

SINLOON® 保險絲貼片電阻
Power Range: 1/16W ~ 1W

FCR Series
Fusible Thick Film Chip Resistor

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 $\pm 400\text{ppm}/^\circ\text{C}$)
- ◆ Noncombustible insula coat.
- ◆ May treat as the general resistance use.
- ◆ Size: 0402/0603/0805/1206/1210/2010/2512.

Applications

- ◆ Medical Equipment
- ◆ Testing / Measurement Equipment
- ◆ Consumer Product
- ◆ Printer Equipment
- ◆ Automatic Equipment Controller
- ◆ Converters
- ◆ Communication Device, Cell phone, GPS, PDA
- ◆ Measurement instruments

ORDERING INFORMATION

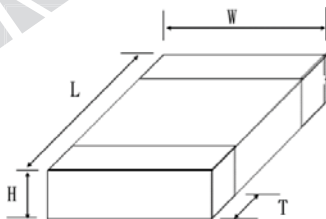
Example: FCR03H1R00JR

Power	Size	Type	TCR($^\circ\text{C}$)	Resistance	Tolerance	Packing	Quantity
1/16W	0402	FCR02	H \pm 400ppm	1R = 1R00	J = \pm 5%	7" Reel	10K Reel
1/10W	0603	FCR03		10R=10R0			5K Reel
1/8W	0805	FCR05		100R=100R			5K Reel
1/4W	1206	FCR06		1K = 1001			5K Reel
1/3W	1210	FCR12		5K Reel			
1/2W	2010	FCR20		4K Reel			
1W	2512	FCR25		4K Reel			

DIMENSION

Unit: mm

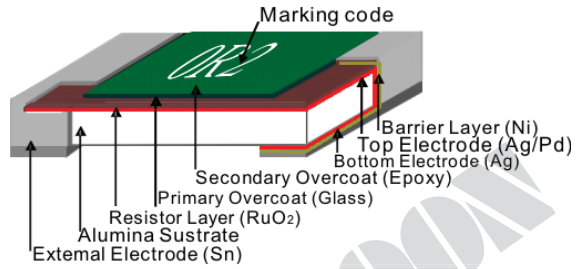
Power	Size	Type	L	W	H	T1	T2
1/16W	0402	FCR02	1.00 \pm 0.10	0.50 \pm 0.05	0.30 \pm 0.05	0.20 \pm 0.10	0.20 \pm 0.10
1/10W	0603	FCR03	1.60 \pm 0.20	0.80 \pm 0.15	0.40 \pm 0.10	0.30 \pm 0.20	0.30 \pm 0.15
1/8W	0805	FCR05	2.00 \pm 0.20	1.25 \pm 0.15	0.50 \pm 0.15	0.35 \pm 0.15	0.35 \pm 0.15
1/4W	1206	FCR06	3.20 \pm 0.20	1.60 \pm 0.20	0.55 \pm 0.15	0.45 \pm 0.20	0.45 \pm 0.20
1/3W	1210	FCR12	3.20 \pm 0.20	2.50 \pm 0.20	0.55 \pm 0.15	0.50 \pm 0.20	0.50 \pm 0.20
1/2W	2010	FCR20	5.00 \pm 0.20	2.50 \pm 0.20	0.55 \pm 0.10	0.60 \pm 0.20	0.60 \pm 0.20
1W	2512	FCR25	6.30 \pm 0.20	3.20 \pm 0.20	0.55 \pm 0.10	0.60 \pm 0.20	0.60 \pm 0.20



FIGURE



CONSTRUCTION



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GENERAL ELECTRICAL SPECIFICATION

Type	Size	Power	Max.Hold-off Voltage	Fusing Time & Min. Fusing Power	Resistance Range (Ω)	Resistance Tolerance	Resistor TCR (ppm/°C)
FCR02	0402	0.1W	50V	<30 sec at 2.5W	1Ω ~ 1K	±5%, ±2%, ±1%	1Ω~47Ω ±600 48Ω~470Ω ±400 471Ω~10KΩ ±200
FCR03	0603	0.125W	100V	<30 sec at 3W	1Ω ~ 1K8		
FCR05	0805	0.15W	150V	<30 sec at 3.25W	1Ω ~ 3K		
FCR06	1206	0.25W	200V	<30 sec at 5W	1Ω ~ 5K1		
FCR12	1210	0.5W	250V	<30 sec at 7.5W	1Ω ~ 6K2		
FCR20	2010	0.75W	300V	<30 sec at 11.25W	1Ω ~ 7K5		
FCR25	2512	1W	400V	<30 sec at 15W	1Ω ~ 10K		
Operating Temperature Range:			-55°C ~ +155°C				

Voltage Rating or Current Rating

Resistance Range: ≥ 1R ohm

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

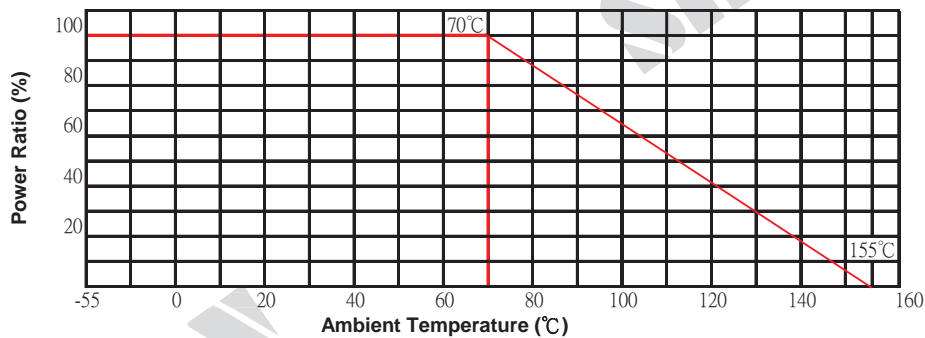
REMARK: $E = \sqrt{R \times P}$

E= Rated voltage (V)

R=Nominal resistance (Ω)

P=Power rating (W)

POWER DERATING CURVE (功率衰減曲線)

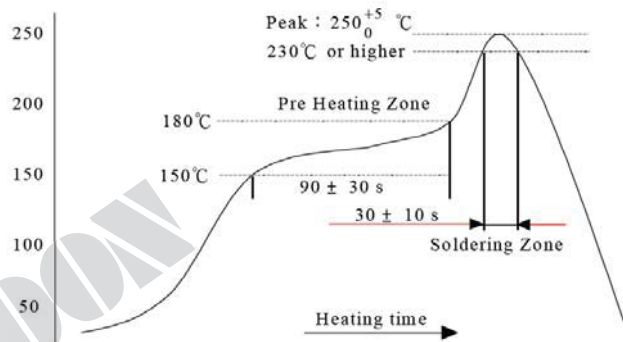


Power rating or current rating is in the case based on continuous full-load at ambient temperature of 70°C for operating at ambient temperature in excess of 70°C, the load should be derated in accordance with figure of derating curve.

Operation and Storage Temperature

	Min.	Max.
Operation temperature	-55°C	70°C
Storage temperature	20°C	30°C
Storage Humidity	30%	70%

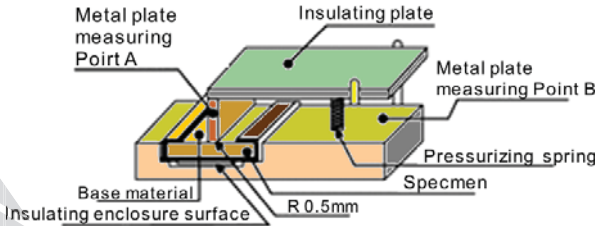
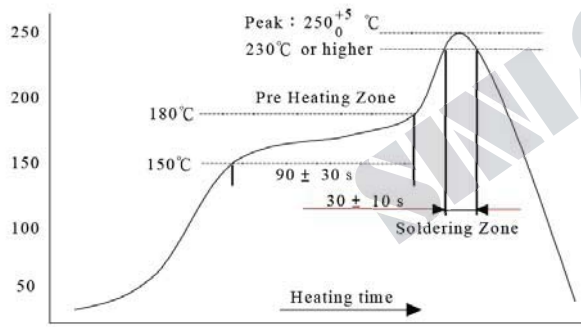
Soldering Profile



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PERFORMANCE CHARACTERISTICS

Test Item	Test Methods	Description
Temperature	-55 ~ +155°C, 20°C is the reference temperature	JIS C 5201 ...Clause 4.8 Refer to Ratings
Short Time Overload	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.	JIS C 5201-2 ... Clause 4.13 ±1:±(1.0%+0.05Ω) Max. ±5:±(2.0%+0.1Ω) Max.
Insulation Resistance	Max. Overload voltage for 1 minute 	JIS C 5201-1 .Clause 4.6 ≥ 10 ⁹ Ω
IR Reflow		Sony SS-00254 Resistance Range: ±1: (1.0%+0.05Ω) ±5: (1.0%+0.05Ω)
Leaching	260±5°C for 30 Seconds	Sony SS-00254-9 >95% Coverage
Soldering Heat	260±5°C for 10 Seconds	Sony C 5201-1 Clause 4.18 ±1: (1.0%+0.05Ω) ±5: (1.0%+0.05Ω)
Temperature Cycling	-55°C to +155°C . 5 cycles	Sony C 5201-1 Clause 4.19 0.1%, 0.5%, 1% : ± (1.0%+0.05Ω) 2%, 5%: ± (1.0%+0.1Ω)
Electric Iron	Preheating temperature: 350±5°C Electric iron perheating time: 3+1/-0 seconds	Sony SS-00254-5 ±1: (1.0%+0.05Ω) ±5: (1.0%+0.05Ω)
Resistance to Solvent	The tested resistor be immersed into isopropyl alcohol of 20 ~ 25°C for 60 secs. Then the resistor is left in the room 48 hours.	Sony C 5201-1 Clause 4.29 ±1: (1.0%+0.05Ω) ±5: (1.0%+0.05Ω)
Load Life in Humidity	40±2°C , 90~95% RH or Max.working voltage for 1000 hours with 1.5 hours [NO] and 0.5 hours [OFF]	Sony C 5201-1 Clause 4.24 0.1%, 0.5%, 1% : ± (0.5%+0.05Ω) 2%, 5%: ± (2.0%+0.05Ω)
Load Life (Endurance)	70±2°C , or Max, Working voltage for 1000 hours with 1.5 hours [NO] and 0.5 hours [OFF]	Sony C 5201-1 Clause 4.25 0.1%, 0.5%, 1% : ± (0.1%+0.05Ω) 2%, 5%: ± (3.0%+0.1Ω)
Terminal Bending Strenght	Bending once for 5 seconds D: FCR series 0402; 0603; 0805 = 5mm FCR series 1206; 1210 = 3mm FCR series 2010; 2512 = 2mm	Sony C 5201-1 Clause 4.33 ±1: (1.0%+0.05Ω) ±5: (1.0%+0.05Ω)

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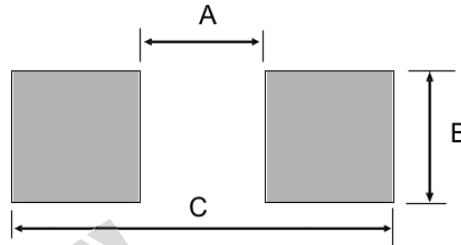
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☐ RECOMMEND LAND PATTERN DESIGN (For Reflow Soldering)



◆ Special Passivated NiCr Film for Anti-Acid and Anti-Damp

Unit: mm

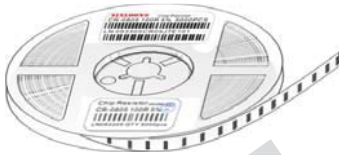
Type	FCR02	FCR03	FCR05	FCR06	FCR10	FCR20	FCR25
Dim.	0402	0603	0805	1206	1210	2010	2512
A	0.60	0.80	1.30	2.20	2.00	3.80	4.90
B	1.60	2.40	2.90	4.20	4.40	4.24	8.10
C	0.70	1.00	1.40	1.70	2.70	4.50	3.40



PACKAGE SPECIFICATION

Power	Type	Size	Quantity(ea)			
			Paper Reel Tape	In Box	Carton	
1/16W	FCR02	0402	10,000 Pcs 7" Reel	100K pcs	600K pcs	 <p>品質承諾標誌 QUALITY COMMITMENT</p>
1/10W	FCR03	0603	5,000 Pcs 7" Reel	50K pcs	300K pcs	
1/8W	FCR05	0805	5,000 Pcs 7" Reel	50K pcs	300K pcs	
1/4W	FCR06	1206	5,000 Pcs 7" Reel	50K pcs	300K pcs	
1/3W	FCR12	1210	5,000 Pcs 7" Reel	40K pcs	300K pcs	
1/2W	FCR20	2010	4,000 Pcs 7" Reel	40K pcs	240K pcs	
1W	FCR25	2512	4,000 Pcs 7" Reel	40K pcs	240K pcs	

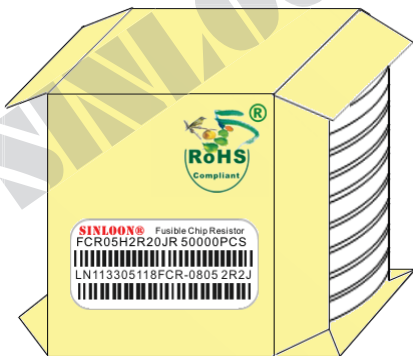
Paper Reel Tape



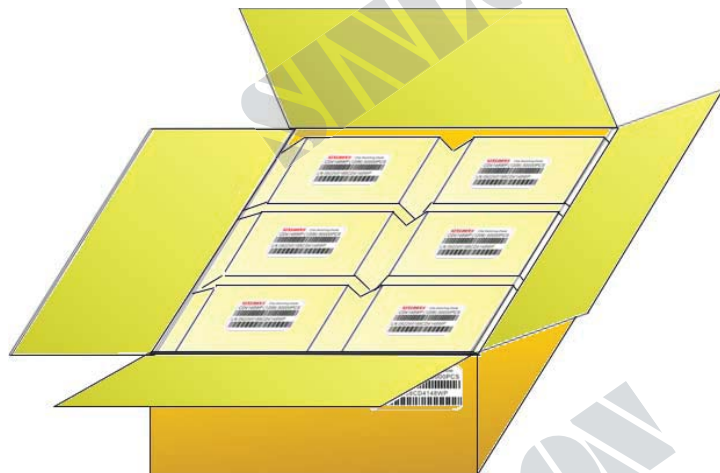
Reel Tape Leble



Inner Box



Carton Pack



* 美隆電子產品規格特性參數的改變或更新,將不會另行通知。

* Mayloon characteristic parameters of electronic product specification changes or updates without prior notice.

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STANDARD RESISTANCE VALUE IN A DECARD

誤差率	阻值表示法		電阻功率代碼		溫度系數
Tolerance	E96	E24	Power	Codes	T.C.R/°C
A= ±0.01%	m5=R0005Ω	m5=R0005Ω	1/32W	Z	S=±5ppm
B= ±0.1%	5m=R005Ω	5m=R005Ω	1/16W	Y	B=±10ppm
C= ±0.25%	50m=R05Ω	50m=R05Ω	1/10W	X	N=±15ppm
D= ±0.5%	100m=R1Ω	100m=R1Ω	1/8W	W	C=±25ppm
F= ±1%	1000m=1Ω	1000m=1Ω	1/4W	V	D=±50ppm
G= ±2%	1R = 1R00	1R = 1R0	1/2W	U	E=±100ppm
H= ±3%	10R=10R0	10R=100	3/4W	T	K=±150ppm
J= ±5%	100R=100R	100R=101	1W	S	F=±200ppm
K= ±10%	1K = 1001	100R=102	1.5W	R	G=±300ppm
M= ±20%	10K = 1002	10K = 103	2W	Q	H=±400ppm
N= ±50%	100K=1003	100K=104	2.5W	P	I=±500ppm
Z=+80-20%	1M=1-004	1M=105	3W	N	J=±600ppm
	10M=1005	10M=106	4W	M	Z=±1500ppm
	100M=1006	100M=107	5W	L	

Resistor Series Ordering Information :

±1%:	Marking Code please refer to E96 data form as below :
Ex.	121K the marking code is 1213 in E96
	10R ohm the marking code is 1009 E96
	1R ohm the marking code is 1008 E96
	0.1R ohm the marking code is 0R10 E96
±5%:	Marking Code please refer to E24 data form as below :
Ex.	100K the marking code is 104 in E24
	10R ohm the marking code is 100 E24
	1R ohm the marking code is 1R0 E24
	0.1R ohm the marking code is 0R1 E24

For Resistance According to IEC Publication 63

E24	E96			
10	100	178	316	562
11	102	182	324	576
12	105	187	332	590
13	107	191	340	604
15	110	196	348	619
16	113	200	357	634
18	115	205	365	649
20	118	210	374	665
22	121	215	383	681
24	124	221	392	698
27	127	226	402	715
30	130	232	412	732
33	133	237	422	750
36	137	243	432	768
39	140	249	442	787
43	143	255	453	806
47	147	261	464	825
51	150	267	475	845
56	154	274	487	866
62	158	280	499	887
68	162	287	511	909
75	165	294	523	931
82	169	301	536	953
91	174	309	549	976