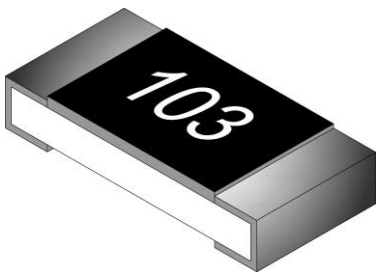




STH Series Anti Sulfur High Power Chip Resistor Product Specifications

Document No.	S-10-12-44-09
Released Date	2024/12/19
Page No.	1/9

■ Anti-Sulfur High Power Chip Resistor — STH 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:

STH	0603	J	10R0	P	05	Z
Product Type	Size (Inch)	Resistor Tolerance	Resistor Value	Package	Quantity	Optional
STH	0402 0603 0805 1206 1210 1812 2010 2512	D : ±0.5% F : ±1% J : ±5%	0R=0R00 1R=1R00 10R=10R0 100R=100R 1K=1K00 1M=1M00	P : Paper Taping (0603~1210) Q : Paper Taping (0402) E : Embossed Taping	04 : 4000PCS 05 : 5000PCS 10 : 10000PCS 20 : 20000PCS 40 : 40000PCS 50 : 50000PCS	Z : 60℃ A : 105℃ (With AEC-Q200 compatible)



STH Series Anti Sulfur High Power Chip
Resistor Product Specifications

Document No.	S-10-12-44-09
Released Date	2024/12/19
Page No.	2/9

■ High Power Electrical Specification

Type \ Item	Rated Power at 70℃	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/℃)	Resistance Range		
	High				D(±0.5%)	F(±1%)	J(±5%)
STH0402	0.1 W	50V	100V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
STH0603	0.125 W	75V	150V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
STH0805	0.25 W	150V	300V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
STH1206	0.5 W	200V	400V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
STH1210	0.66 W	200V	400V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
STH1812	1 W	200V	400V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
STH2010	1 W	200V	400V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
STH2512	2 W	200V	400V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	

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

Type	0402	0603	0805	1206	1210	1812	2010	2512
Jumper Resistance Value	20mΩ Max							
Jumper Rated Current	2A	2.5A	3.5A	5A	6A	7A	7A	10A
Max.Over Load Current <1 second and 1 times	6A	9A	13A	16A	19A	22A	22A	30A



STH Series Anti Sulfur High Power Chip Resistor Product Specifications

Document No. S-10-12-44-09

Released Date 2024/12/19

Page No. 3/9

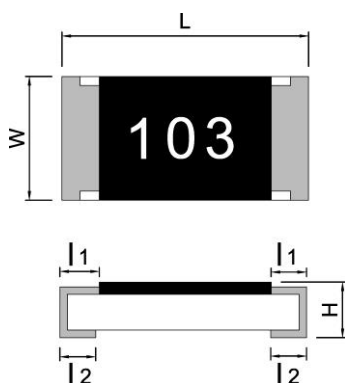
• High Ohm Chip Resistor

■ Standard Electrical Specifications

Item Type	Rated Power at 70℃	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/℃)	Resistance Range	
					F(±1%)	J(±5%)
STH0402	0.1 W	50V	100V	±200	10.1 MΩ	10.1 MΩ
STH0603	0.125 W	75V	150V			
STH0805	0.25 W	150V	300V			
STH1206	0.5 W	200V	400V		~	~
STH1210	0.66 W				30 MΩ	30 MΩ
STH2010	1 W					
STH2512	2 W					

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

■ Type Dimension



STH0402 / STH0603 / STH0805 / STH1206 /
STH1210 / STH1812 / STH2010 / STH2512

Type	L	W	H	l ₁	l ₂
STH0402	1.00 ± 0.05	0.50 ± 0.05	0.30 ± 0.05	0.15 ± 0.10	0.20 ± 0.10
STH0603	1.60 ± 0.10	0.80 ± 0.10	0.40 ± 0.10	0.30 ± 0.20	0.30 ± 0.10
STH0805	2.00 ± 0.10	1.25 ± 0.10	0.50 ± 0.15	0.30 ± 0.15	0.40 ± 0.15
STH1206	3.05 ± 0.10	1.60 ± 0.10	0.55 ± 0.15	0.40 ± 0.20	0.50 ± 0.20
STH1210	3.05 ± 0.10	2.50 ± 0.15	0.55 ± 0.15	0.50 ± 0.20	0.50 ± 0.20
STH1812	4.50 ± 0.10	3.10 ± 0.15	0.55 ± 0.05	0.55 ± 0.20	0.70 ± 0.20
STH2010	5.00 ± 0.20	2.50 ± 0.15	0.55 ± 0.10	0.60 ± 0.20	0.60 ± 0.20
STH2512	6.30 ± 0.20	3.20 ± 0.15	0.65 ± 0.15	0.60 ± 0.30	0.60 ± 0.30



STH Series Anti Sulfur High Power Chip Resistor Product Specifications

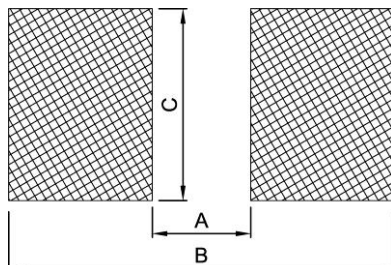
Document No. S-10-12-44-09

Released Date 2024/12/19

Page No. 4/9

General Information

Recommend Land Pattern Design



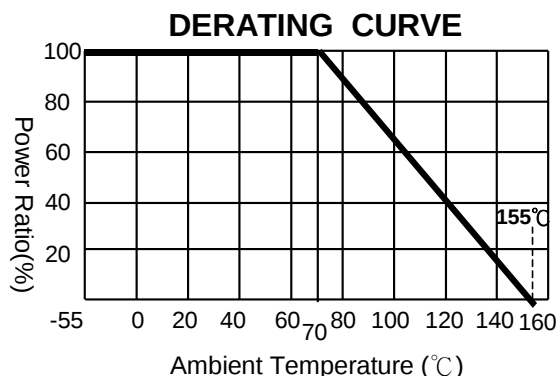
Dimension

Unit: mm

Type	0402	0603	0805	1206	1210	1812	2010	2512
Item								
A	0.60	0.80	1.30	2.20	2.00	3.11	3.80	4.90
B	1.60	2.40	2.90	4.20	4.40	5.91	6.60	8.10
C	0.70	1.00	1.40	1.70	2.70	3.00	2.70	3.40

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=Rated voltage(V)

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

R=Nominal resistance(Ω)



STH Series Anti Sulfur High Power Chip Resistor Product Specifications

Document No. S-10-12-44-09

Released Date 2024/12/19

Page No. 5/9

● Reliability Test and Requirement

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS-C-5201-1 4.8 IEC-60115-1 4.8	At 25°C / -55°C and 25°C / +155°C, 25°C is the reference temperature	As Spec
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	High Power : 2.5 times RCWV or Max. Overload voltage whichever is less for 2 seconds. Jumper: Over Load Current for 5 seconds 0402/0603/0805=2.5A 1206/1210/1812/2010/2512=5A	1% and below : $\pm(1.0\%+0.05\Omega)$ 2%、5% : $\pm(2.0\%+0.10\Omega)$ Jumper : Max 0.05 Ω after test
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% and below : $\pm(0.5\%+0.05\Omega)$ 2%、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% and below : $\pm(0.5\%+0.05\Omega)$ 2%、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% and below : $\pm(0.5\%+0.05\Omega)$ 2%、5% : $\pm(0.5\%+0.05\Omega)$ Jumper : Max 0.05 Ω after test
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% and below : $\pm(1.0\%+0.05\Omega)$ 2%、5% : $\pm(2.0\%+0.05\Omega)$ Value <1 Ω : $\pm(2.0\%+0.05\Omega)$ Jumper : Max 0.1 Ω after test
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% and below : $\pm(1.0\%+0.05\Omega)$ 2%、5% : $\pm(3.0\%+0.10\Omega)$ Value <1 Ω : $\pm(3.0\%+0.10\Omega)$ Jumper : Max 0.1 Ω after test
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	Apply 100VDC for 1 minute.	$\geq$ 10G Ω
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	Bending once for 5 seconds D : 0402、0603、0805=5mm 1206、1210、1812=3mm 2010、2512=2mm	1% and below : $\pm(1.0\%+0.05\Omega)$ 2%、5% : $\pm(1.0\%+0.05\Omega)$
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 : $\pm(2.0\%+0.05 \Omega)$

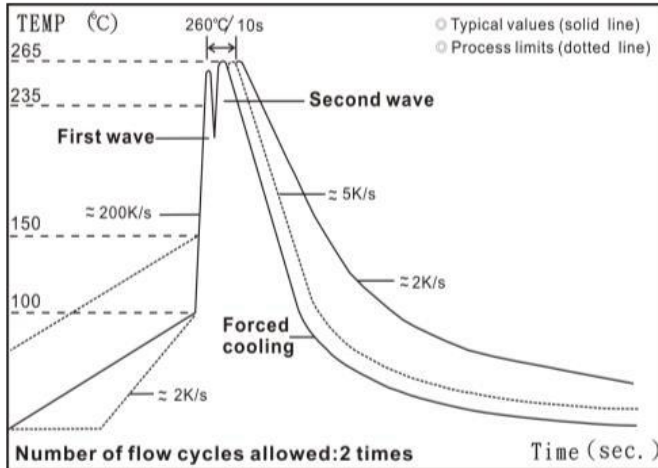


STH Series Anti Sulfur High Power Chip Resistor Product Specifications

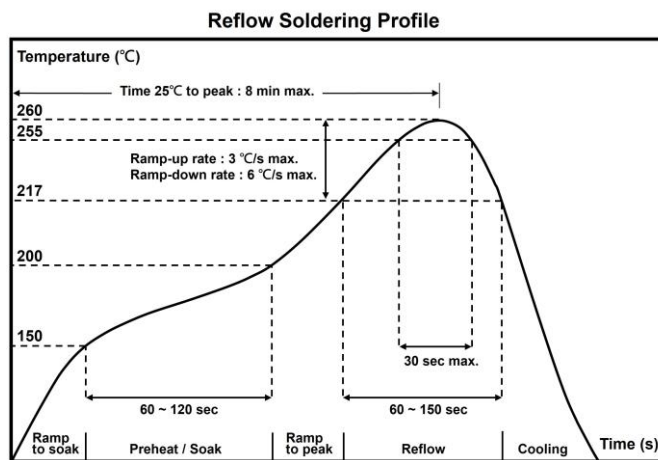
Document No.	S-10-12-44-09
Released Date	2024/12/19
Page No.	6/9

■ 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



STH Series Anti Sulfur High Power Chip Resistor Product Specifications

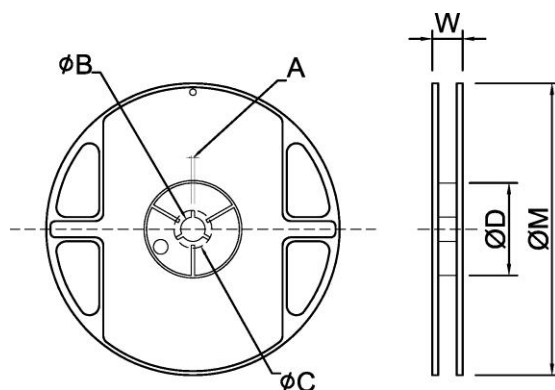
Document No. S-10-12-44-09

Released Date 2024/12/19

Page No. 7/9

■ Appendix For SMD Chip Resistor

● Packaging Information

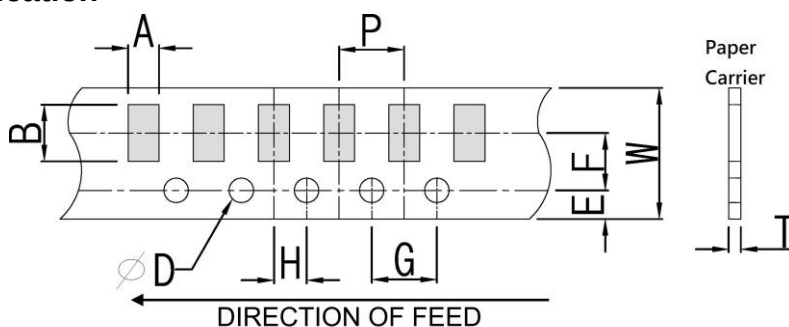


■ Dimension

Unit: mm

Type	Size		A	ΦB	ΦC	ΦD	W	ΦM
0402	7"	10K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
0402	13"	40K/50K Reel	2.0±0.5	13.5±1.0	21±1.0	100±1.0	11.5±2.0	330±2.0
0603/0805/1206/1210	7"	5K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
0603/0805/1206	10"	10K/Reel	2.0±0.5	13.5±1.0	21±1.0	100±1.0	11.5±2.0	254±2.0
	13"	20K/Reel	2.0±0.5	13.5±1.0	21±1.0	100±1.0	11.5±2.0	330±2.0
1812 2010/2512	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

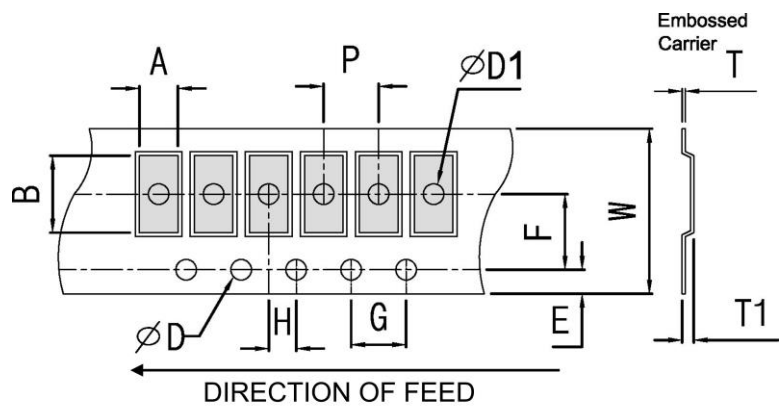
Unit: mm

Packaging	Type	A	B	W	E	F	G	H	T	ϕD	P
Paper Type	0402	0.70 ± 0.1	1.20 ± 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
	0603	1.05 ± 0.2	1.80 ± 0.2	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
	0805	1.55 ± 0.2	2.30 ± 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		
	1206	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		
	1210	2.85 ± 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		



STH Series Anti Sulfur High Power Chip Resistor Product Specifications

Document No.	S-10-12-44-09
Released Date	2024/12/19
Page No.	8/9

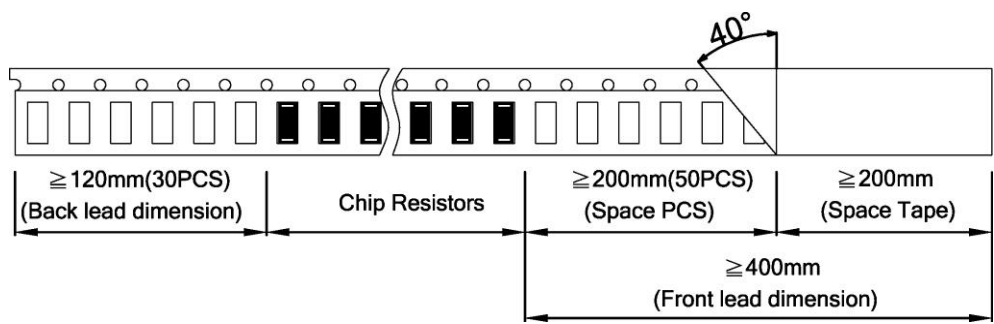


Dimension Unit: mm

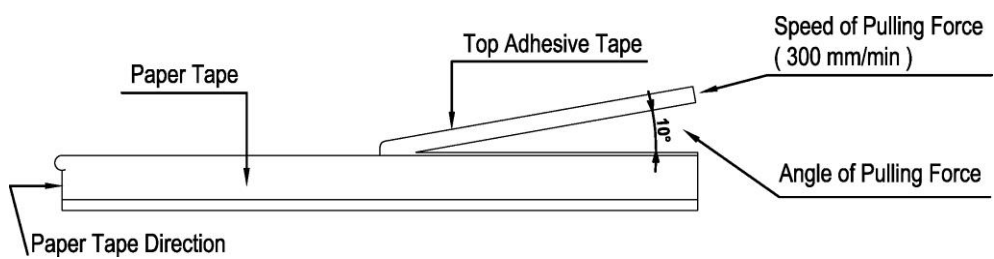
Packaging	Type	A	B	W	E	F	G	H	T	ψD	$\psi D1$	T1	P
Embossed Type	2010	2.80±0.20	5.60±0.20	12±0.10	1.75±0.10	5.5±0.05	4.0±0.10	2.0±0.05	0.23±0.10	1.50	1.50±0.10	0.85±0.15	4.0±0.1
	2512	3.40±0.20	6.70±0.20	12±0.10	1.75±0.10	5.5±0.05	4.0±0.10	2.0±0.05	0.23±0.10		1.50±0.10	0.95±0.15	
	1812	3.30±0.20	4.60±0.20	12±0.10	1.75±0.10	5.5±0.05	4.0±0.10	2.0±0.05	0.23±0.10		1.50±0.10	0.85±0.15	

Packing Material Data/Storage Data

Front & Back Lead Dimension



Top Adhesive Peel Off Strength : 10~70g



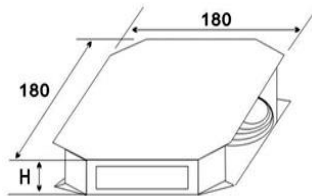


STH Series Anti Sulfur High Power Chip Resistor Product Specifications

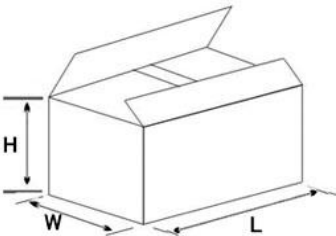
Document No.	S-10-12-44-09
Released Date	2024/12/19
Page No.	9/9

■ 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 two years.