

## Features

- TRSTNF – 0402 package
- Tantalum nitride thin film resistor
- High stability in humid environments
- Tight tolerance down to  $\pm 0.1\%$
- Extremely low TCR down to  $\pm 25\text{PPM}/^\circ\text{C}$
- Resistance values from 100 ohm to 27k ohm
- Test proven immunity to humidity, moisture, and sulfur
- Manufactured in accordance with AEC-Q200 compliance

## RS PRO Thin Film Chip Resistors TRSTNF02 Series

RS Stock No.:

243-0691, 243-0692, 243-0693, 243-0694, 243-0695, 243-0696, 243-0697, 243-0698, 243-0700, 243-0701, 243-0702, 243-0703, 243-0704, 243-0705, 243-0707, 243-0708, 243-0709, 243-0710, 243-0711, 243-0713, 243-0714, 243-0715, 243-0716, 243-0717



RS PRO is the own brand of RS. The RS PRO Seal of Approval is your assurance of professional quality, a guarantee that every part is rigorously tested, inspected, and audited against demanding standards. Making RS PRO the Smart Choice for our customers.

## Product Description

### Applications Include:

- Automotive
- Medical Equipment
- Testing/Measurement Equipment
- Automatic Equipment Controller
- Converters
- Communication Devices

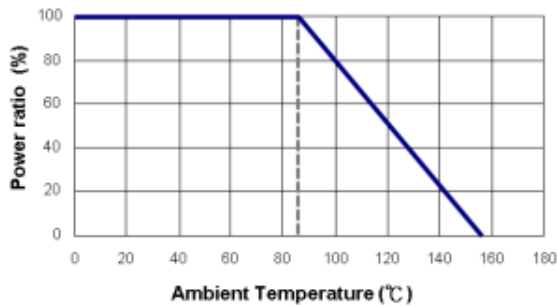
## Dimensions

Type	RS Article	Size (Inch)	L	W	T	D1	D2	Weight (g) (1000pcs)
TRSTNF02	2430692	0402	1.00±0.05	0.50±0.05	0.30±0.05	0.20±0.10	0.20±0.10	0.54
	2430694							
	2430696							
	2430698							
	2430701							
	2430703							
	2430705							
	2430708							
	2430710							
	2430713							
	2430715							
	2430717							
	2430691							
	2430693							
	2430695							
	2430697							
	2430700							
	2430702							
	2430704							
2430707								
2430709								
2430711								
2430714								
2430716								

## Part Number Make Up

Part Number	Package Dimensions	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Power Rating	Resistance Ohmic value
TRSTNF	02: 0402	B: ±0.1%	T: Taping Reel	C: ±25	Y: 1/16W	0010: 1Ω 1001: 1KΩ 1004: 1MΩ

## Derating Curve



## Electrical Specifications

Type	Power Rating at 85°C	Operating Temp. Range	Max Operating Voltage	Max. Overload Voltage	Resistance Range	TCR (PPM/°c)
					±0.1%	
TRSTNF02 (0402)	1/16W	-55°C ~ +155°C	50V	100V	100Ω-27kΩ	±25

Operating voltage= $\sqrt{P \cdot R}$  or Max. operating voltage listed above, whichever is lower.

Overload voltage= $2.5 \cdot \sqrt{P \cdot R}$  or Max. overload voltage listed above, whichever is lower.

## Environmental Characteristics

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec	JIS-C-5201-1 4.8 IEC-60115-1 4.8 -55°C~+125°C, 25°C is the reference temperature
Short Time Overload	±0.1%	JIS-C-5201-1 4.13 RCWV*2.5 or Max overload voltage whichever is lower for 5 seconds
Insulation Resistance	>1000 MΩ	JIS-C-5201-1 4.6 IEC-60115-1 4.6 Apply 100VDC for 1 minute
Operational Life	±0.1%	MIL-STD-202 Method 108 Condition D Steady State T <sub>A</sub> = 125°C at derated power. Measurement at 24±4 hours after test conclusion.
Biased Humidity	±0.1%	MIL-STD-202 Method 103 1000hrs 85°C/85%RH 10% of operating power.
High Temperature Exposure	±0.15%	MIL-STD-202 Method 108 at +155°C for 1000 hrs
Temperature Cycling	±0.1% for 125°C	JESD22 Method JA-104 -55°C to +125°C, 1000 cycles -55°C to +155°C, 1000 cycles
	±0.2% for 155°C	

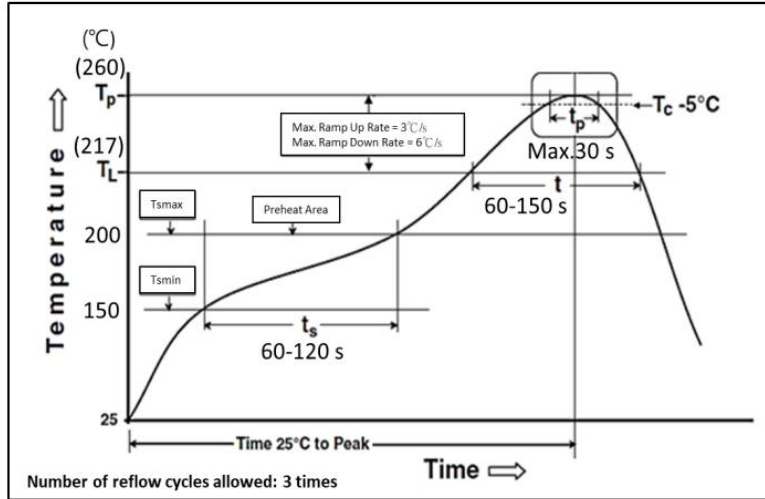
Bonding Strength (Board Flex)	±0.1%	JIS-C-5201-1 4.33 Bending 2mm for 60 seconds
Solderability	95% min. coverage	JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 3 seconds
Resistance to Soldering Heat	±0.1%	JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds
Terminal Strength	No broken	AEC-Q200-006 Force of 1kg for 60 seconds
Mechanical Shock	±0.1%	MIL-STD-202 Method 213 Wave Form: Tolerance for half sine shock pulse. Peak value is 100g's. Normal duration (D) is 6.
Vibration	±0.1%	MIL-STD-202 Method 204 5g's for 20min., 12 cycles each of 3 orientations, 10-2000Hz
ESD	±0.1%	AEC-Q200-002 Human body model TRSTNF02 0.2KV
Resistance to solvents	Marking Unsmeared	MIL-STD-202 Method 215 Add Aqueous wash chemical – OKEM Clean or equivalent. Do not use banned solvents.
Sulfur Test	±1%	EIA-977 (Conditions B) 105±2°C no power rating for 750 hrs.
Flammability	No ignition of the tissue paper or scorching of the pinewood board	UL-94 V-0 or V-1 are acceptable. Electrical test not required
Endurance	±0.1%	IEC60115-1 4.25 1000 +48/-0 hours, loaded with RCWV or Vmax in chamber controller 85 ±2°C, 1.5 hours on and 0.5 hours off
Moisture Resistance	±0.1%	MIL-STD-202 Method 106 65±2°C, 80-100% RH, 10 cycles, 24 hours/cycle

RCWV(Rated continuous working voltage)=  $\sqrt{P \cdot R}$  or Max. Operating voltage whichever is lower

- Storage Temperature: 15~28°C; Humidity < 80%RH
- Shelf Life: 2 years from production date.

## Soldering Condition

(IPC/JEDEC J-STD-020)

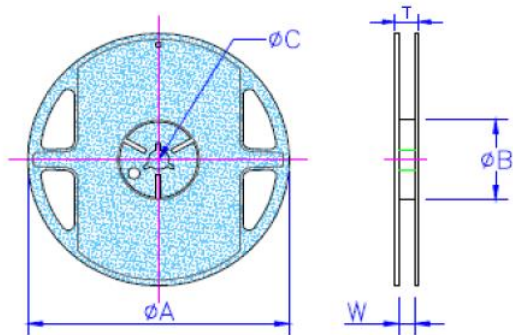


## Packaging

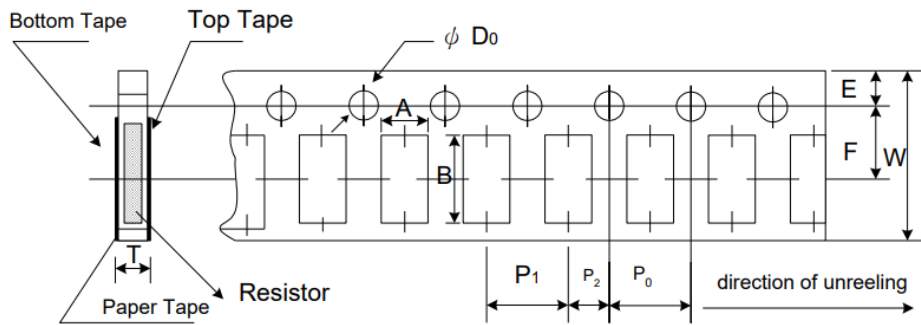
Packaging Quantity & Reel Specification

Unit:mm

Type	$\varnothing A$	$\varnothing B$	$\varnothing C$	W	T	Paper Tape (EA)	Emboss Plastic Tape (EA)
TRSTNF02	178.0±1.0	60.0±1.0	13.5±0.7	9.5±1.0	11.5±1.0	10,000	-

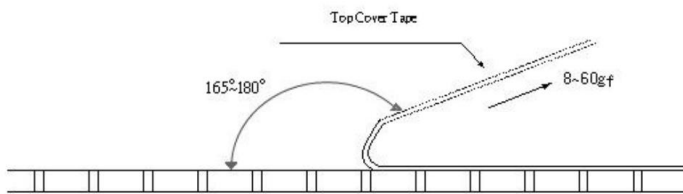


Paper Tape Specifications



Type	A	B	W	E	F	P0	P1	P2	$\Phi D_0$	T
TRSTNF02	0.70±0.05	1.16±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	2.00±0.5	2.00±0.05	1.55±0.05	0.40±0.03

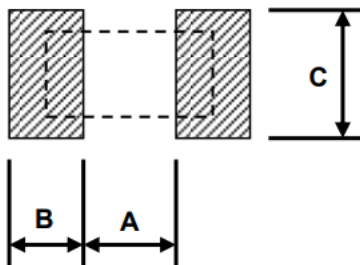
- Peel force top cover tape
- The peel speed shall be about 300mm/min±5%
- The peel force of top cover tape shall be between 8gf to 60gf



## Recommended Land Pattern

Type	A	B	C
TRSTNF02	0.50	0.50	0.60±0.2

Unit:mm



## Similar Products

MPN	RS Article Number	
	SSM	MPQ
TRSTNF02BTCY1000	2430692	2430691
TRSTNF02BTCY1001	2430694	2430693
TRSTNF02BTCY1002	2430696	2430695
TRSTNF02BTCY1200	2430698	2430697
TRSTNF02BTCY2002	2430701	2430700
TRSTNF02BTCY2200	2430703	2430702
TRSTNF02BTCY2202	2430705	2430704
TRSTNF02BTCY2702	2430708	2430707
TRSTNF02BTCY3300	2430710	2430709
TRSTNF02BTCY4700	2430713	2430711
TRSTNF02BTCY5600	2430715	2430714
TRSTNF02BTCY6200	2430717	2430716