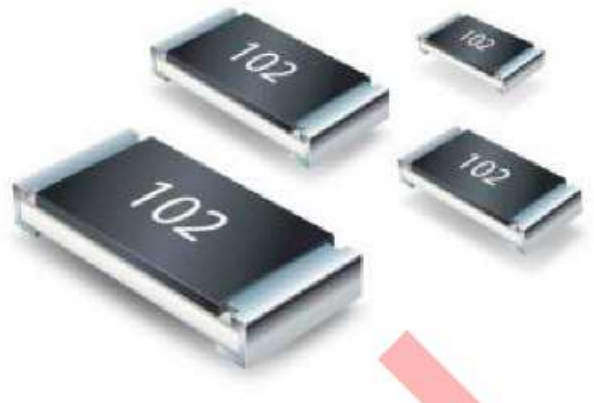
FRC-Series
Thick Film Chip Resistor
FRC

FOSAN SEMICONDUCTOR FOJAN

Thick FilmChip Resistor
FRC Series



Applicatio

- Entertainment : Stereo,TV tuners , Tape recorder
- Appliance: Air conditioner, Refrigerator
- Computer & relative products : Main board, PDA
- Communication equipment: Cell phone, Fax machine
- Power equipment: Power supply , II Lumination equipment
- Measuring instrument: Electric meter,Navigation equipment

Features

- small size and light weight
- Reliability, high quality

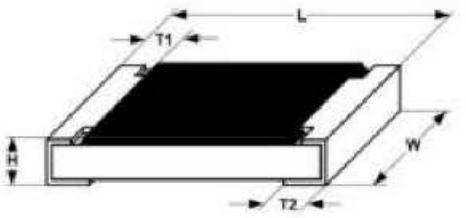
Parts Number Explanation

Example FRC1206F1001 TSD

F	R	C	1206	F	1001	T	S	D
FOJAN	R:Resistor C:Capacitor L:Inductor D:Diode A:Audion	C:Normal P:Hi-Power L:Lowohmic A:Array S:Surge H:Hi-Precision V:Hi-Voltage Q:Auto-motive R:Anti-sulfur M:Metal D: LED	0201 0402 0603 0805 1206 1210 1218 1812 2010 2512	B:±0.1% C:±0.25% D:±0.5% F:±1% J:±5% P: Jumper	±5%:E24 3-digits+blank 102=1KΩ 1R0=1Ω ±1%&Below： E24+E96： 4-digits 1001=1KΩ 1R00=1Ω	T: 7 inch reel Q:10 inch reel R:13 inch reel B:Bulk	S : Sn C : Cu A : Au	N:Normal D : LED
Company code	Type code	Functional code	Size code	Tolerance code	Resistance code	Packaging code	Termination code	Special Case

Dimension

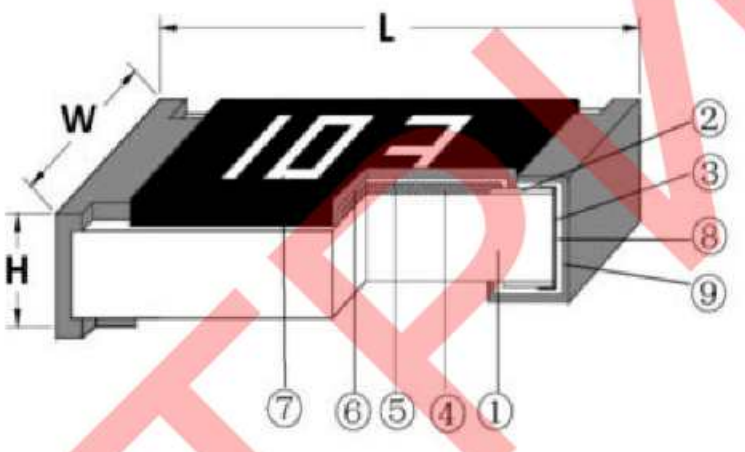
dimension



（unit）: mm

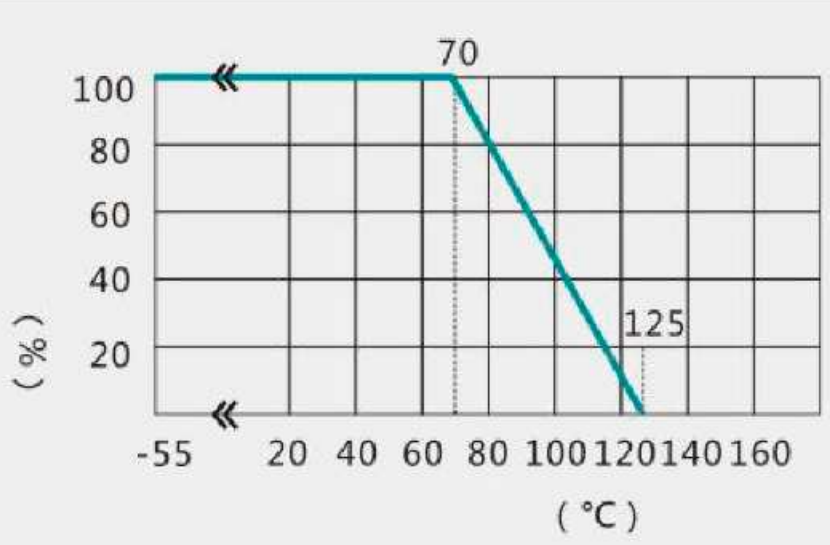
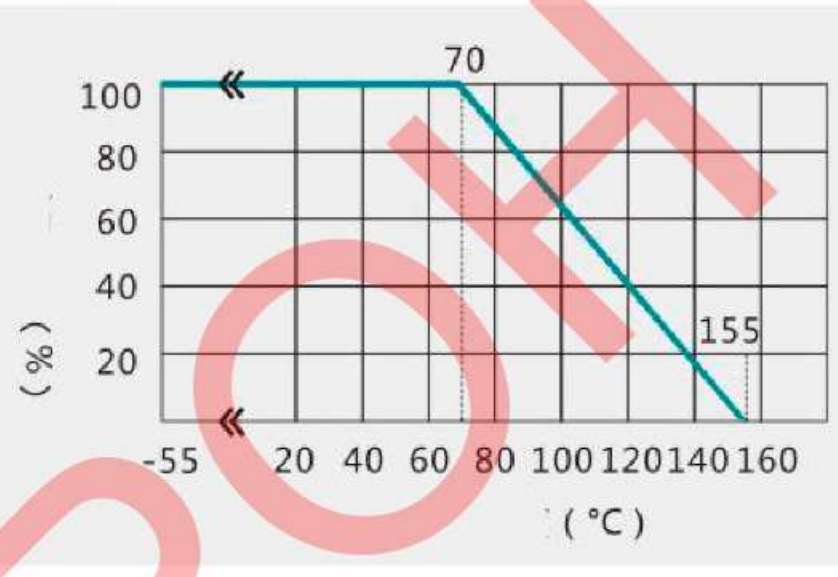
Type	L	W	H	T1	T2
0201	0.60±0.03	0.30±0.03	0.23±0.03	0.10±0.05	0.15±0.05
0402	1.00±0.05	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10
0603	1.60±0.10	0.80±0.10	0.45±0.10	0.25±0.15	0.25±0.15
0805	2.00±0.10	1.25±0.10	0.50±0.10	0.35±0.20	0.35±0.20
1206	3.10±0.10	1.60±0.10	0.55±0.10	0.45±0.20	0.40±0.20
1210	3.10±0.10	2.60±0.15	0.55±0.10	0.45±0.15	0.50±0.20
1218	3.10±0.10	4.60±0.10	0.55±0.10	0.45±0.20	0.40±0.20
1812	4.50±0.20	3.10±0.20	0.55±0.10	0.55±0.20	0.70±0.20
2010	5.00±0.10	2.50±0.15	0.55±0.10	0.45±0.15	0.50±0.20
2512	6.35±0.10	3.10±0.15	0.55±0.10	0.60±0.20	0.50±0.20

Construction)



NO.	construction	Major material
1	Ceramic substrate	Al_2O_3
2	Conductive layer	Ag
3	Side conductive layer	NiCr
4	Resistive layer	RuO_2 + glass
5	Inner protective layer	Glass
6	Outer Protective layer	Epoxy
7	Marking	Epoxy
8	Ni plating layer	Ni
9	Sn plating layer	Matte Tin

Derating Curve

	-55°C~+125°C(0201)	-55°C~+155°C
		

Electrical characteristics

Type	0201	0402	0603	0805	1206	1210	1218	1812	2010	2512
Dielectric Withstanding Voltage	-	100V	100V	300V	500V	500V	500V	500V	500V	500V
Resistance Value of Jumper ±1%	-	<30mΩ	<30mΩ	<30mΩ	<30mΩ	<30mΩ	<30mΩ	<30mΩ	<30mΩ	<30mΩ
Resistance Value of Jumper ±5%	<50mΩ	<50mΩ	<50mΩ	<50mΩ	<50mΩ	<50mΩ	<50mΩ	<50mΩ	<50mΩ	<50mΩ
Rated Current of Jumper	0.5A	1A	1A	2A	2A	2A	6A	2A	2A	2A
Max Current of Jumper	1A	2A	2A	5A	10A	10A	10A	10A	10A	10A

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Standard Electrical Specifications

Type	PowerRating at 70℃	Max. RCWV	Max. Overload Voltage	(PPM/℃)	Resistance Range
0201	1/20W	25V	50V	± 400	1Ω~10Ω
				± 200	10Ω~10MΩ
0402	1/16W	50V	100V	±200	1Ω~10Ω
					10MΩ~100MΩ
				± 100	10Ω~10MΩ
0603	1/10W	75V	150V	± 200	1Ω~10Ω
					10MΩ~100MΩ
				± 100	10Ω~10MΩ
0805	1/8W	150V	300V	± 200	1Ω~10Ω
					10MΩ~100MΩ
				± 100	10Ω~10MΩ
1206	1/4W	200V	400V	± 200	1Ω~10Ω
					10MΩ~100MΩ
				± 100	10Ω~10MΩ
1210	1/3W	200V	400V	± 200	1Ω~10Ω
					10MΩ~100MΩ
				± 100	10Ω~10MΩ
1218	1W	200V	500V	± 200	1Ω~10Ω
				± 100	10Ω~1MΩ
1812	3/4W	200V	400V	± 200	1Ω~10Ω
				± 100	10MΩ~100MΩ
2010	3/4W	200V	400V	± 200	1Ω~10Ω
					10MΩ~100MΩ
				± 100	10Ω~10MΩ
2512	1W	200V	400V	± 200	1Ω~10Ω
					10MΩ~100MΩ
				± 100	10Ω~10MΩ

For non-standard parts, please contact our sales dept.

Performance Specifications

Item	Test Methods	Test Conditions	Specification
Temperature Coefficient	JIS C 5201 4.8	TCR= (R-R_0) / (t-t_0) R_0 ×10^6 (ppm) R_0 (resistance at room temperature) R (resistance at 125℃ or -55℃) t_0 (room temperature) t (test temperature 125℃ or -55℃)	0201 : 1Ω≦R≦10Ω: ±400 PPM/℃ 10Ω<R≦10MΩ: ±200 PPM/℃ 0402~2512 : 1Ω≦R≦10Ω: ±200 PPM/℃ 10Ω<R≦10MΩ: ±100 PPM/℃ 10MΩ<R≦100MΩ: ±200PPM/℃
Short-time overload	JIS C 5201 4.13	Applied 2.5 times of rated voltage for 5 second. Measure the variation of resistance.	±(1.00% +0.05Ω)
Solderability	JIS C 5201 4.17	Dip the terminal in a flux and then dip into a soldering bath at 245±5℃ for 3±0.5sec.	(> 95% coverage)
Resistto soldering heat	JIS C 5201 4.18	Dip the terminal in a flux and then dip into a soldering bath at 260±5℃ for 10±0.5sec. Measure the variation of resistance.	±(1.00% +0.05Ω)
Insulation resistance	JIS C 5201 4.6	Applied the dielectric withstanding voltage on the center of body for 60±5seconds. Then measure insulation resistance.	>10GΩ
Dielectric withstanding voltage	JIS C 5201 4.7	Applied the dielectric withstanding voltage on the center of body for60±5seconds.	No evidence of flashover, mechanical damage arcing or insulation breakdown

Item	Test Methods	Test Conditions	Specification
Terminalbending	JIS C 5201 4.33	Specimen shall be mounted on test board, then bend the board and maintained for 20±1s. the distance of bending is 5+0.2/0 mm for resistors which size no larger than 1206 or 2+0.2/0 mm which size larger than 1206. Measure the variation of resistance.	±(1.00% +0.05Ω)
Temperature Cycling	JIS C 5201 4.19	Put specimen in a chamber which temperature can be changed to 155±2℃ or -55±3℃, repeated 5 times. Measure the variation of resistance.	±(2.00% +0.05Ω)
Humidity	JIS C 5201 4.24	Put the specimen in a chamber at 40±2℃ temperature and 90~95% relative humidity, then applied rated voltage for1.5H and rested for 0.5H repeatedly till total test time is $1000^{+48}/_{-0}$ H. Measure the variation of resistance.	±(2.00% +0.05Ω)
Load life	JIS C 5201 4.25.1	Put the specimen in a chamber at 70±2℃ temperature, ON TIME:1.5H , OFF TIME:0.5H , and applied rated voltage for 1000 $^{+24}/_{-0}$H. Measure the variation of resistance.	±(2.00% +0.05Ω)
Moisture resistance	MIL-STD-202 METHOD 106	25°C~65°C,90~100%RH, 2.5H; 65°C 90~100%RH, 3H; 65°C~25°C 80~100%RH, 2.5H, 10 cycles, Measurement at 24±4 hours after test conclusion.	±(2.00% +0.05Ω)