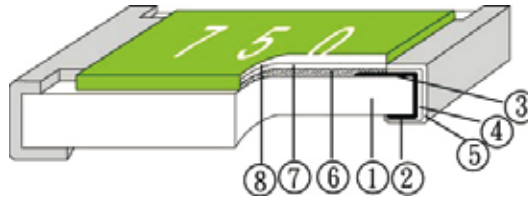


Fusible Thick Film Chip Resistor FCR Series



Construction



1	Alumina Substrate	5	External Electrode (Sn)
2	Bottom Electrode (Ag)	6	Resistor Layer (RuO ₂)
3	Top Electrode (Ag/Pd)	7	Primary Overcoat (Glass)
4	Barrier Layer (Ni)	8	Secondary Overcoat (Epoxy)

Features

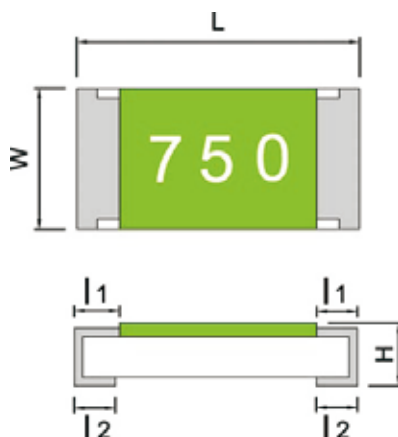
- The accurate fusibility is applicable to safety circuits in the wide range of electronic sets.
- Small in size, light in weight.
- Low temperature coefficient.(under ± 400 PPM/ $^{\circ}$ C)
- Noncombustible insulated coat.
- May treat as the general resistance use.

Parts Number Explanation

Example:

FCR	0603	J	10R	P	05	3W
Product Type	Size (Inch)	Resistor Tolerance	Resistors Value	Package	Quantity	Min. Fusing Power
	0402 0603 0805 1206 1210 2010 2512	F : 1% G : $\pm 2\%$ J : 5% K : 10%		P、Q : Paper Taping E : Embossed Taping D : Packed in a Bag	01 : 1000PCS 02 : 2000PCS 04 : 4000PCS 05 : 5000PCS 10 : 10000PCS 20 : 20000PCS 40 : 40000PCS 50 : 50000PCS	

■ Type Dimension



■ Dimension

Unit : mm

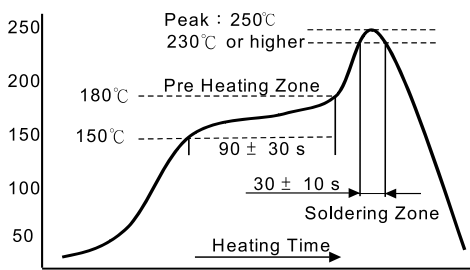
TYPE	L	W	H	l ₁	l ₂
FCR0402	1.00±0.10	0.50±0.05	0.30±0.05	0.15 ± 0.10	0.15 ± 0.10
FCR0603	1.60±0.20	0.80±0.15	0.40±0.10	0.20 ± 0.10	0.20 ± 0.10
FCR0805	2.00±0.20	1.25±0.15	0.50±0.15	0.30 ± 0.15	0.40 ± 0.15
FCR1206	3.05±0.10	1.60±0.20	0.55±0.15	0.40 ± 0.20	0.50 ± 0.20
FCR1210	3.05±0.10	2.50±0.20	0.55±0.15	0.50 ± 0.20	0.50 ± 0.20
FCR2010	5.00±0.20	2.50±0.20	0.55±0.10	0.60 ± 0.20	0.60 ± 0.20
FCR2512	6.30±0.20	3.20±0.20	0.55±0.10	0.60 ± 0.20	0.60 ± 0.20

■ Power Characteristic

Type	Item	Rated Power at 70°C	Max Hold-Off Voltage	Fusing Time & Min. Fusing Power	Resistance Range	T.C.R. (PPM/°C)	Standard Tolerance (%)
FCR0402		0.063W	50V	<30 sec at 2.5W	1Ω~1KΩ	1Ω~47Ω (±600PPM) 48Ω~470Ω (±400PPM) 471Ω~10KΩ (±200PPM)	5%, 10% (1%,2% available)
FCR0603		0.1W	100V	<30 sec at 3W			
FCR0805		0.125W	150V	<30 sec at 3.25W			
FCR1206		0.25W	200V	<30 sec at 5W			
FCR1210		0.33W	250V	<30 sec at 7.5W			
FCR2010		0.5W	300V	<30 sec at 11.25W			
FCR2512		1W	400V	<30 sec at 15W			

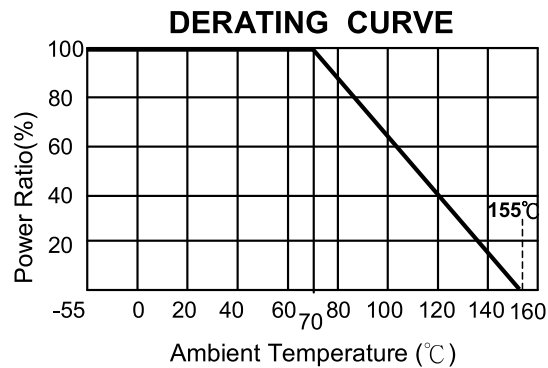
- For non-standard parts, please contact our sales dept.
- Operating Temperature Range: -55°C~+155°C

■ Test Procedures and Requirements

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS-C-5201-1 clause 4.8	-55°C ~ +155°C, 20°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 for 5 seconds. High Power : 2.5 times RCWV or Max. Overload voltage for 2 seconds.	±1 : ±(1.0%+0.05Ω) ±5 : ±(2.0%+0.1Ω)
IR Reflow	Sony SS-00254	 <p>The graph shows a temperature profile for IR reflow. The y-axis is temperature in °C (50 to 250) and the x-axis is time. Key points include: Pre Heating Zone (150°C to 180°C), a 90 ± 30 s dwell at 180°C, a peak of 250°C (or 230°C or higher), a 30 ± 10 s dwell at the peak, and a Soldering Zone. The total Heating Time is indicated by an arrow at the bottom.</p>	±1 : ±(1.0%+0.05Ω) ±5 : ±(1.0%+0.05Ω)
Leaching	Sony SS-00254-9	260±5°C for 30 seconds.	>95% Coverage
Soldering Heat	JIS-C-5201-1 clause 4.18	260±5°C for 10 seconds.	±1 : ±(0.5%+0.05Ω) ±5 : ±(1.0%+0.05Ω)
Temperature Cycling	JIS-C-5201-1 clause 4.19	-55°C to +155°C, 5 cycles	0.1%、0.5%、1% : ±(0.5%+0.05Ω) 2%、5% : ±(1.0%+0.10Ω)
Electric Iron	Sony SS-00254-5	Preheating temperature : 350±5°C Electric iron preheating time : 3+1/-0 sec	±1 : ±(1.0%+0.05Ω) ±5 : ±(1.0%+0.05Ω)
Resistance to Solvent	JIS-C-5201-1 clause 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 : ±(0.5%+0.05Ω) ±5 : ±(0.5%+0.05Ω)
Load Life in Humidity	JIS-C-5201-1 clause 4.24	40±2°C, 90~95% R.H. or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	0.1%、0.5%、1% : ±(0.5%+0.05Ω) 2%、5% : ±(2.0%+0.05Ω)
Load Life (Endurance)	JIS-C-5201-1 clause 4.25	70±2°C, or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	0.1%、0.5%、1% : ±(1.0%+0.05Ω) 2%、5% : ±(3.0%+0.10Ω)
Terminal Bending Strength	JIS-C-5201-1 clause 4.33	Bending once for 5 seconds D : FCR Series 0402、0603、0805=5mm FCR Series 1206、1210、1812=3mm FCR Series 1218、2010、2512、2030=2mm	±1 : ±(1.0%+0.05Ω) ±5 : ±(1.0%+0.05Ω)
Insulation Resistance	JIS-C-5201-1 clause 4.6	Max. Overload voltage for 1 minute.	≥ 10GΩ

■ 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:

$$E = \sqrt{P \times R}$$

E=Rated voltage(V)
 P=Power rating(W)
 R=Nominal resistance(Ω)

■ Operation and Storage Temperature

	MIN	MAX
Operation temperature	-55°C	70°C
Storage temperature	20°C	30°C
Storage humidity	30%	70%

■ Soldering Profile

