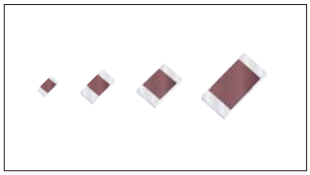
Sulfur Tolerant Chip Resistors

TRR Series

●Features

1) Special construction prevents sulfur gas penetration, significantly increasing reliability.
2) Highly recommended for automotive, industrial and Power supply applications under sulfur environment.
3) ROHM resistors have obtained ISO9001 / ISO / TS16949 certification.
4) Corresponds to AEC-Q200. (TRR03 / 10 / 18)



●Products List

Part No.	Size (mm)	Size (inch)	Rated Power (70°C) (W)	Limiting Element Voltage (V)	Maximum Overload Voltage (V)	Temperature Coefficient (ppm / °C)	Resistance Tolerance (%)	Resistance Range	Series	Operating Temperature Range (°C)
TRR01	1005	0402	0.063	50	100	+500 / −250	J(±5%)	1Ω to 9.1Ω	E24	−55 to +155
						±200		10Ω to 10MΩ		
						±100	F(±1%)	10Ω to 2.2MΩ		
			Jumper type : Rmax = 50mΩ / Imax. = 1A							
TRR03	1608	0603	0.1	50	100	±400	J(±5%)	1Ω to 9.1Ω	E24	
						±200		10Ω to 10MΩ		
						±100	F(±1%)	10Ω to 10MΩ		
			Jumper type : Rmax = 50mΩ / Imax. = 1A							
TRR10	2012	0805	0.125	150	200	±400	J(±5%)	1Ω to 9.1Ω	E24	
						±200		10Ω to 10MΩ		
						±100	F(±1%)	10Ω to 2.2MΩ		
			Jumper type : Rmax = 50mΩ / Imax. = 2A							
TRR18	3216	1206	0.25	200	400	±400	J(±5%)	1Ω to 9.1Ω	E24	
						±200		10Ω to 10MΩ		
						±100	F(±1%)	10Ω to 2.2MΩ		
			Jumper type : Rmax = 50mΩ / Imax. = 2A							

∗Design and specifications are subject to change without notice.
Carefully check the specification sheet supplied with the product before using or ordering it.

●Part Number Description

T R R	0 1	M Z P	J	1 0 5
Part No.	**Size** (mm [inch])	**Packaging Specifications Code**	**Resistance Tolerance**	**Nominal Resistance**
TRR (Sulfur Tolerant Chip Resistors)	01 (1005 [0402]) 03 (1608 [0603]) 10 (2012 [0805]) 18 (3216 [1206])		F (±1%) J (±5%)	Resistance code, 3 or 4 digits. 000 denotes jumper type.

Packaging Specifications Code

Part No.	Code	Packaging specifications	Quantity / Reel
TRR01	MZP	Paper tape (2mm Pitch)	10,000
TRR03	EZP	Paper tape (4mm Pitch)	5,000
TRR10	EZP	Paper tape (4mm Pitch)	5,000
TRR18	EZP	Paper tape (4mm Pitch)	5,000

Nominal Resistance

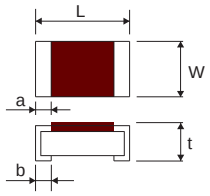
Resistance tolerance		Resistance code
F	:	4 digits
J	:	3 digits

Ex.)

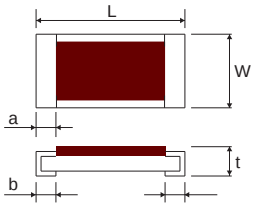
1Ω = 1R0	(±5%)
9.1Ω = 9R1	(±5%)
10Ω = 10R0	(±1%)
100	(±5%)
1MΩ = 1004	(±1%)
105	(±5%)

●Chip Resistor Dimensions and Markings

■ **TRR01 / 03**



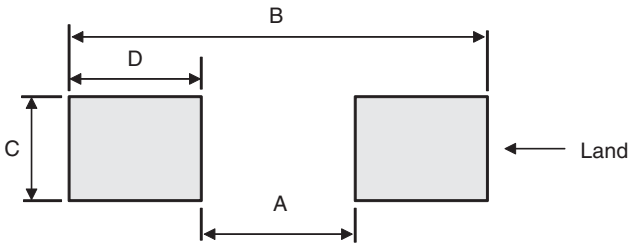
■ **TRR10 / 18**



(Unit : mm)

Part No.	(mm)	(inch)	L	W	t	a	b	Marking existence *Including jumper type
TRR01	1005	0402	1.0±0.05	0.5±0.05	0.35±0.05	0.33±0.08	$0.25^{+0.05}_{-0.1}$	No
TRR03	1608	0603	1.6±0.1	0.8±0.1	0.45±0.1	0.4±0.1	0.3±0.2	No
TRR10	2012	0805	2.0±0.1	1.25±0.1	0.55±0.1	$0.43^{+0.15}_{-0.1}$	0.4±0.2	No
TRR18	3216	1206	3.2±0.15	1.6±0.15	0.55±0.1	$0.69^{+0.2}_{-0.15}$	0.5±0.25	No

●Land pattern Example



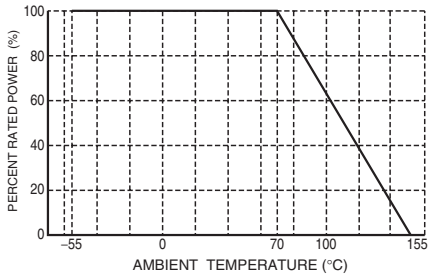
(Unit : mm)

Dimensions / Part No.	A	B	C	D
TRR01	0.5	1.3	0.5	0.4
TRR03	1.0	2.0	0.8	0.5
TRR10	1.2	2.6	1.15	0.7
TRR18	2.2	4.0	1.5	0.9

●Derating Curve

When the ambient temperature exceeds 70°C, power dissipation must be adjusted according to the derating curves below.

■ TRR01 / 03 / 10 / 18



●Characteristics

Test Items	Guaranteed Value		Test Conditions
	Resistor Type	Jumper Type	
Resistance	See P.1		20°C
Variation of resistance with temperature	See P.1		Measurement : +20 / –55 / +20 / +125°C
Overload	± (2.0%+0.1Ω)	Max. 50mΩ	Rated voltage (current) ×2.5, 2s Maximum overload voltage
Solderability	A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage.		Rosin·Ethanol : 25% (Weight) Soldering condition : 235±5°C Duration of immersion : 2.0±0.5s
Resistance to soldering heat	± (1.0%+0.05Ω)	Max. 50mΩ	Soldering condition : 260±5°C Duration of immersion : 10±1s
	No remarkable abnormality on the appearance.		
Rapid change of temperature	± (1.0%+0.05Ω)	Max. 50mΩ	Test temp. : –55°C to +125°C 5cycle
Damp heat, steady state	± (3.0%+0.1Ω)	Max. 100mΩ	40°C, 93%RH (Relative Humidity) Test time : 1,000h to 1,048h
Endurance at 70°C	± (3.0%+0.1Ω)	Max. 100mΩ	70°C Rated voltage (current) 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	± (3.0%+0.1Ω)	Max. 100mΩ	155°C Test time : 1,000h to 1,048h
Resistance to solvent	± (1.0%+0.05Ω)	Max. 50mΩ	23±5°C, Immersion cleaning, 5±0.5min Solvent : 2–propanol
Bend strength of the end face plating	± (1.0%+0.05Ω)	Max. 50mΩ	–
	Without mechanical damage such as breaks.		

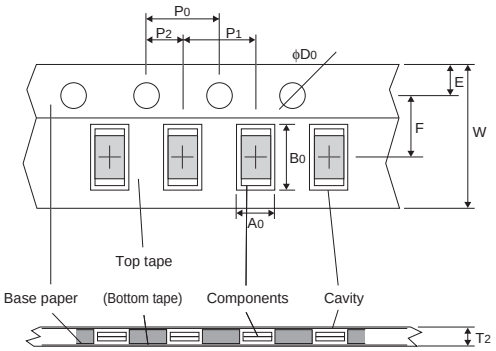
Compliance Standard(s) : IEC60115–8
JISC 5201–8

●Chip weight (typical value)

Parameter	Unit	TRR01	TRR03	TRR10	TRR18
Weight	mg/pc	0.70	2.13	5.05	9.51

●Tape Dimensions

■ Paper Tape

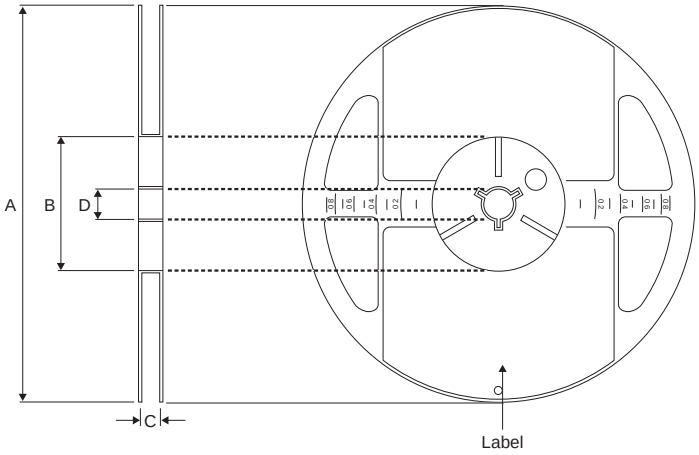


(Unit : mm)

Part No.	W	F	E	A0	B0
TRR01	8.0±0.3	3.5±0.05	1.75±0.1	0.7±0.1	1.2±0.1
TRR03	8.0±0.3	3.5±0.05	1.75±0.1	1.1±0.1	1.9±0.1
TRR10	8.0±0.3	3.5±0.05	1.75±0.1	$1.65^{+0.2}_{-0.1}$	$2.4^{+0.2}_{-0.1}$
TRR18	8.0±0.3	3.5±0.05	1.75±0.1	$1.95^{+0.1}_{-0.05}$	$3.5^{+0.15}_{-0.05}$

Part No.	D0	P0	P1	P2	T2
TRR01	$\phi1.5^{+0.1}_{0}$	4.0±0.1	2.0±0.05	2.0±0.05	Max 1.1
TRR03	$\phi1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
TRR10	$\phi1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
TRR18	$\phi1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1

●Reel Dimensions



ACCORDING TO EIAJ ET-7200B

(Unit : mm)

Part No.	A	B	C	D
TRR01	$\phi180^{0}_{-1.5}$	$\phi60^{+1.0}_{0}$	$9^{+1.0}_{0}$	φ13±0.2
TRR03				
TRR10				
TRR18				

Notes

1) The information contained herein is subject to change without notice.

2) Before you use our Products, please contact our sales representative and verify the latest specifications :

3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Poducts beyond the rating specified by ROHM.

4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.

6) The Products are intended for use in general electronic equipment (i.e. AV/OA devices, communication, consumer systems, gaming/entertainment sets) as well as the applications indicated in this document.

7) The Products specified in this document are not designed to be radiation tolerant.

8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.

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