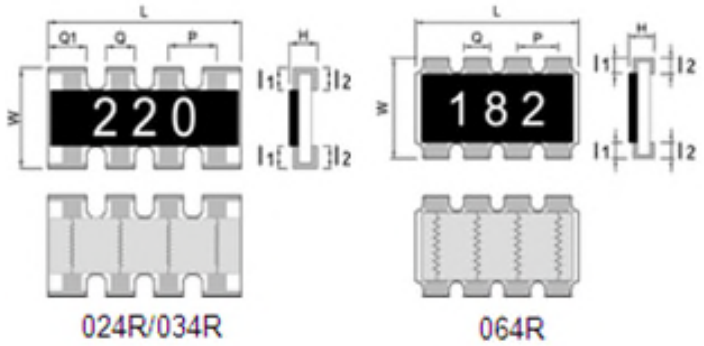
■ Standard Electrical Specifications

Item / Type	Rating Power at 70℃	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/℃)	Resistance Range F(±1%)、J±(5%)
STA022R	0.063 W	25V	50V	±400	1Ω≦R<10Ω
				±200	10Ω≦R≦1MΩ
STA024R	0.063 W	25V	50V	±400	1Ω≦R<10Ω
				±200	10Ω≦R≦1MΩ
STA034R	0.1 W	50V	100V	±400	1Ω≦R<10Ω
				±200	10Ω≦R≦1MΩ
STA064R	0.25 W	200V	400V	±400	1Ω≦R<10Ω
				±200	10Ω≦R≦1MΩ

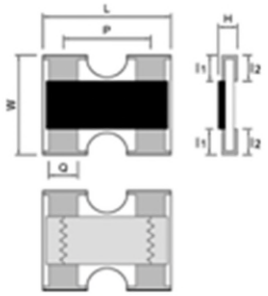
- For non-standard parts, please contact our sales dept.
- Operating Temperature Range ：−55℃～＋155℃.

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

■ Type Dimension



024R/034R　　064R



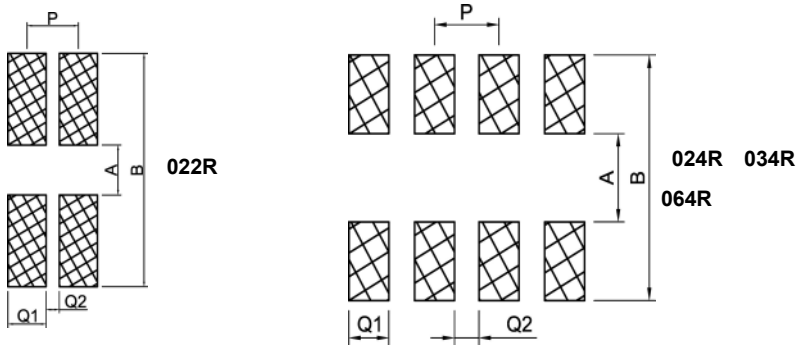
022R

■ **Dimension** **Unit: mm**

TYPE	L	W	H	I_1	I_2	P	Q	Q1
STA022R	1.00±0.10	1.00±0.10	0.33±0.05	0.30±0.15	0.25±0.10	0.67±0.10	0.34±0.10	---
STA024R	2.00±0.10	1.00±0.10	0.40±0.10	0.30±0.15	0.20±0.10	0.50±0.10	0.30±0.10	0.43±0.10
STA034R	3.20±0.20	1.60±0.15	0.50±0.10	0.40±0.20	0.30±0.20	0.80±0.20	0.50±0.15	0.61±0.10
STA064R	5.10±0.20	3.10±0.20	0.55±0.15	0.55±0.20	0.55±0.15	1.30±0.20	0.90±0.10	---

● General Information

■ Recommend Land Pattern Design (For Reflow Soldering)



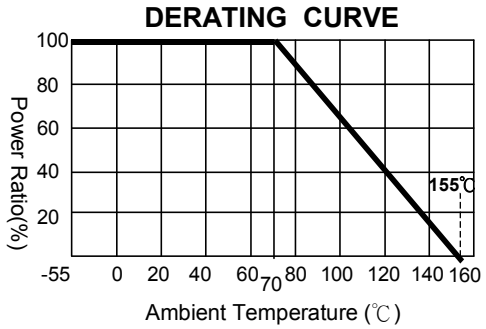
■ Dimension

Unit: mm

Type / Item	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℃.
For operation at ambient temperature in excess of 70℃, the load should be derated in accordance with figure of derating Curve.

■ Voltage Rating or Current Rating

Resistance Range: ≧1Ω

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:

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

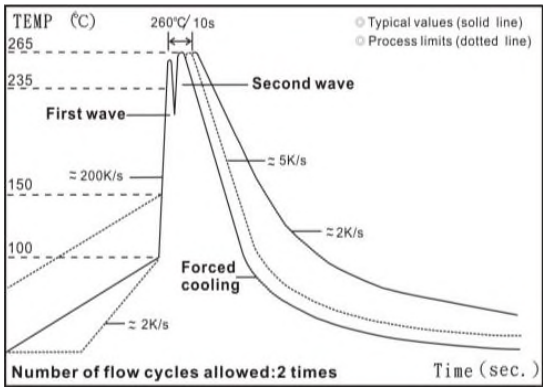
E=Rated voltage(V)
P=Power rating(W)
R=Nominal resistance(Ω)

● Reliability Test and Requirement

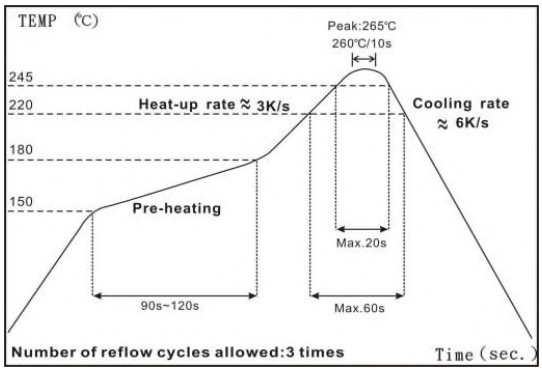
Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS C 5201-1 clause 4.8	-55℃ or +155℃, 25℃ is the reference temperature	Refer to Ratings
Short Time Overload	JIS C 5201-1 clause 4.13	General：2.5 times RCWV or Max. Overload voltage whichever is less for 5 seconds. High Power：2.5 times RCWV or Max. Overload voltage whichever is less for 2 seconds.	1%：±(1.0%+0.05Ω) 5%：±(2.0%+0.10Ω)
Leaching	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1	260±5℃ for 30 seconds.	Individual leaching area ≦5% Total leaching area ≦ 10%
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5℃ for 10 seconds.	1% ：±(0.5%+0.05Ω) 5%：±(1.0%+0.05Ω)
Rapid Change of Temperature	JIS-C-5201-1 4.19 IEC-60115-1 4.19	-55℃ to +155℃,5 cycles	1%： ±(0.5%+0.05Ω) 5%：±(1.0%+0.10Ω)
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%：±(0.5%+0.05Ω) 5%：±(0.5%+0.05Ω)
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%：±(1.0%+0.05Ω) 5%：±(2.0%+0.05Ω)
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%： ±(1.0%+0.05Ω) 5% ：±(3.0%+0.10Ω)
Insulation Resistance	JJIS-C-5201-1 4.6 IEC-60115-1 4.6	Apply 100VDC for 1 minute.	≧10GΩ
Sulfur Test	ASTM-B-809-95 EIA-977	60±2℃, no rating power for 1000 hrs	ΔR：±(1.0%+0.05 Ω)
		105±2℃, no rating power for 1000 hrs	ΔR：±(2.0%+0.05 Ω)
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：±(1.0%+0.05Ω) 2%、5%：±(1.0%+0.05Ω)

■ Recommended Customer Soldering Parameters

■ Wave solder Temperature condition



■ Solder reflow Temperature condition



■ Rework temperature（hot air equipment）：350℃, 3~5seconds

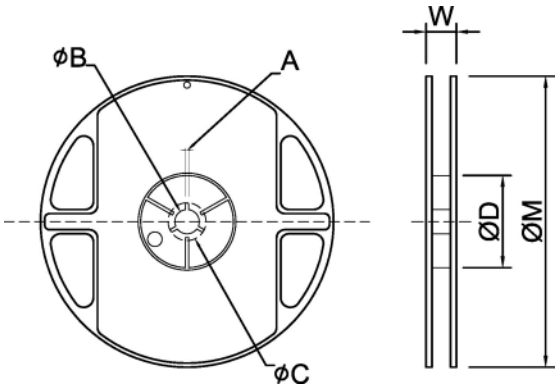
■ Recommended reflow methods

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

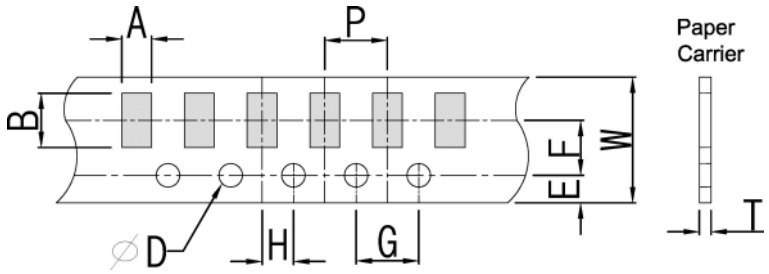


■ Dimension

Unit: mm

TYPE	SIZE		A	ϕ B	ϕ C	ϕ D	W	ϕ M
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

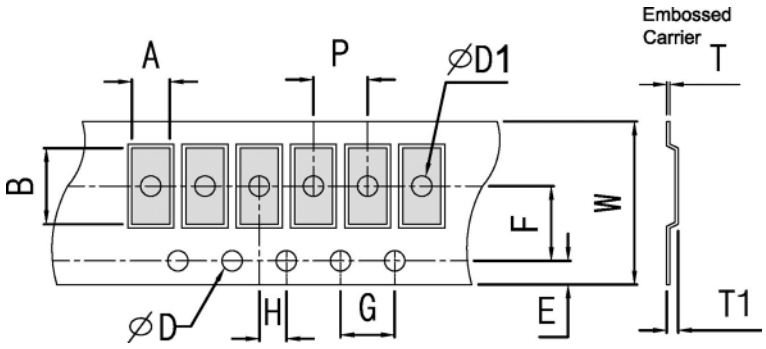
■ Tapping Specification



■ Dimension

Unit: mm

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



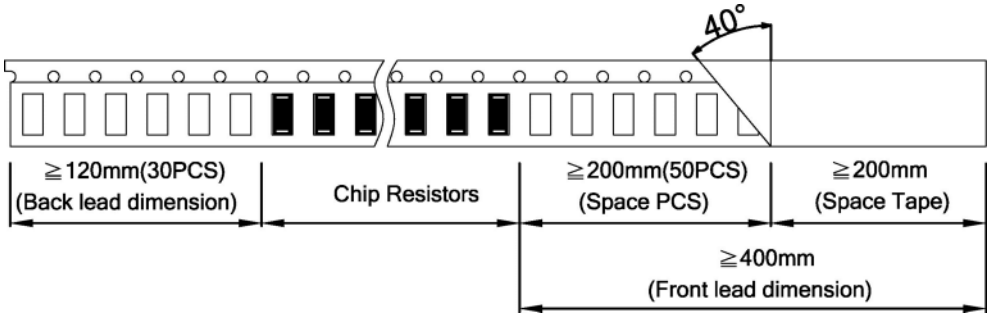
■ Dimension

Unit: mm

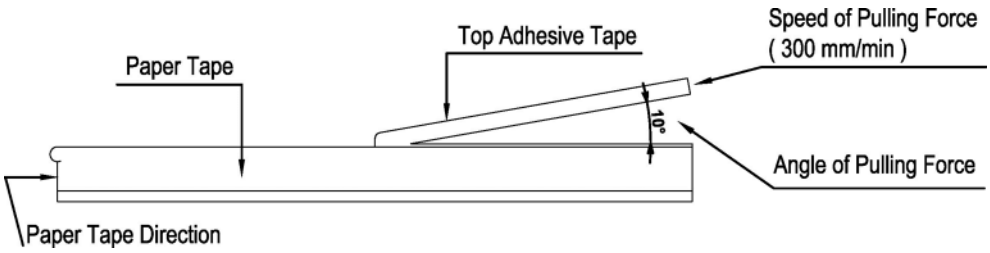
Packaging	Type	A	B	W	E	F	G	H	T	ØD	ΨD1	T1	P
Embossed Type	064R	3.55±0.2	5.55±0.2	12±0.3	1.75±0.1	5.5±0.05	4.0±0.1	2.0±0.05	0.25±0.1	1.50 +0.10 -0	1.50 +0.25 -0	0.85±0.15	4.0±0.1

■ Packing Material Data/Storage Data

■ Front & Back Lead Dimension

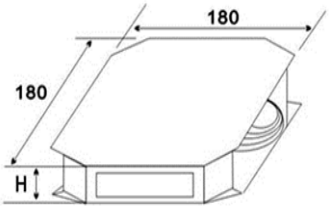


■ Top Adhesive Peel Off Strength：10~70g

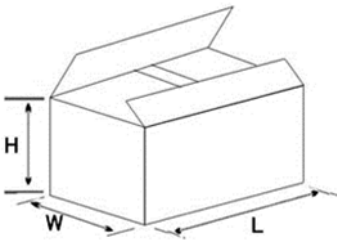


■ Package

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±5℃& humidity: 60±20% is valid for one year from the date of delivery.

■ 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.

■ Standard Resistance Values in a Decade

Marking code:

- 5%: marking code, please refer to E24 data
  Ex: 120K, The marking code is 124 in E24

●Note: Array resistors 1%&5% code is the same.

●Note: jumper zero ohm resistor marking code is one 「0」 (except type below 022R).

E96	E48	E96	E48	E96	E48	E96	E48
100	100	169	169	287	287	487	487
102		174		294		499	
105	105	178	178	301	301	511	511
107		182		309		523	
110	110	187	187	316	316	536	536
113		191		324		549	
115	115	196	196	332	332	562	562
118		200		340		576	
121	121	205	205	348	348	590	590
124		210		357		604	
127	127	215	215	365	365	619	619
130		221		374		634	
133	133	226	226	383	383	649	649
137		232		392		665	
140	140	237	237	402	402	681	681
143		243		412		698	
147	147	249	249	422	422	715	715
150		255		432		732	
154	154	261	261	442	442	750	750
158		267		453		768	
162	162	274	274	464	464	787	787
165		280		475		806	

E96	E48		
825	825		
845			
866	866		
887			
909	909		
931			
953	953		
976			

E24	E12	E6	E3
10	10	10	10
11			
12	12		
13			
15	15	15	
16			
18	18		
20			
22	22	22	22
24			
27	27		
30			
33	33	33	
36			
39	39		
43			
47	47	47	47
51			
56	56		
62			
68	68	68	
75			
82	82		
91			

According to IEC publication 63