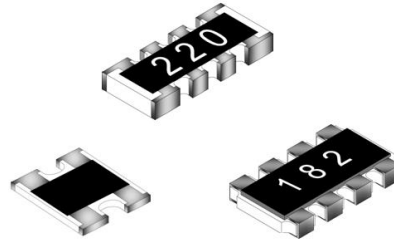




STA- Series Anti-Sulfur Array Chip Resistor Product Specifications

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■ 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°C A : 105°C (With AEC-Q200 compatible)

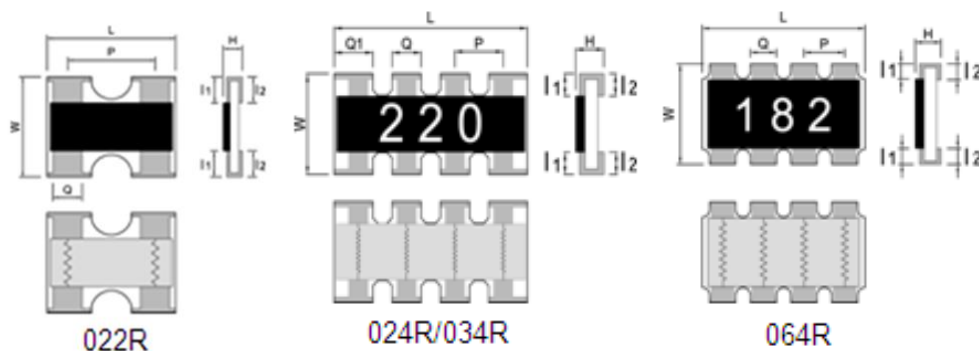
Standard Electrical Specifications

Type	Item	Rating Power at 70°C	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/°C)	Resistance Range
						F(±1%)、J(±5%)
STA022R		0.063 W	25V	50V	±400	$1\Omega \leq R < 10\Omega$
					±200	$10\Omega \leq R \leq 1M\Omega$
STA024R		0.063 W	25V	50V	±400	$1\Omega \leq R < 10\Omega$
					±200	$10\Omega \leq R \leq 1M\Omega$
STA034R		0.1 W	50V	100V	±400	$1\Omega \leq R < 10\Omega$
					±200	$10\Omega \leq R \leq 1M\Omega$
STA064R		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



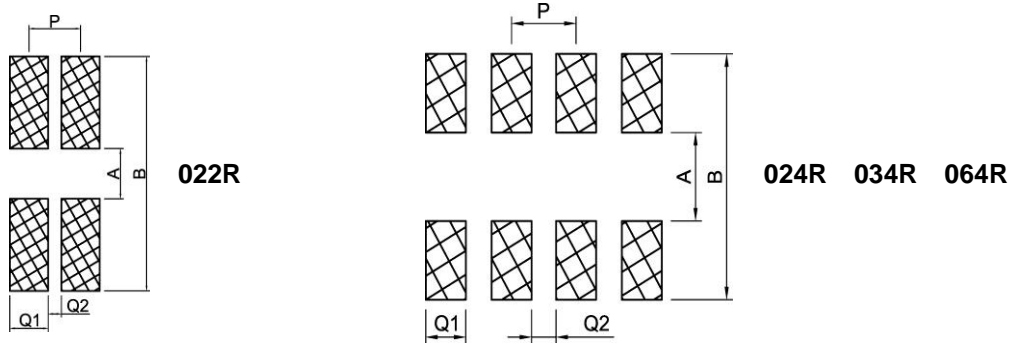
Dimension

Unit: mm

Type	L	W	H	I ₁	I ₂	P	Q	Q1
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)**



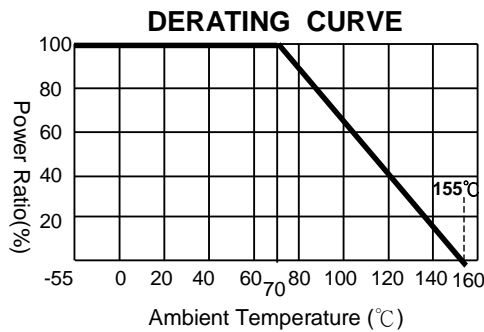
■ **Dimension**

Unit: mm

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)



STA- Series Anti-Sulfur Array Chip Resistor Product Specifications

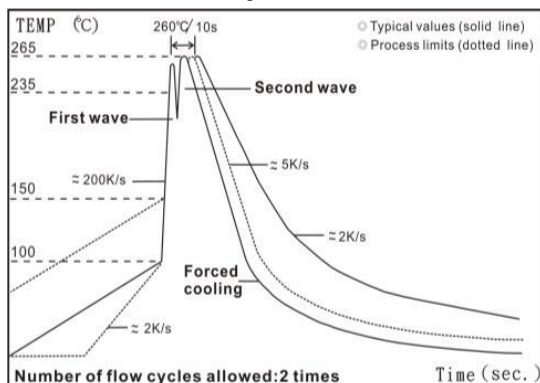
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Reliability Test and Requirement

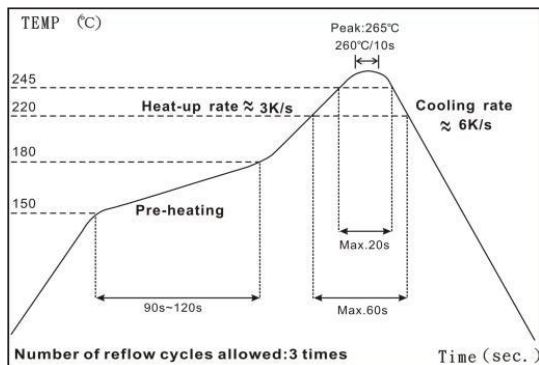
Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS C 5201-1 clause 4.8	-55°C or +155°C, 25°C is the reference temperature	Refer to Ratings
Short Time Overload	JIS C 5201-1 clause 4.13	General : 2.5 times RCWV or Max. Overload voltage whichever is less for 5 seconds. High Power : 2.5 times RCWV or Max. Overload voltage whichever is less for 2 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 \pm 5°C 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 \pm 5°C 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°C to +155°C,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°C 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 \pm 2°C, 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 \pm 2°C, 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 Ω
Sulfur Test	ASTM-B-809-95 EIA-977	60 \pm 2°C, no rating power for 1000 hrs	ΔR : $\pm(1.0\%+0.05 \Omega)$
		105 \pm 2°C, no rating power for 1000 hrs	ΔR : $\pm(2.0\%+0.05 \Omega)$
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**

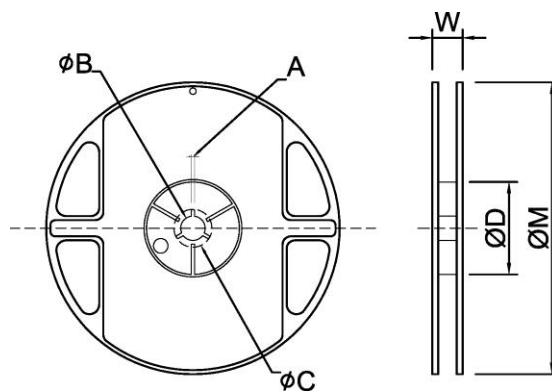
■ **Recommended reflow methods**

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**

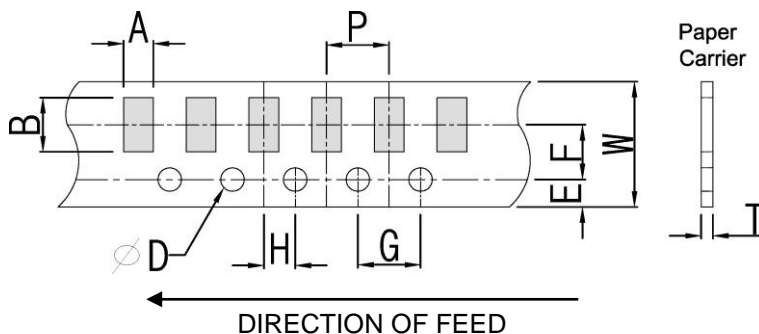


■ **Dimension**

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

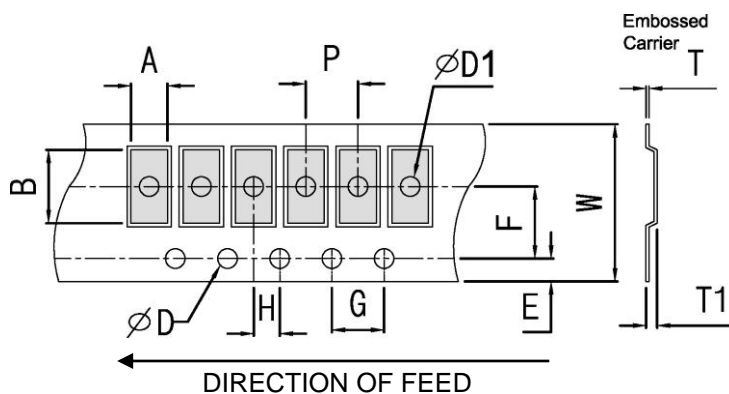
■ Tapping Specification



■ Dimension

Unit: mm

Packaging	Type	A	B	W	E	F	G	H	T	φD	P
Paper Type	022R	1.25±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		4.0±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		



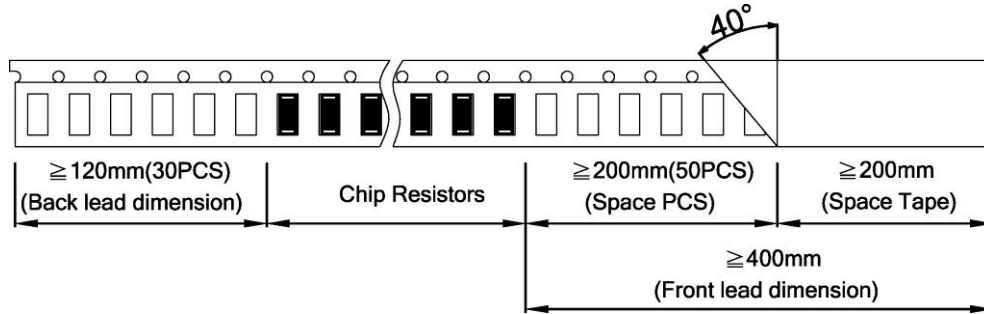
■ Dimension

Unit: mm

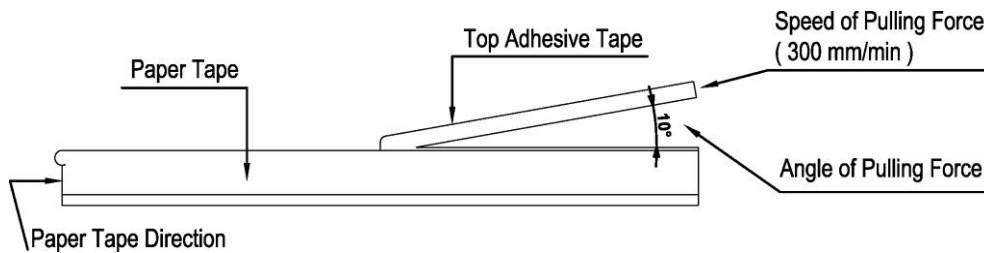
Packaging	Type	A	B	W	E	F	G	H	T	φD	φD1	T1	P
Embossed Type	064R	3.55±0.2	5.55±0.2	12±0.3	1.75±0.1	5.5±0.05	4.0±0.1	2.0±0.05	0.25±0.1	1.50 +0.10 -0	1.50 +0.25 -0	0.85±0.15	4.0±0.1

■ **Packing Material Data/Storage Data**

■ **Front & Back Lead Dimension**

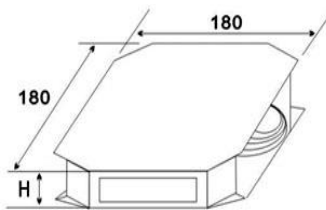


■ **Top Adhesive Peel Off Strength : 10~70g**

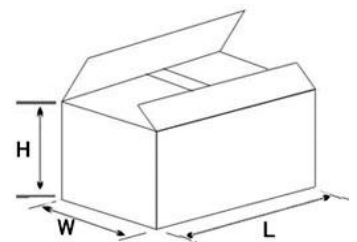


■ **Package**

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 :**

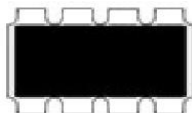
Storage time at the environment temp: $25 \pm 5^\circ\text{C}$ & humidity: $60 \pm 20\%$ is valid for one year from the date of delivery.

■ **Product Testing Method:**

Our products are tested with our company's tapping & testing equipments by using four-foot 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 Decode

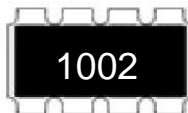
Marking code:



022R: no marking



024R~064R: 3 digits code (5%)



024R~064R: 4 digits code (1%)

- NO marking on 022R type.
- 5%: marking code, please refer to E24 data
Ex: 120K, The marking code is 124 in E24
- **Note: jumper zero ohm resistor marking code is one 「0」 (except type below 022R).**

Standard E96 Values

R-Value	100	102	105	107	110	113	115	118	121	124	127	130	133	137	140	143	147	150	154	158	162	165	169	174
R-Value	178	182	187	191	196	200	205	210	215	221	226	232	237	243	249	255	261	267	274	280	287	294	301	309
R-Value	316	324	332	340	348	357	365	374	383	392	402	412	422	432	442	453	464	475	487	499	511	523	536	549
R-Value	562	576	590	604	619	634	649	665	681	698	715	732	750	768	787	806	825	845	866	887	909	931	953	976

3 digits code for 024R ~ 064R type of E24 values (±5%)

First 2 digits are the significant figures, the 3rd digit is the multiplier. "R"= decimal point.

Examples:

Resistance	4.7Ω	33Ω	470Ω	5.6KΩ	62KΩ	680KΩ
3 digits code	4R7	330	471	562	623	684

4 digits code for 024R ~ 064R type(±1%)

First 3 digits are the significant figures, the 4th digit is the multiplier. "R"= decimal point.

Examples:

Resistance	5.6Ω	10Ω	22.6Ω	100Ω	1.1KΩ	10KΩ	332KΩ	1MΩ
4 digits code	5R60	10R0	22R6	1000	1101	1002	3323	1004