

SMD CHIP RESISTOR

How To Order:

Series: RC Part No.:

RC	<u>0603</u>	<u>J</u>	<u>2K3</u>	<u>B</u>	<u>10</u>
Series: Chip Resistor	Size: 0201 0402 0603 0805 1206 1210 1812 2512 2010	Tolerance: B=0.1% D=0.5% F=1% G=2% J=5%	Resistance: 1R=1 ohm 2.3R=2R3 1K=1000 ohm 2.3K=2K3 1M=1000000 ohm 2.3M=2M3	Size of Reel B=13" C=10"	Pcs/reel 10=10k/reel 15=15k/reel 20=20k/reel

Description: CHIP RESISTOR 0603 5% 2K3.

Note:

The normal packing of Chip Resistor is Tape & Reel 7"

The standard value of 1% is 10R~1M

The standard value of 5% is 0R, 1R~10M

The quantity of 0603, 0805, 1206, 1210, is 5000pcs/Reel

The quantity of 2512, 2010, is 4000pcs/Reel

The quantity of 0402 is 10000pcs/Reel

SMD CHIP RESISTORS (ARRAYS)

1. INSTRUCTION

This sheet is the statement of chip resistor specification that Faithful Link's productions can meet.

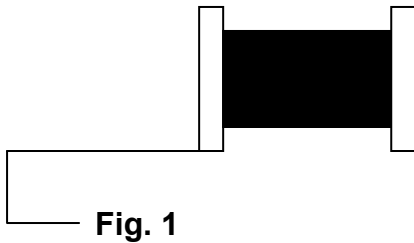
2. LEAD FREE CHIP RESISTORS MATERIALS

MATERIALS	MAIN CONTENTS
Alumina Substrate	Al_2O_3 OVER 96%
Electrode INK	Ag/Pd
Resistor	RuO_2
1 coating INK	Glass
2 coating INK	Epoxy resin
Electrode Plating Film	Ni, Sn
Packaging	Paper Tapping Embossed Taping Bulk
Reel	PE

Chip Resistor Surface Mount (RC SERIES 0201 Pb Free)

MARKING

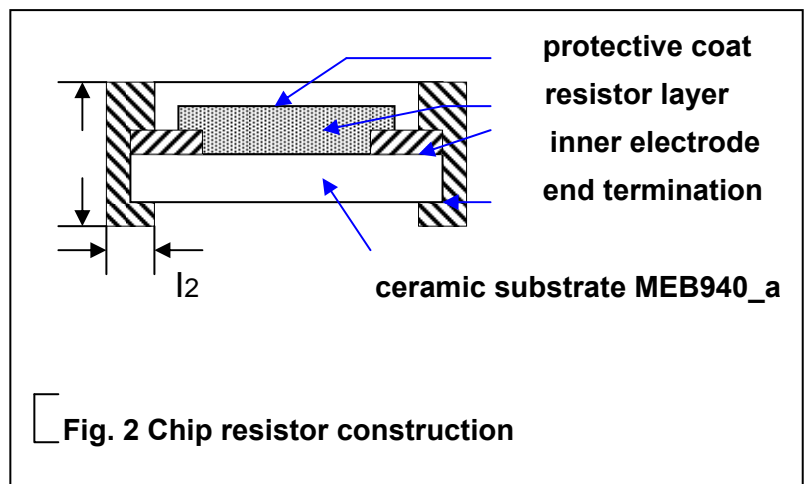
RC 0201



No marking

CONSTRUCTION

The resistors are constructed out of a high-grade ceramic body. Internal metal electrodes are added at each end and connected by a resistive paste. The composition of the paste is adjusted to give the approximate required resistance and laser cutting of this resistive layer that achieves tolerance trims the value. The resistive layer is covered with a protective coat.

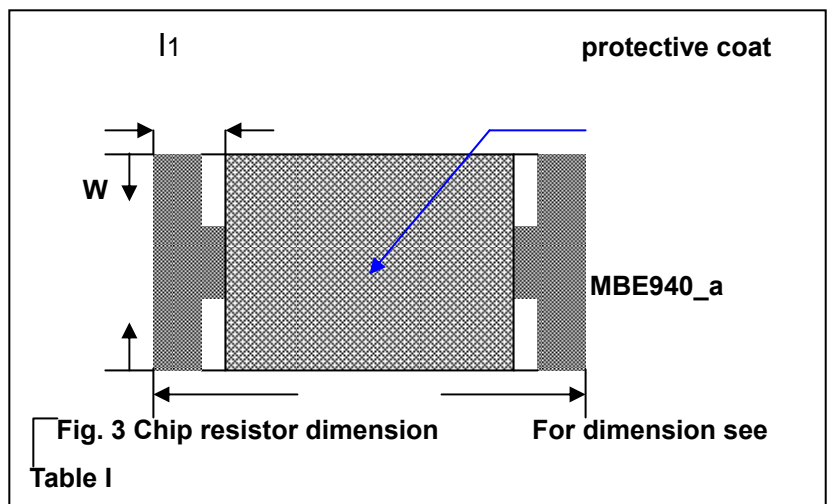


Finally, the two external terminations (pure Tin) are added. See fig. 2.

DIMENSIONS

Table I

TYPE	RC0201
L (mm)	0.60 ± 0.03
W (mm)	0.30 ± 0.03
H (mm)	0.23 ± 0.03
l1 (mm)	0.13 ± 0.08
l2 (mm)	0.15 ± 0.08



Chip Resistor Surface Mount (RC SERIES 0201 Pb Free)

ELECTRICAL CHARACTERISTICS

Table 2

CHARACTERISTICS	RC0201 1/20W	
Operating Temperature Range	-55 °C to + 125 °C	
Maximum Working Voltage	15V	
Maximum Overload Voltage	50V	
Dielectric Withstanding Voltage	50V	
Resistance Range	5% (E24)	1 Ω to 1M Ω
	1% (E96)	1 Ω to 1M Ω
	Zero Ohm Jumper < 0.05 Ω	
Temperature Coefficient	10 Ω < R ≤ 1M Ω	±250 ppm/ °C
	1 Ω < R ≤ 10 Ω	-100/+600 ppm/ °C
Jumper Criteria	Rated Current	0.5A
	Maximum Current	1.0A

FOOTPRINT AND SOLDERING PROFILES

For recommended footprint and soldering profiles, please see the special data sheet “Chip resistors mounting”.

ENVIRONMENTAL DATA

For material declaration information (IMDS-data) of the products, please see the separated info “Environmental data”.

PACKING STYLE AND PACKAGING QUANTITY

Table 3 Packing style and packaging quantity

PRODUCT TYPE	PACKING STYLE	REEL DIMENSION	QUANTITY PER REEL
RC0201	Paper / PE Taping Reel (R)	7” (178mm)	10,000 units
		10” (254mm) / not preferred	20,000 units
		13” (330mm)	50,000 units

FUNCTIONAL DESCRIPTION

POWER RATING

RC0201 rated power at 70°C is 1/20 W

RATED VOLTAGE

The DC or AC (rms) continuous working voltage corresponding to the rated power is determined by the following formula:

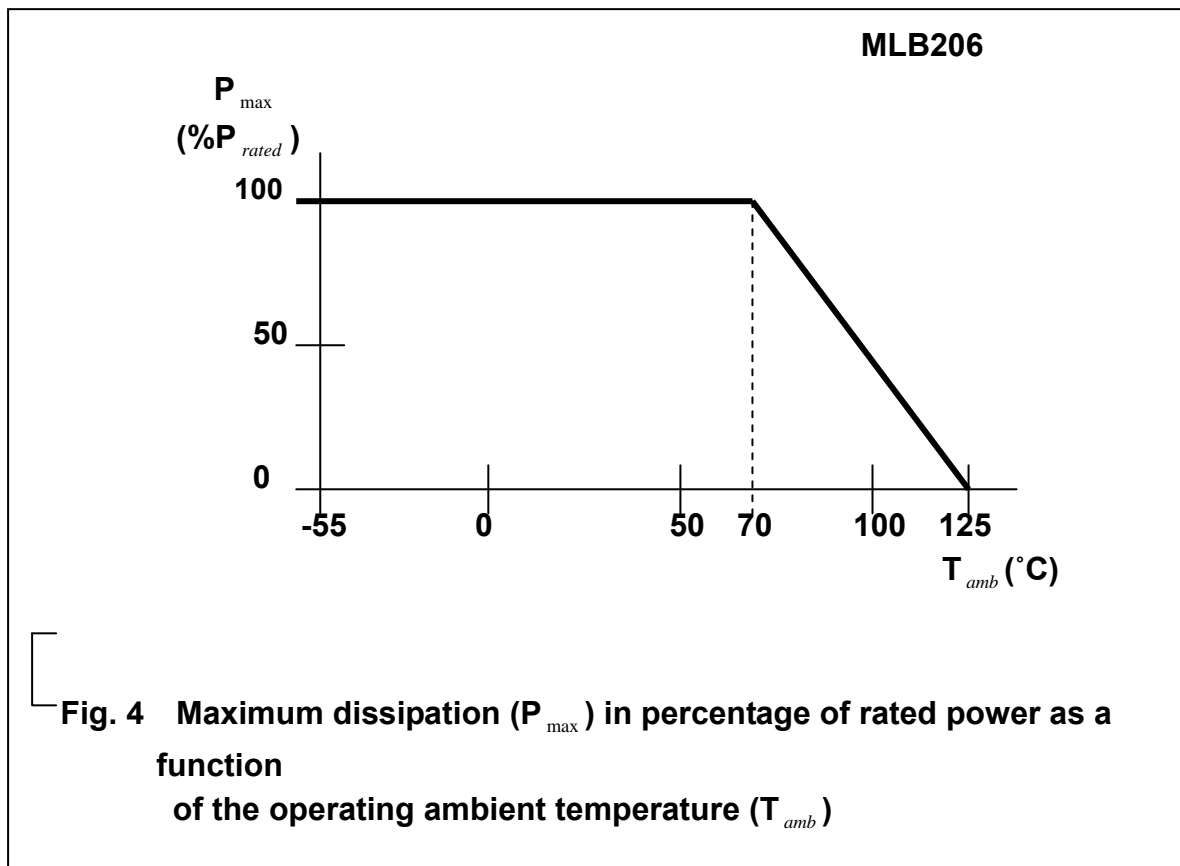
$$V = \sqrt{PXR}$$

Where

V=Continuous rated DC or
AC (rms) working voltage (V)

P=Rated power (W)

R=Resistance value (Ω)



Chip Resistor Surface Mount (RC SERIES 0201 Pb Free)

TESTS AND REQUIREMENTS

Table 4 Test condition, procedure and requirements

TEST	TEST METHOD	PROCEDURE	REQUIREMENTS				
Temperature	MIL-STD-202F-method 304;	At +25/-55°C and +25/+125°C	Refer to table 2				
Coefficient of Resistance (T.C.R.)	JIS C 5202-4.8	Formula: $\text{T.C.R.} = \frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (ppm/}^\circ\text{C)}$ Where $t_1 = +25^\circ\text{C}$ or specified room temperature $t_2 = -55^\circ\text{C}$ or $+125^\circ\text{C}$ test temperature R_1 =resistance at reference temperature in ohms R_2 =resistance at test temperature in ohms					
Thermal Shock	MIL-STD-202F-method 107G; IEC 60115-1 4.19	At $-65(+0/-10)^\circ\text{C}$ for 2 minutes and at $+125(+10/-0)^\circ\text{C}$ for 2 minutes; 25 cycles	$\pm(0.5\%+0.05\Omega)$ for 1% tol $\pm(1.0\%+0.05\Omega)$ for 5% tol				
Low Temperature Operation	MIL-R-55342D-Para 4.7.4	At $-65(+0/-5)^\circ\text{C}$ for 1 hour; RCWV applied for 45(+5/-0) minutes	$\pm(0.5\%+0.05\Omega)$ for 1% tol $\pm(1.0\%+0.05\Omega)$ for 5% tol No visible damage				
Short Time Overload	MIL-R-55342D-Para 4.7.5; IEC 60115-1 4.13	2.5x RCWV applied for 5 seconds at room temperature	$\pm(1.0\%+0.05\Omega)$ for 1% tol $\pm(2.0\%+0.05\Omega)$ for 5% tol No visible damage				
Insulation Resistance	MIL-STD-202F-method 302; IEC 60115-1 4.6.1.1	RCOV for 1 minute <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid black;">Type</td> <td style="border-bottom: 1px solid black;">RC0201</td> </tr> <tr> <td style="border-bottom: 1px solid black;">Voltage(DC)</td> <td style="border-bottom: 1px solid black;">50V</td> </tr> </table>	Type	RC0201	Voltage(DC)	50V	$\geq 10 \text{ G}\Omega$
Type	RC0201						
Voltage(DC)	50V						
Dielectric Withstand Voltage	MIL-STD-202F-method 301; IEC 60115-1 4.6.1.1	Maximum voltage(V_{rms}) applied for 1 minute <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid black;">Type</td> <td style="border-bottom: 1px solid black;">RC0201</td> </tr> <tr> <td style="border-bottom: 1px solid black;">Voltage(AC)</td> <td style="border-bottom: 1px solid black;">50V_{rms}</td> </tr> </table>	Type	RC0201	Voltage(AC)	50V _{rms}	No breakdown or flashover
Type	RC0201						
Voltage(AC)	50V _{rms}						
Resistance to Soldering Heat	MIL-STD-202F-method 210C; IEC 60115-1 4.18	Unmounted chips; $260\pm 5^\circ\text{C}$ for 10±1 seconds	$\pm(0.5\%+0.05\Omega)$ for 1% tol $\pm(1.0\%+0.05\Omega)$ for 5% tol No visible damage				
Life	MIL-STD-202F-method 108A; IEC 60115-1 4.25.1	At $70\pm 2^\circ\text{C}$ for 1,000 hours; RCWV applied for 1.5 hours on and 0.5 hour off	$\pm(1.0\%+0.05\Omega)$ for 1% tol $\pm(3.0\%+0.05\Omega)$ for 5% tol				

Chip Resistor Surface Mount (RC SERIES 0201 Pb Free)

TEST	TEST METHOD	PROCEDURE	REQUIREMENTS														
Solderability	MIL-STD-202F-method 208A;	Solder bath at 245 \pm 3°C	Well tinned (\geq 95% covered)														
	IEC 60115-1 4.17	Dipping time; 2 \pm 0.5 seconds	No visible damage														
Bending	JIS C 5202.6.14;	Resistors mounted on a 90 mm glass	\pm (1.0%+0.05 Ω) for 1% tol														
Strength	IEC 60115-1 4.15	epoxy resin PCB(FR4) Bending: 5mm	\pm (1.0%+0.05 Ω) for 5% tol No visible damage														
Resistance to Solvent	MIL-STD-202F-method 215; IEC 60115-1 4.29	Isopropylalcohol (C_3H_7OH) or dichloromethane (CH_2Cl_2) followed by brushing	No smeared														
Noise	JIS C 5202 5.9; IEC 60115-1 4.12	Maximum voltage(V_{rms}) applied	<table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Resistors range</th> <th style="text-align: left;">Value</th> </tr> </thead> <tbody> <tr> <td>$R < 100 \Omega$</td> <td>10 dB</td> </tr> <tr> <td>$100 \Omega \leq R < 1 K\Omega$</td> <td>20 dB</td> </tr> <tr> <td>$1 K\Omega \leq R < 10 K\Omega$</td> <td>30 dB</td> </tr> <tr> <td>$10 K\Omega \leq R < 100 K\Omega$</td> <td>40 dB</td> </tr> <tr> <td>$100 K\Omega \leq R < 1 M\Omega$</td> <td>46 dB</td> </tr> <tr> <td>$1 M\Omega \leq R < 22 M\Omega$</td> <td>48 dB</td> </tr> </tbody> </table>	Resistors range	Value	$R < 100 \Omega$	10 dB	$100 \Omega \leq R < 1 K\Omega$	20 dB	$1 K\Omega \leq R < 10 K\Omega$	30 dB	$10 K\Omega \leq R < 100 K\Omega$	40 dB	$100 K\Omega \leq R < 1 M\Omega$	46 dB	$1 M\Omega \leq R < 22 M\Omega$	48 dB
Resistors range	Value																
$R < 100 \Omega$	10 dB																
$100 \Omega \leq R < 1 K\Omega$	20 dB																
$1 K\Omega \leq R < 10 K\Omega$	30 dB																
$10 K\Omega \leq R < 100 K\Omega$	40 dB																
$100 K\Omega \leq R < 1 M\Omega$	46 dB																
$1 M\Omega \leq R < 22 M\Omega$	48 dB																
Humidity (steady state)	JIS C 5202 7.5; IEC 60115-8 4.24.8	1,000 hours; 40 \pm 2°C; 93(+2/-3)% RH RCWV applied for 1.5 hours on and 0.5 hour off	\pm (0.5%+0.05 Ω) for 1% tol \pm (2.0%+0.05 Ω) for 5% tol														
Leaching	EIA/IS 4.13B; IEC 60115-8 4.18	Solder bath at 260 \pm 5°C Dipping time: 30 \pm 1 seconds	No visible damage														
Intermittent Overload	JIS C 5202 5.8	At room temperature; 2.5x RCWV applied for 1 second on and 25 seconds off; total 10,000 cycles	\pm (1.0%+0.05 Ω) for 1% tol \pm (2.0%+0.05 Ω) for 5% tol														
Resistance to Vibration	On request	On request															
Moisture Resistance Heat	MIL-STD-202F-method 106F; IEC 60115-1 4.24.2	42 cycles; total 1,000 hours Shown as Fig. 5	\pm (0.5%+0.05 Ω) for 1% tol \pm (2.0%+0.05 Ω) for 5% tol No visible damage														

Chip Resistor Surface Mount (RC SERIES 0201 Pb Free)

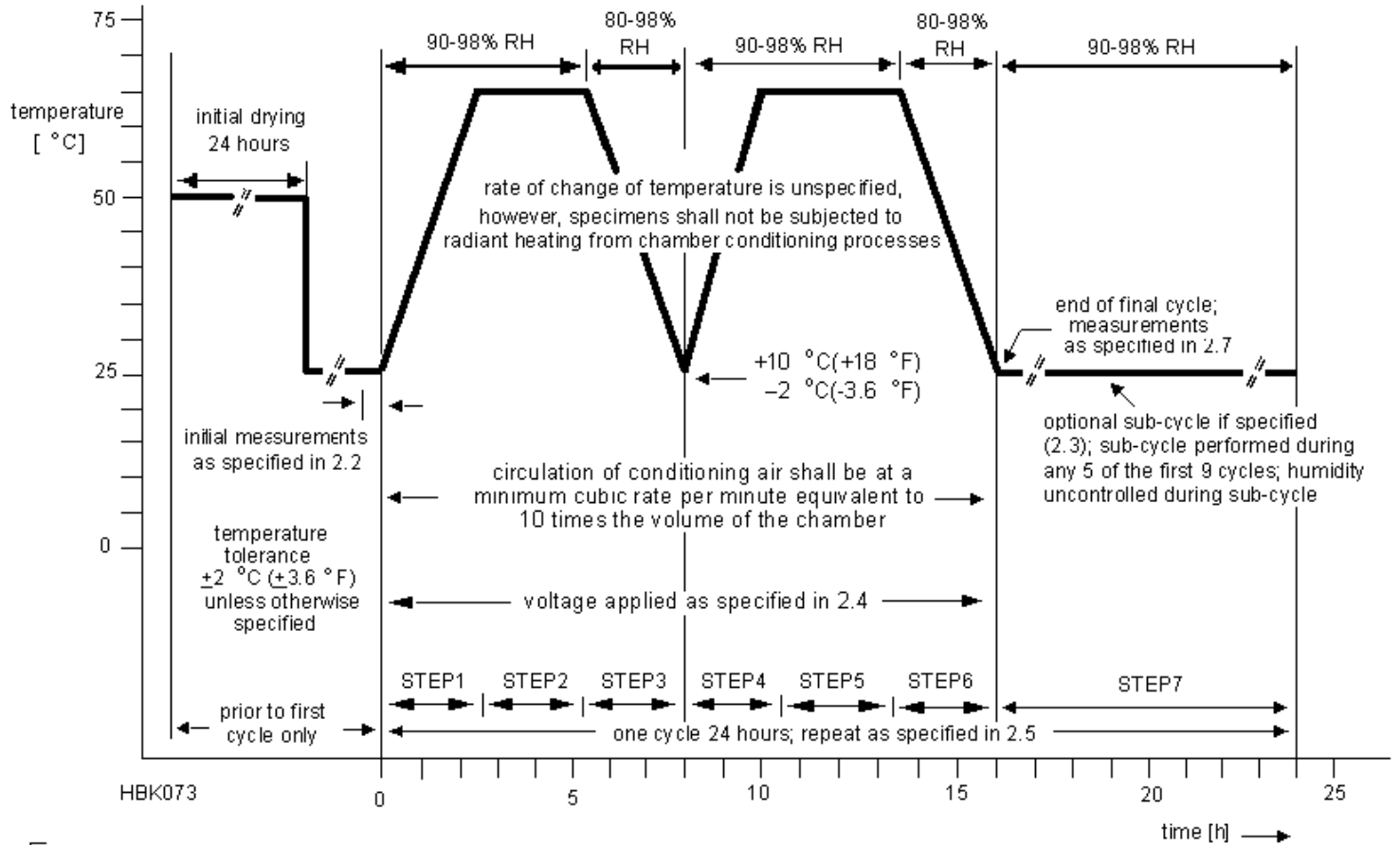
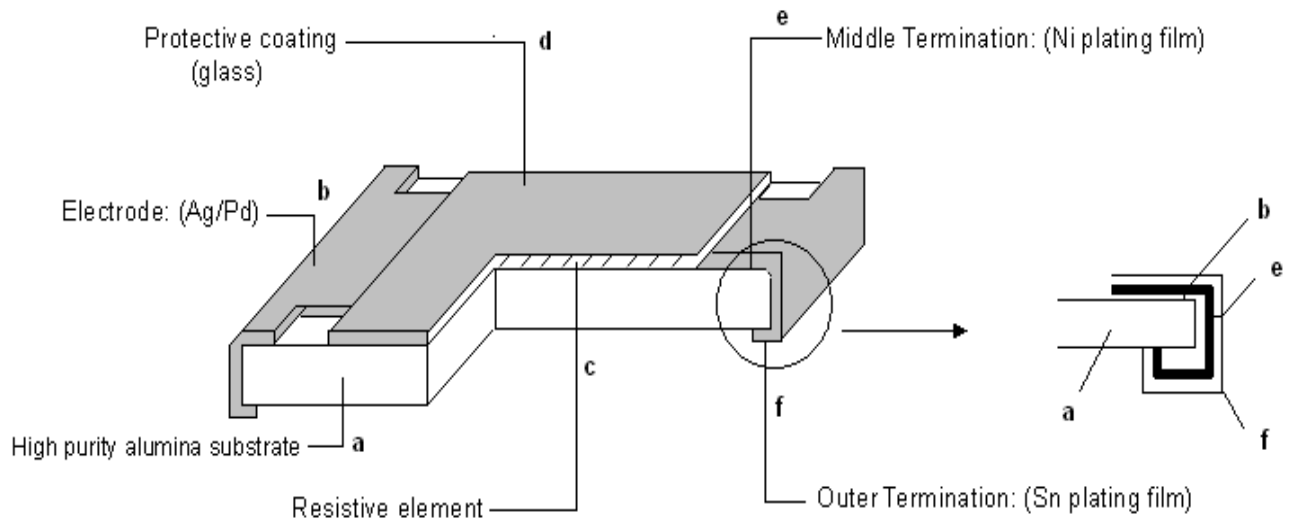


Fig. 5 Moisture resistance test requirements

SMD THICK FILM CHIP RESISTORS

CONSTRUCTION



APPLICATION:

Entertainment: stereo, TV tuners, tape recorder

Appliance: Air condition, refrigerator

Computer & relative products: Main board, PDA

Communication equipment: cell phone, Fax machine

Power equipment: power supply, illumination equipment

Measuring instrument: Electric meter, Navigation equipment

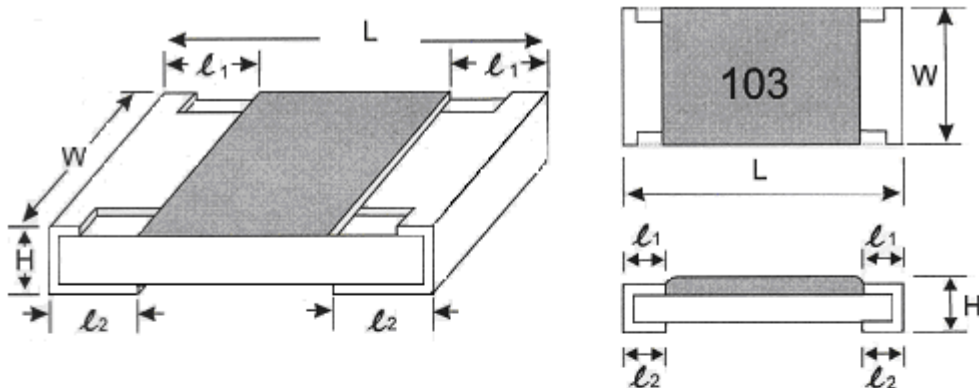
FEATURES:

- Small size and light weight.
- Reduction of assembly costs and matching with placement machines.
- Reliability, High quality and Fast delivery.
- Suitable for both reflow soldering and flow soldering.

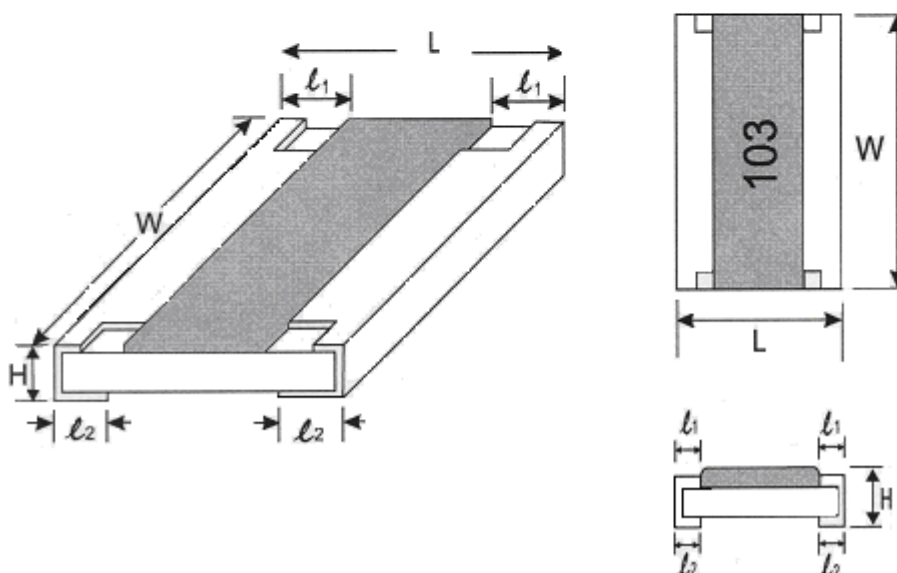
SMD THICK FILM CHIP RESISTORS

DIMENSION

RC0402/RC0603/RC0805/RC1206/RC1210/RC1812/RC2010/RC2512



RC1218



DIMENSION

TYPE	L	W	H	l_1	l_2
RC0402	1.00±0.10	0.50±0.05	0.30±0.05	0.20±0.10	0.20±0.10
RC0603	1.60±0.20	0.80±0.15	0.40±0.10	0.30±0.20	0.30±0.15
RC0805	2.00±0.20	1.25±0.15	0.50±0.15	0.35±0.15	0.35±0.15
RC1206	3.20±0.20	1.60±0.20	0.55±0.15	0.45±0.20	0.45±0.20
RC1210	3.20±0.20	2.50±0.20	0.55±0.15	0.50±0.20	0.50±0.20
RC1812	4.50±0.10	3.00±0.10	0.55±0.05	0.55±0.10	0.80±0.10
RC2010	5.00±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.60±0.20
RC1218	3.10±0.10	4.60±0.10	0.55±0.05	0.45±0.10	0.40±0.10
RC2512	6.30±0.20	3.20±0.20	0.55±0.10	0.60±0.20	0.60±0.20

SMD THICK FILM CHIP RESISTORS

RATINGS

TYPE	Rated Power at 70°C	Max Working Voltage	Max Overload Voltage	T.C.R (PPM/°C)	Resistance Range				Operating Temperature Range
					B(±0.1%) D(±0.5%)	F(±1%)	G(±2%)	J(±5%) K(±10%)	
RC0402	0.063W	50V	100V	+500~-200		1Ω~9.9Ω	1Ω~9.9Ω	1Ω~9.9Ω	-55°C~+155°C
				+300~-300		10Ω~990Ω	10Ω~990Ω	10Ω~990Ω	
				+200~-200	10Ω~1MΩ	1KΩ~10MΩ	1KΩ~10MΩ	1KΩ~10MΩ	
RC0603	0.1W	50V	100V	+400~-400		1Ω~9.9Ω	1Ω~9.9Ω	1Ω~9.9Ω	
				+200~-200			10Ω~10MΩ	10Ω~10MΩ	
				+100~-100	10Ω~1MΩ	10Ω~10MΩ			
RC0805	0.125W	150V	300V	+400~-400		1Ω~9.9Ω	1Ω~9.9Ω	1Ω~9.9Ω	
				+200~-200			10Ω~10MΩ	10Ω~10MΩ	
				+100~-100	10Ω~1MΩ	10Ω~10MΩ			
RC1206	0.25W	200V	400V	+400~-400		1Ω~9.9Ω	1Ω~9.9Ω	1Ω~9.9Ω	
				+200~-200			10Ω~10MΩ	10Ω~10MΩ	
				+100~-100	10Ω~1MΩ	10Ω~10MΩ			
RC1210	0.333W	200V	400V	+400~-400		1Ω~9.9Ω	1Ω~9.9Ω	1Ω~9.9Ω	
				+200~-200			10Ω~10MΩ	10Ω~10MΩ	
				+100~-100	10Ω~1MΩ	10Ω~10MΩ			
RC1812	0.5W	200V	400V	+400~-400		1Ω~9.9Ω	1Ω~9.9Ω	1Ω~9.9Ω	
				+200~-200			10Ω~10MΩ	10Ω~10MΩ	
				+100~-100	10Ω~1MΩ	10Ω~10MΩ			
RC2010	0.5W	200V	400V	+400~-400		1Ω~9.9Ω	1Ω~9.9Ω	1Ω~9.9Ω	
				+200~-200			10Ω~10MΩ	10Ω~10MΩ	
				+100~-100	10Ω~1MΩ	10Ω~10MΩ			
RC1218	1W	200V	400V	+400~-400		1Ω~9.9Ω	1Ω~9.9Ω	1Ω~9.9Ω	
				+200~-200			10Ω~10MΩ	10Ω~10MΩ	
				+100~-100	10Ω~1MΩ	10Ω~10MΩ			
RC2512	1W	200V	400V	+400~-400		1Ω~9.9Ω	1Ω~9.9Ω	1Ω~9.9Ω	
				+200~-200			10Ω~10MΩ	10Ω~10MΩ	
				+100~-100	10Ω~1MΩ	10Ω~10MΩ			

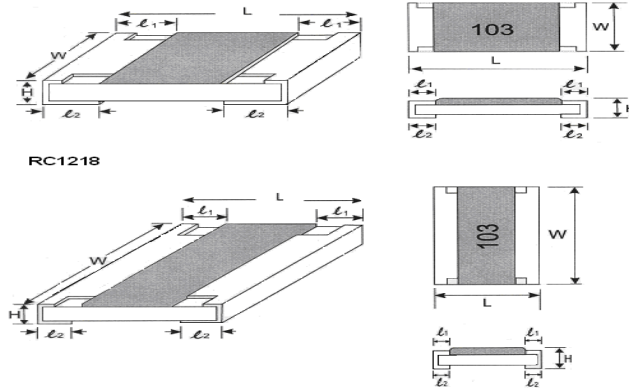
TYPE	RC0402	RC0603	RC0805	RC1206	RC1210	RC1812	RC2010	RC1218	RC2512
Jumper Resistance Value	50mΩ Max								
Rated Power at 70°C	0.063W	0.1W	0.125W	0.25W	0.333W	0.5W	0.5W	1W	1W
Jumper Rated Current	0.5A	1A			2A				
Operating Temperature Range	-55°C~+125°C								

THICK FILM LOW OHM CHIP RESISTORS

Features:

1. Most suitable as resistor for current detection in power source circuits, motor circuits. etc

2. Type 0402/0603/0805/1206/1210/1812/2010/2512



RATINGS

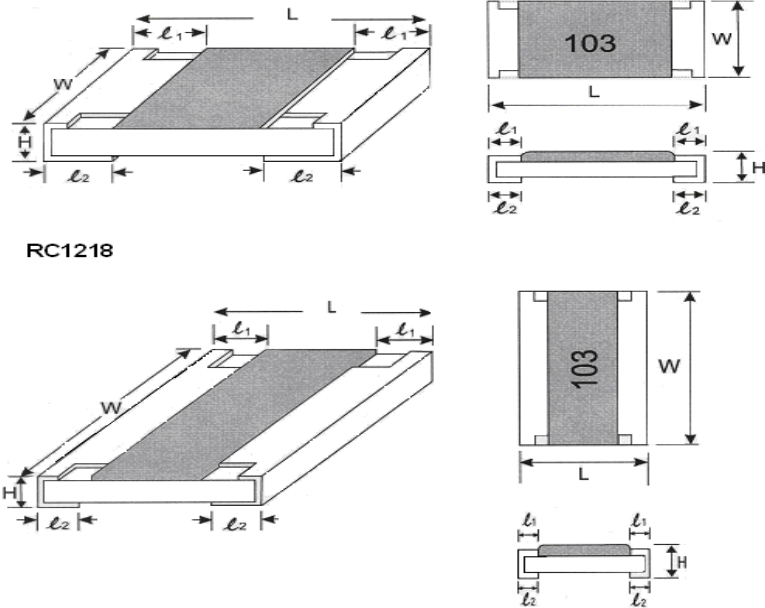
TYPE	Power Rating at 70°C	Rate Current Voltage(Vr)	Max Working Voltage(Vw)	Max Over Load Voltage(Vo)	TCR (PPM/°C)	Resistance Tolerance (%)	Resistance Range (Ω)	Operating Temperature (°C)
0402	0.063W	0.13V~0.86V	0.43V	0.86V	±800	±1%	0.1~0.99	-55°C~+155°C
					±1500	±5%	0.1~0.99	
0603	0.1W	0.17V~1.09V	0.54V	1.08V	±800	±1%	0.01~0.99	-55°C~+155°C
					±1500	±5%	0.01~0.99	
0805	0.125W	0.19V~1.22V	0.61V	1.22V	±800	±1%	0.01~0.99	-55°C~+155°C
					±1500	±5%	0.01~0.99	
1206	0.25W	0.27V~1.74V	0.87V	1.74V	±800	±1%	0.01~0.99	-55°C~+155°C
					±1500	±5%	0.01~0.99	
1210	0.333W	0.31V~1.98V	0.99V	1.98V	±800	±1%	0.01~0.99	-55°C~+155°C
					±1500	±5%	0.01~0.99	
1812	0.5W	0.38V~2.44V	1.22V	2.44V	±800	±1%	0.01~0.99	-55°C~+155°C
					±1500	±5%	0.01~0.99	
2010	0.5W	0.38V~2.44V	1.22V	2.44V	±800	±1%	0.01~0.99	-55°C~+155°C
					±1500	±5%	0.01~0.99	
1218	1W	0.27V~1.74V	0.87V	1.74V	±800	±1%	0.01~0.99	-55°C~+155°C
					±1500	±5%	0.01~0.99	
2512	1W	0.54V~3.46V	1.73V	3.46V	±800	±1%	0.01~0.99	-55°C~+155°C
					±1500	±5%	0.01~0.99	

Rated Resistance

Resistance	Code	0603 Code	Resistance	Code	0603 Code	Resistance	Code	0603 Code	Resistance	Code	0603 Code	Resistance	Code	0603 Code
10mΩ	R010	010	65mΩ	R065	065	0.12Ω	R120	R12	0.27Ω	R270	R27	0.56Ω	R560	R56
15mΩ	R015	015	68mΩ	R068	068	0.13Ω	R130	R13	0.30Ω	R300	R30	0.60Ω	R600	R60
20mΩ	R020	020	70mΩ	R070	070	0.15Ω	R150	R15	0.33Ω	R330	R33	0.65Ω	R650	R65
30mΩ	R030	030	75mΩ	R075	075	0.16Ω	R160	R16	0.36Ω	R360	R36	0.68Ω	R680	R68
40mΩ	R040	040	80mΩ	R080	080	0.18Ω	R180	R18	0.40Ω	R400	R40	0.70Ω	R700	R70
50mΩ	R050	050	90mΩ	R090	090	0.20Ω	R200	R20	0.43Ω	R430	R43	0.75Ω	R750	R75
56mΩ	R056	056	0.10Ω	R100	R10	0.22Ω	R220	R22	0.47Ω	R470	R47	0.80Ω	R800	R80
60mΩ	R060	060	0.11Ω	R110	R11	0.25Ω	R250	R25	0.50Ω	R500	R50	0.90Ω	R900	R90

THICK FILM HIGH OHM CHIP RESISTORS

1. Design for using in compact instrumentation i.e. pyroelectric sensor etc.
2. Type RC0402/RC0603/RC0805/RC1206/RC1210/RC1812/RC2010/RC2512



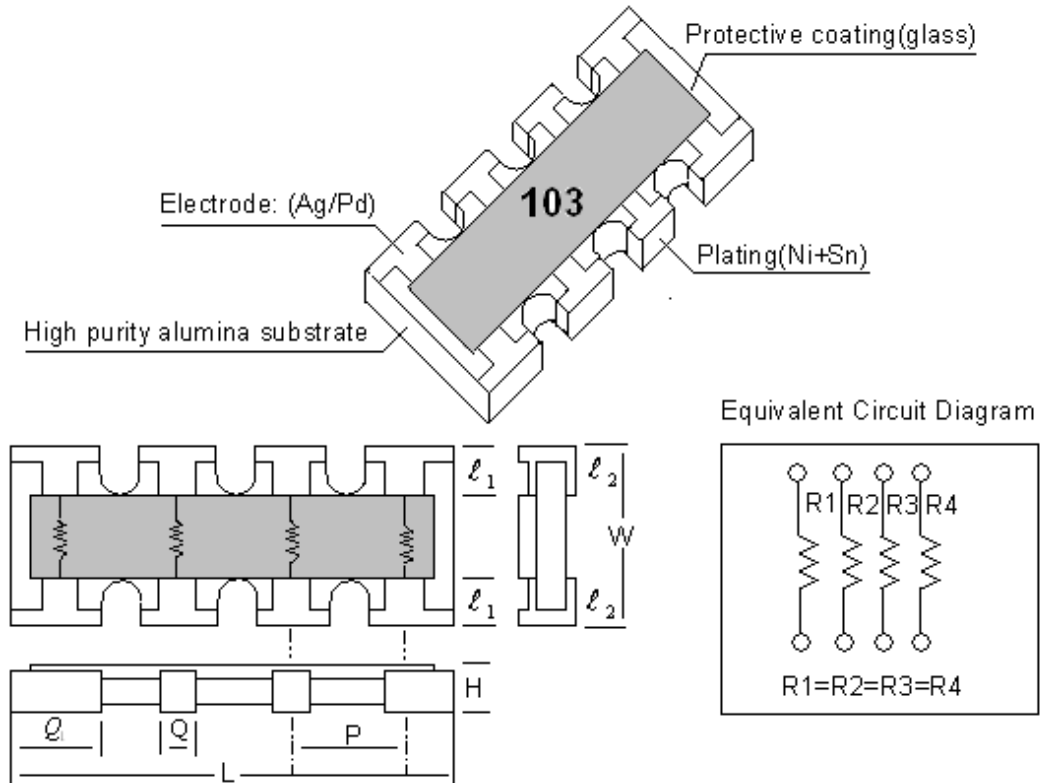
RATINGS

TYPE	Power Rating at 70°C	Max Working Voltage(Vw)	Max Over Load Voltage(Vo)	TCR (PPM/°C)	Resistance Tolerance (%)	Resistance Range (Ω)	Operating Temperature (°C)
0402	0.063W	50V	100V	±200	±1%	10.1M~54M	-55°C~+155°C
					±5%	10.1M~100M	
					±10%	10.1M~100M	
0603	0.1W	50V	100V	±200	±1%	10.1M~54M	
					±5%	10.1M~100M	
					±10%	10.1M~100M	
0805	0.125W	150V	300V	±200	±1%	10.1M~54M	
					±5%	10.1M~100M	
					±10%	10.1M~100M	
1206	0.25W	200V	400V	±200	±1%	10.1M~54M	
					±5%	10.1M~100M	
					±10%	10.1M~100M	
1210	0.333W	200V	400V	±200	±1%	10.1M~54M	
					±5%	10.1M~100M	
					±10%	10.1M~100M	
1812	0.5W	200V	400V	±200	±1%	10.1M~54M	
					±5%	10.1M~100M	
					±10%	10.1M~100M	
2010	0.5W	200V	400V	±200	±1%	10.1M~54M	
					±5%	10.1M~100M	
					±10%	10.1M~100M	
1218	1W	200V	400V	±200	±1%	10.1M~54M	
					±5%	10.1M~100M	
					±10%	10.1M~100M	
2512	1W	200V	400V	±200	±1%	10.1M~54M	
					±5%	10.1M~100M	
					±10%	10.1M~100M	

THICK FILM CHIP RESISTORS ARRAYS

FCN124R (0402 4 Elements)

FCN164R (0603 4 Elements)



Dimension

Unit: mm

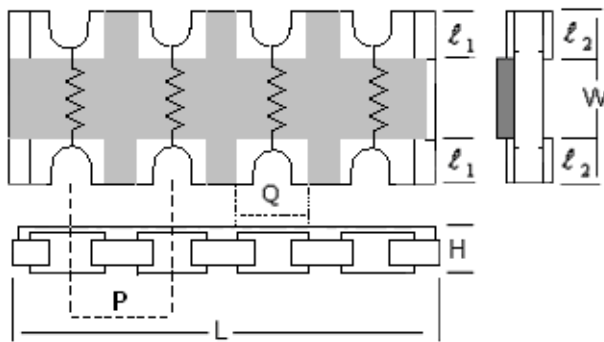
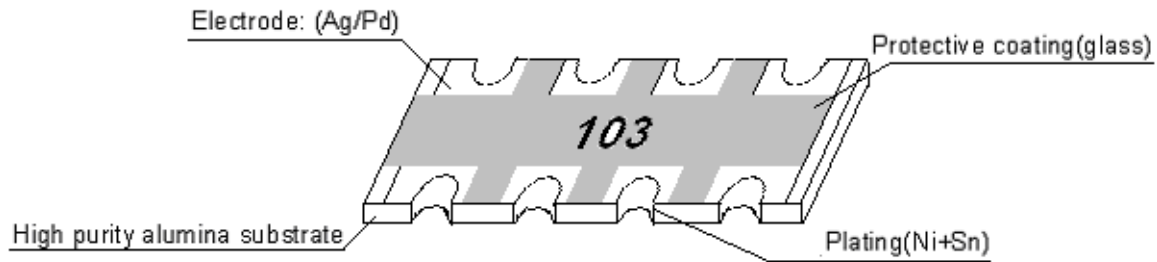
DIMENSION TYPE	L	W	H	l_1	l_2	P	Q	Q_1
FCN124R (0402)	2.00 ± 0.10	1.00 ± 0.10	0.40 ± 0.10	0.20 ± 0.10	0.20 ± 0.10	0.50 ± 0.10	0.30 ± 0.10	0.43 ± 0.10
FCN164R (0603)	3.20 ± 0.20	1.60 ± 0.15	0.50 ± 0.10	0.30 ± 0.20	0.30 ± 0.20	0.80 ± 0.20	0.50 ± 0.10	0.61 ± 0.10

RATINGS

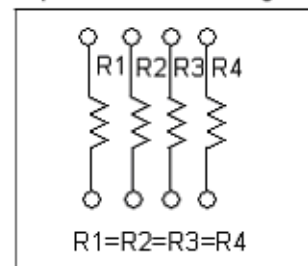
TYPE	Power Rating at 70°C	Rate Current of Jumper (A)	Max Working Voltage (Vw)	Max Over Load Voltage (Vo)	TCR (PPM/°C)	Resistance Tolerance (%)	Resistance Range (Ω)	Operating Temperature (°C)
FCN124R	0.063W	1A	50V	100V	±200	JUMPER	below 50m	-55°C ~ +155°C
						±1%	10~1M	
						±5%	10~1M	
FCN164R	0.063W	1A	50V	100V	±200	JUMPER	below 50m	-55°C ~ +155°C
						±1%	10~1M	
						±5%	10~1M	

THICK FILM CHIP RESISTORS ARRAYS

- FCN124C (0402 4 Elements)
- FCN164C (0603 4 Elements)



Equivalent Circuit Diagram



Dimension

Unit: mm

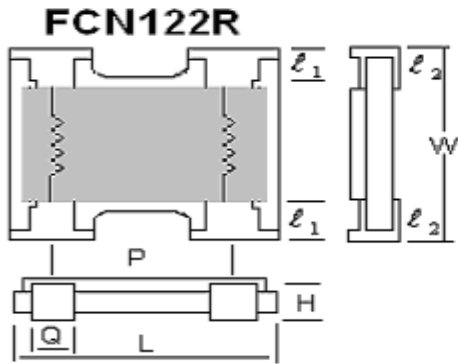
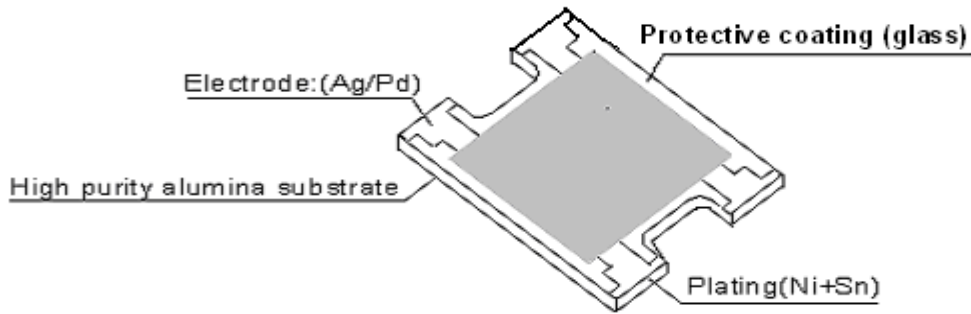
DIMENSION TYPE	L	W	H	l_1	l_2	P	Q
FCN124C (0402)	2.00 ± 0.10	1.00 ± 0.10	0.40 ± 0.10	0.15 ± 0.10	0.20 ± 0.10	0.50 ± 0.10	0.30 ± 0.10
FCN164C (0603)	3.20 ± 0.20	1.60 ± 0.20	0.50 ± 0.10	0.35 ± 0.20	0.40 ± 0.20	0.80 ± 0.10	0.40 ± 0.10

RATINGS

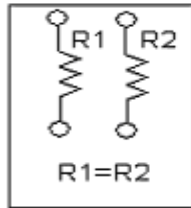
TYPE	Power Rating at 70°C	Rate Current of Jumper (A)	Max Working Voltage(Vw)	Max Over Load Voltage(Vo)	TCR (PPM/°C)	Resistance Tolerance (%)	Resistance Range (Ω)	Operating Temperature (°C)
FCN124C	0.063W	1A	50V	100V	± 200	JUMPER	below 50m	-55°C~+155°C
						$\pm 1\%$	10~1M	
						$\pm 5\%$	10~1M	
FCN164C	0.063W	1A	50V	100V	± 200	JUMPER	below 50m	-55°C~+155°C
						$\pm 1\%$	10~1M	
						$\pm 5\%$	10~1M	

THICK FILM CHIP RESISTORS NETWORK (Lead Free)

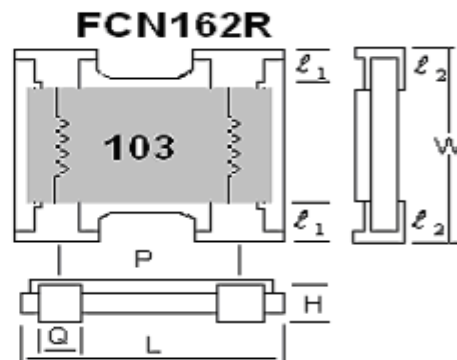
- FCN122R (0402 2 Elements)
- FCN162R (0603 2 Elements)



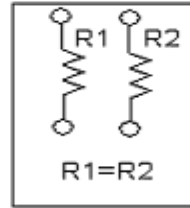
Equivalent Circuit Diagram



FCN122R
No Marking



Equivalent Circuit Diagram



FCN162R
code number same as
1% : 0603
5% : 0603

Dimension

Unit: mm

DIMENSION TYPE	L	W	H	l_1	l_2	P	Q
FCN122R (0402)	1.00±0.10	1.00±0.10	0.33±0.05	0.15±0.10	0.25±0.10	0.67±0.10	0.34±0.10
FCN162R (0603)	1.60±0.15	1.60±0.15	0.50±0.04	0.30±0.10	0.30±0.10	0.99±0.10	0.61±0.10

RATINGS

TYPE	Power Rating at 70°C	Rate Current of Jumper (A)	Max Working Voltage (Vw)	Max Over Load Voltage (Vo)	TCR (PPM/°C)	Resistance Tolerance (%)	Resistance Range (Ω)	Operating Temperature (°C)
FCN122R	0.063W	1A	50V	100V	±200	JUMPER	below 50m	-55°C~+155°C
						±1%	10~1M	
						±5%	10~1M	
FCN162R	0.1W	1A	50V	100V	±200	JUMPER	below 50m	-55°C~+155°C
						±1%	10~1M	
						±5%	10~1M	

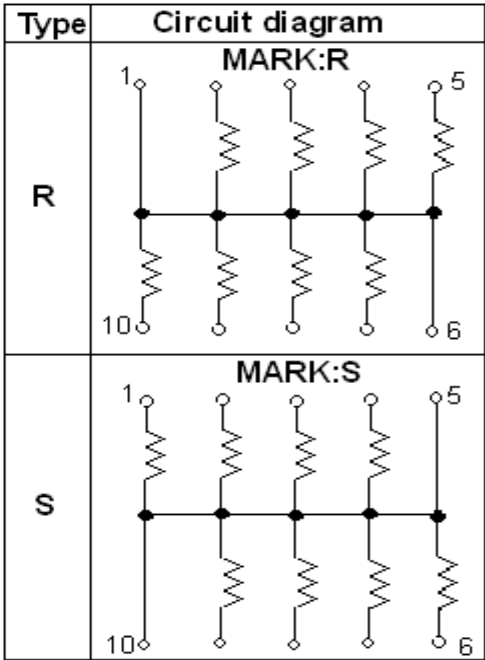
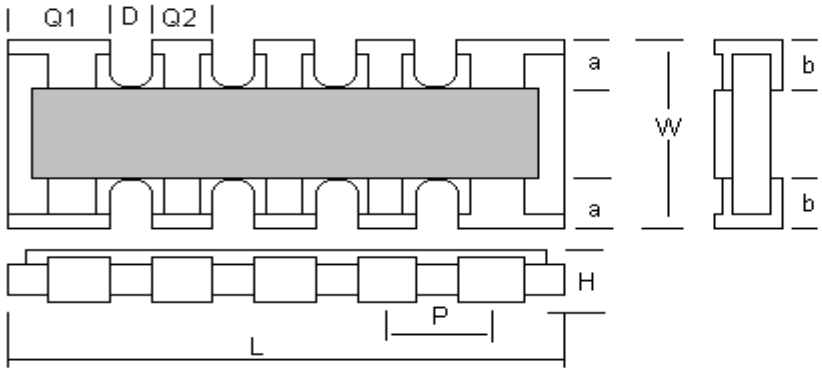
THICK FILM CHIP RESISTORS NETWORK (Lead Free)

FCN128R (0402 8 Elements 10P8R)

Features

1. This product is highly suitable for the purpose of pull-up and pull-down.
2. It is easy to handle because of no specified direction for mounting due to the symmetrical placement of common terminal.

Dimension



Unit: mm

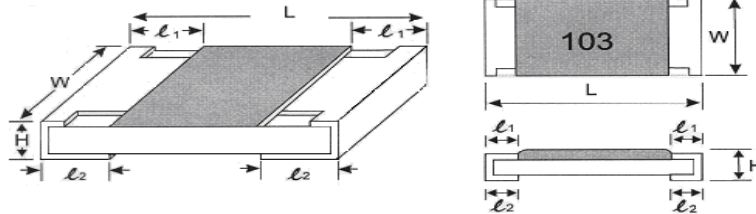
TYPE	L	W	H	D	Q1	Q2	a	b	P
FCN128R (0402)	3.20±0.20	1.60±0.10	0.55±0.10	0.32±0.10	0.53±0.10	0.32±0.15	0.30±0.15	0.30±.15	0.64±0.10

RATINGS

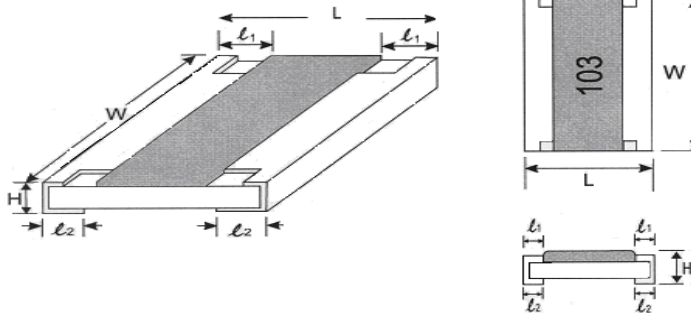
TYPE	Rated Power at 70°C	Maximum Working Voltage (Vw)	Maximum Overload Voltage (Vo)	Temperature Coefficient of Resistance (PPM/°C)	Resistance Range	Resistance Tolerance	Operating Temperature (°C)
FCN128R	0.063W	50V	100V	±200	10Ω~1MΩ	±5%	-55°C~+155°C

TRIMMABLE CHIP RESISTORS (Lead Free)

Type RC0402/RC0603/RC0805/RC1206/RC1210/RC1812/RC2010/RC2512



RC1218



DIMENSION

Unit: mm

TYPE	L	W	H	l_1	l_2
RC0402	1.00±0.10	0.50±0.05	0.30±0.05	0.20±0.10	0.20±0.10
RC0603	1.60±0.20	0.80±0.15	0.40±0.10	0.30±0.20	.300±0.15
RC0805	2.00±0.20	1.25±0.15	0.50±0.15	0.35±0.15	0.35±0.15
RC1206	3.20±0.20	1.60±0.20	0.55±0.15	0.45±0.20	0.45±0.20
RC1210	3.20±0.20	2.50±0.20	0.55±0.15	0.50±0.20	0.50±0.20
RC1812	4.50±0.10	3.00±0.10	0.55±0.05	0.55±0.10	0.80±0.10
RC2010	5.00±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.60±0.20
RC1218	3.10±0.10	4.60±0.10	0.55±0.05	0.45±0.10	0.40±0.10
RC2512	6.30±0.20	3.20±0.20	0.55±0.10	0.60±0.20	0.60±0.20

RATINGS

TYPE	Power Rating at 70°C	Max Working Voltage (Vw)	Max Over Load Voltage (Vo)	TCR (PPM/°C)	Resistance Tolerance (%)	Resistance Range (Ω)	Operating Temperature (°C)
RC0402	0.063W	50V	100V	±200	±15% ±20% ±30%	10~1M	-55°C ~ +155°C
RC0603	0.1W	50V	100V				
RC0805	0.125W	150V	300V				
RC1206	0.25W	200V	400V				
RC1210	0.33W	200V	400V				
RC1812	0.5W	200V	400V				
RC2010	0.5W	200V	400V				
RC1218	1.0W	200V	400V				
RC2512	1.0W	200V	400V				

TRIMMABLE CHIP RESISTORS (Lead Free)

The importance of final adjustment of electric circuits is increasing as electrical products that become more sophisticated and diversified. Instead of a variable resistor, the TCR series Chip Resistors are developed for those purposes.

APPLICATION

This trimmable chip resistor is suitable for the circuit demanding stability as a replacement of variable resistor adjusting circuit. Please note that customer needs laser trimming machine by themselves.

Trimmed by laser. Resistance rising rate is up to initial resistance x2.
As rising rate differs depend on trimming form. Please refer to fig-1.

RESISTANCE RISING RATE

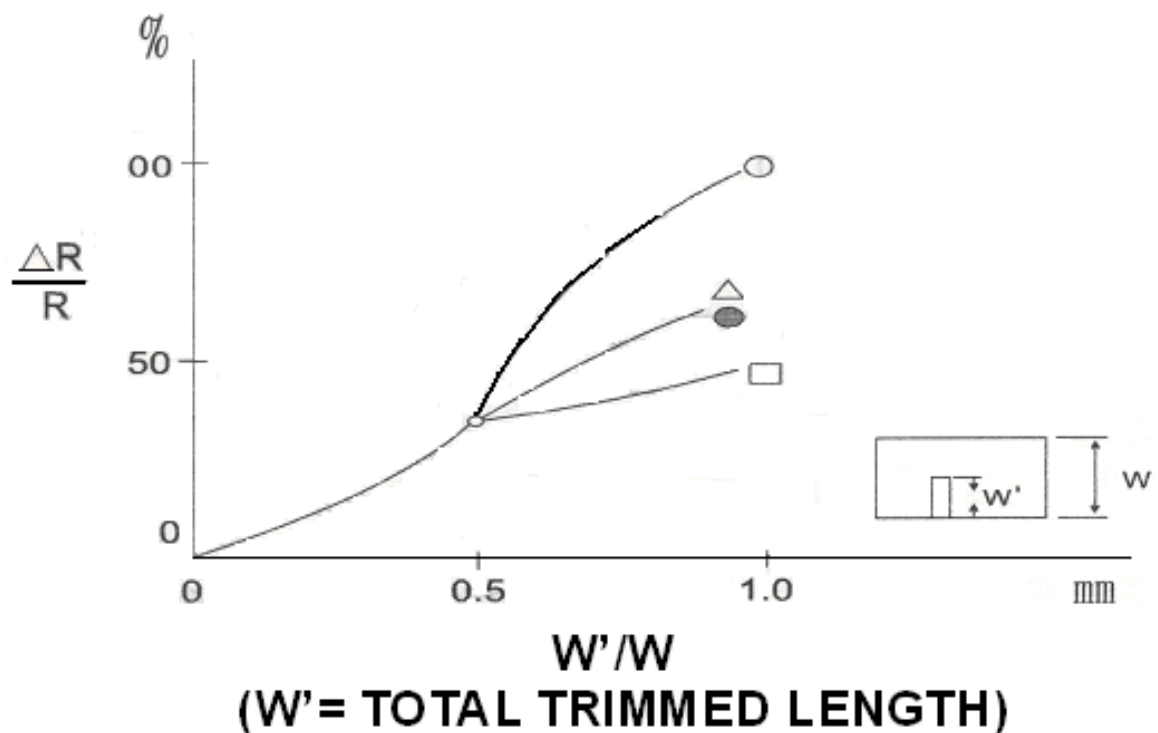


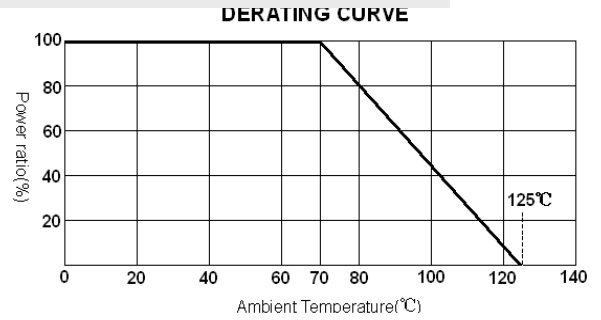
fig-1

- Single cut
- △ Double cut
- Double reverse out
- L cut

PERFORMANCE CHARACTERISTICS (Lead Free)

Power Derating Curve:

As resistors operated in ambient temperatures above 70°C~125°C, power ratio shall be derated in accordance with figure right.



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 form as following:

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

E=Rated voltage (V)

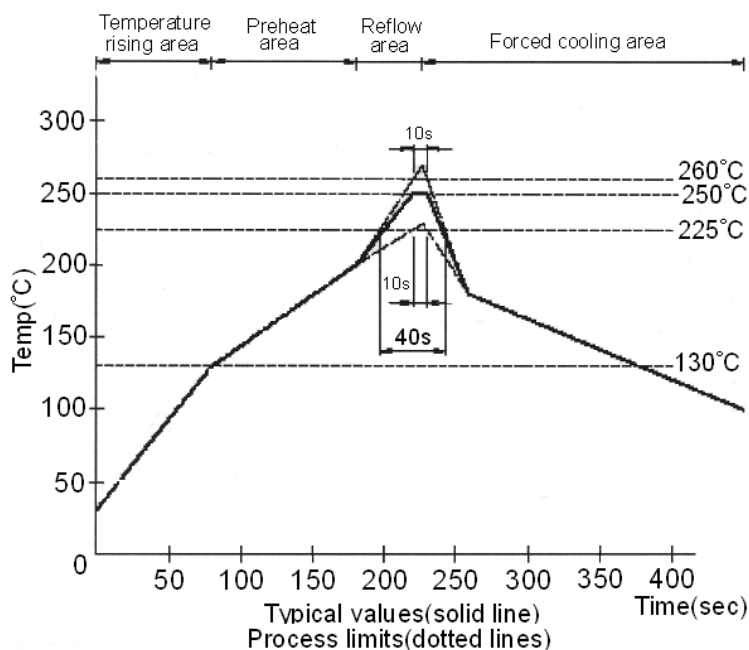
P=Power rating (W)

R=Nominal resistance (Ω)

Operation 、 Storage and Shipping temperature

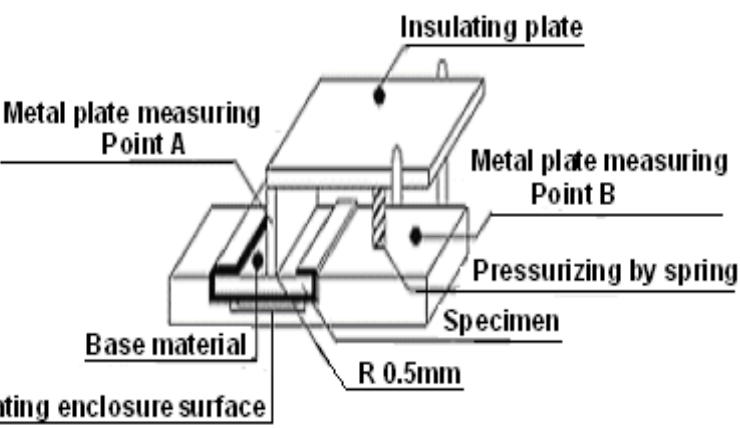
	MIN	MAX
Operation temperature	-55°C	70°C
Storage temperature	-55°C	125°C
Shipping temperature	-55°C	125°C
Storage humidity	RH \leq 60%	

Soldering profile



PERFORMANCE CHARACTERISTICS (Lead Free)

Electrical performance Test

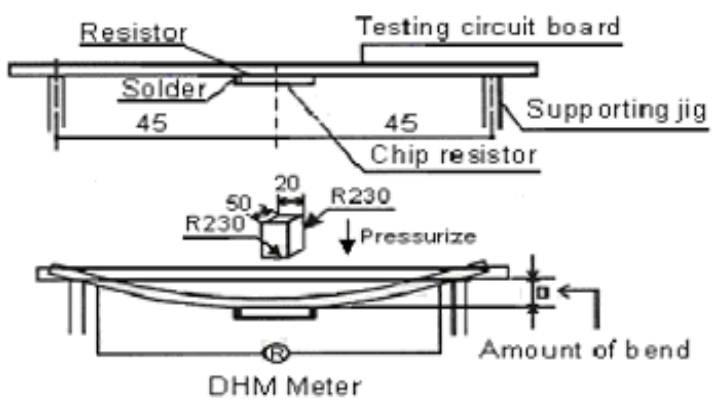
Test Item	Test Methods	Description
Temperature Coefficient of Resistance	$TCR(PPM/^{\circ}C) = \frac{(R2 - R1)}{R1(T2 - T1)} \times 10^6$ <p>R1: Resistance at room temperature R2: Resistance at -55°C or +125°C T1: Room temperature T2: Temperature -55°C or +125°C</p>	JIS C 5202.....clause 5.2
		Refer to Ratings
Short Time Overload	Apply 2.5 times rated voltage for 5 secs, and released to load for about 30 minutes, then measure the resistance.	JIS C 5202.....clause 5.5
		<p>(WV)= $2.5\sqrt{WR}$ ON 5 sec.</p> <p>Requirement:</p> <p>±5: ±(2.0% ±0.1 Ω) Max</p> <p>±1: ±(1.0% ±0.05 Ω) Max</p>
		No evidence of mechanical damage, no short or burned on the appearance
Insulation Resistance	<p>Put the resistor in the fixture, add 100VDC in +, - $\geq 10^9 \Omega$ terminal for 60 sec. Then measured the insulation resistance between electrodes and insulating enclosure or between electrodes and base material.</p> 	JIS C 5202.....clause 5.6
		$\geq 10^9 \Omega$

Mechanical Performance Test

Test Item	Test Methods	Description											
IR Reflow	<p>Peak: 250^o °C 230^o °C or higher Pre Heating Zone 180^o °C 150^o °C 90±30 s 30±10 s Soldering Zone Heating time</p>	Sony SS-00254 Resistance Range: $\geq 1\Omega$ $\Delta R\% = +(1.0\% + 0.05\Omega)$ No evidence of electrode damage. No side conductive peel off.											
		Sony SS-00254 Solder coverage over 95%											
Wetting Balance Test	Testing conditions for wetting balance method with solder pot	Sony SS-00254 Solder coverage over 95%											
	<table border="1"> <thead> <tr> <th></th> <th>Condition</th> </tr> </thead> <tbody> <tr> <td>Solder temperature</td> <td>245±3^oC</td> </tr> <tr> <td>Immersion speed</td> <td>1 to 5 mm/s</td> </tr> <tr> <td>Immersion depth</td> <td>0.1mm</td> </tr> <tr> <td>Immersion angle</td> <td>Horizontal</td> </tr> <tr> <td rowspan="2">Mass of solder ball</td> <td>25mg→0402、0603</td> </tr> <tr> <td>200mg→0805、1206、1210、2010、2512</td> </tr> </tbody> </table>			Condition	Solder temperature	245±3 ^o C	Immersion speed	1 to 5 mm/s	Immersion depth	0.1mm	Immersion angle	Horizontal	Mass of solder ball
	Condition												
Solder temperature	245±3 ^o C												
Immersion speed	1 to 5 mm/s												
Immersion depth	0.1mm												
Immersion angle	Horizontal												
Mass of solder ball	25mg→0402、0603												
	200mg→0805、1206、1210、2010、2512												
Soldering Heat	Test Temp: 260±5^oC Dip time: 10 secs. The part get through above step lasting 30 mins and than measure its resistance rate.	JIS-C5202-6.4 Resistance Range: $\geq 1\Omega$ ±1%: $\Delta R\% = \pm(0.5\% + 0.05)$											
		Sony SS-00254-5 Resistance Range: $\geq 1\Omega$ $\Delta R\% = +(1.0\% + 0.05\Omega)$ No evidence of electrode damage.											
Electric iron Test	Preheating temperature: 350±5^oC Electric iron preheating time: 3+1/-0 sec Preheat the electric iron on electrode termination, as after that step place the iron over 60 mins and measure its resistance rate.	Sony SS-00254-5 Resistance Range: $\geq 1\Omega$ $\Delta R\% = +(1.0\% + 0.05\Omega)$ No evidence of electrode damage.											
Leaching Test	The tested resistor be immersed into molten solder of 260±5^oC for 30 seconds. Then the resistor is left as placed under microscope to observed its solder area.	Sony SS-00254-9 1. Solder coverage over 95% 2. The underlying material (such as ceramic) shall not be visible at the crest corner area of the electrode.											

PERFORMANCE CHARACTERISTICS (Lead Free)

☐ Mechanical Performance Test

Test Item	Test Methods	Description
Steam	<p>Put the resistor in the vessel of temperature 100 °C relative humidity 100% for 4 hrs then immerse it in solder pot at 230±5°C for 3 secs.</p>	JIS-C5202-6.11.4
		Solder coverage over 95%
Resistance to solvent	<p>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.</p>	JIS C 5202.....clause 6.9
		<p>Resistance Range: $\geq 1 \Omega$ $\pm(0.5\%+0.05 \Omega)$</p> <p>No evidence of mechanical damage, no G2 over coating and Sn layer by leaching.</p>
Bending Strength	<p>Solder tested resistor on the PC board. Add force in the middle down, and under load measured its resistance variance rate.</p> <p>D: RC0402 、 0603 、 0805= 5mm RC1206 、 1812= 3mm RC2012 、 2512= 2mm</p> <p style="text-align: right;">Unit:mm</p> 	JIS C 5202.....clause 6.1.4
		<p>(1)Variance rate on resistance Resistance Range: $\geq 1 \Omega$ $\Delta R\% = \pm(1.0\%+0.05 \Omega)$</p> <p>(2)No evidence of mechanical damage. No terminal peel off and core body cracked.</p>

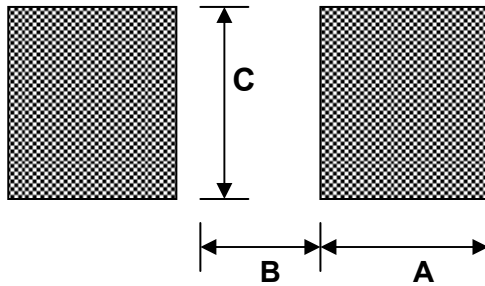
PERFORMANCE CHARACTERISTICS (Lead Free)

□ Environmental Test

Test Item	Test Methods	Description															
Temperature Cycling	<p>Put the tested resistor in the chamber under the temperature cycle which shown in the following table shall be repeated 5 times consecutively. Then leaving the tested resistor in the room temperature for 1 hr, and measure its resistance variance rate</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr style="background-color: #ADD8E6;"> <th>Step</th> <th>Temperature (°C)</th> <th>Time (minute)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">-55±3</td> <td style="text-align: center;">30</td> </tr> <tr style="background-color: #FFFF00;"> <td style="text-align: center;">2</td> <td style="text-align: center;">25±3</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">125±3</td> <td style="text-align: center;">30</td> </tr> <tr style="background-color: #FFFF00;"> <td style="text-align: center;">4</td> <td style="text-align: center;">25±3</td> <td style="text-align: center;">3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Time (minute)	1	-55±3	30	2	25±3	3	3	125±3	30	4	25±3	3	<p style="background-color: #ADD8E6; padding: 2px;">JIS C 5202.....clause 7.4</p> <p>Resistance Range: $\geq 1\Omega$ 0.1%、0.5%、1%: $\pm(0.5\%+0.05\Omega)$ 2%、5%: $\pm(1.0\%+0.10\Omega)$</p>
		Step	Temperature (°C)	Time (minute)													
1	-55±3	30															
2	25±3	3															
3	125±3	30															
4	25±3	3															
<p>No evidence of mechanical damage, no short or burned on the appearance.</p>																	
Loading Life in Moisture	<p>Put tested resistors in the chamber under temperature $40\pm 2^{\circ}\text{C}$, relative humidity 90~95% for 90 minutes on, 30 minutes off, total 1000 hours. Leaving the tested resistor in the room temperature of 60 minutes, measure the resistance.</p>	<p style="background-color: #ADD8E6; padding: 2px;">JIS C 5202.....clause 7.9</p> <p>Resistance Range: $\geq 1\Omega$ 0.1%、0.5%、1%: $\pm(0.5\%+0.05\Omega)$ 2%、5%: $\pm(2.0\%+0.05\Omega)$</p>															
		<p>No evidence of electrode damage.</p>															
Load Life	<p>Put the tested resistor in the chamber under temperature $70\pm 2^{\circ}\text{C}$, and load the rated voltage for 90 minutes on, 30 minutes off, total 1000 hours. Then leaving the tested resistor in the room temperature of 60 minutes, and measure its resistance variance rated.</p>	<p style="background-color: #ADD8E6; padding: 2px;">JIS C 5202.....clause 7.10</p> <p>Resistance Range: $\geq 1\Omega$ 0.1%、0.5%、1%: $\pm(1.0\%+0.05\Omega)$ 2%、5%: $\pm(3.0\%+0.10\Omega)$</p>															
		<p>No evidence of electrode damage.</p>															

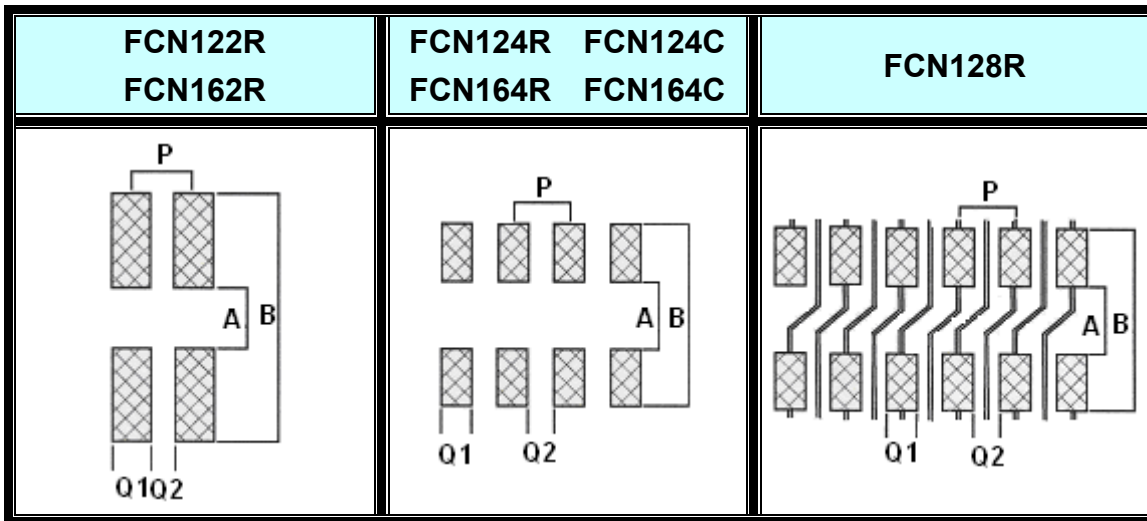
PERFORMANCE CHARACTERISTICS (Lead Free)

RECOMMEND LAND PATTERN DESIGN (For Reflow Soldering):



Unit: mm

DIM. \ TYPE	RC0402	RC0603	RC0805	RC1206	RC1210	RC1812	RC2010	RC1218	RC2512
A	1.60	2.40	2.90	4.20	4.40	5.91	6.60	4.24	8.10
B	0.60	0.80	1.30	2.20	2.00	3.11	3.80	2.04	4.90
C	0.70	1.00	1.40	1.70	2.70	3.00	2.70	4.50	3.40



Unit: mm

DIM \ TYPE	A	B	P	Q1	Q2
FCN122R	0.50	2.00	0.67	0.33	0.34
FCN162R	1.00	2.60	0.95	0.62	0.38
FCN124R FCN124C	0.50	2.00	0.50	0.28	0.22
FCN164R FCN164C	1.00	2.60	0.80	0.40	0.40
FCN128R	3.10	2.60	0.30	0.40	0.40

PARTS NUMBER EXPLANATION (Lead Free)

EXAMPLE: RC1206 103 J

TYPE NOMINAL RESISTOR
RESISTANCE TOLERANCE

TYPE	
1005(0402)	RC0402
1608(0603)	RC0603
2012(0805)	RC0805
3216(1206)	RC1206
3225(1210)	RC1210
5025(2010)	RC2010
6432(2512)	RC2512
0402 2 elements	FCN122R
0402 4 elements	FCN124R
0402 4 elements	FCN124C
0402 8 elements	RCN128R
0603 2 elements	RCN162R
0603 4 elements	RCN164R
0603 4 elements	RCN164C

Resistor Tolerance	
B	+0.1%
D	+0.5%
F	+1%
G	+2%
J	+5%
K	+10%
O	Jumper

Nominal Resistance	
E24 Series Eg. 10K=103 2.7 =2R7	3-Digits
E96 Series Eg. 10K=1002 10.2 =10R2	4-Digits
Zero Ohm(Jumper)	000

Package	
P	Paper Taping
B	Bulk
E	Plastic Taping

EXAMPLE: FCN164C 103J
FCN164R 103J

<u>FCN164</u>	<u>R</u>	<u>103</u>	<u>J</u>	<u>P</u>
A	B	C	D	E

<u>FCN164</u>	<u>C</u>	<u>103</u>	<u>J</u>	<u>P</u>
A	B	C	D	E

- A. **Type(FCN164R 0603 ARRAY)**
- B. **Type(R=Convex C=Concave)**
- C. **Resistance Value(E-24 E-96 Series) 10K**
- D. **Tolerance(F:± 1% J:± 5% K:± 10%)**
- E **Packing (P: 500pcs Paper Tape Reel)**
Packing (E: 400pcs Plastic Tape Reel)

EXAMPLE: FCN128R 103J

<u>FCN128</u>	<u>R</u>	<u>103</u>	<u>J</u>	<u>P</u>
A	B	C	D	E

- A. **Type(FCN128Resistor Network 0402 10P8R)**
- B. **Circuit diagram(R type)**
- C. **Resistance Value(E-24 Series)**
- D. **Tolerance(J:± 5% K:± 10%)**
- E **Packing (P: 500pcs Paper Tape Reel)**
Packing (E: 400pcs Plastic Tape Reel)

RC0603 E-96 MULTIPLIER CODE

Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	10 ⁰	10 ¹	10 ²	10 ³	10 ⁴	10 ⁵	10 ⁶	10 ⁷	10 ⁻¹	10 ⁻²	10 ⁻³

CODING FORMULA
 XX X
 ↑ ↑
 Resistance Code Multiplier Code

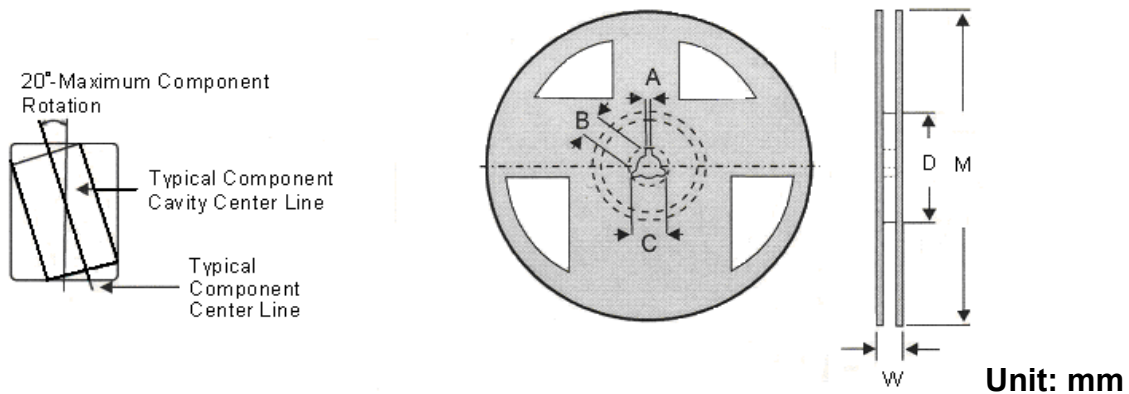
Example: 10.2kΩ = $\frac{102}{02} \times \frac{10^3 \Omega}{C} = 02C$
 33.2Ω = $\frac{332}{51} \times \frac{10^{-1}}{X} = 51X$

(RC0603) STANDARD E-96 VALUES AND 0603 RESISTANCE CODES

R-Value	Code	R-Value	Code	R-Value	Code	R-Value	Code
100	01	178	25	316	49	562	73
102	02	182	26	324	50	576	74
105	03	187	27	332	51	590	75
107	04	191	28	340	52	604	76
110	05	196	29	348	53	619	77
113	06	200	30	357	54	634	78
115	07	205	31	365	55	649	79
118	08	210	32	374	56	665	80
121	09	215	33	383	57	681	81
124	10	221	34	392	58	698	82
127	11	226	35	402	59	715	83
130	12	232	36	412	60	732	84
133	13	237	37	422	61	750	85
137	14	243	38	432	62	768	86
140	15	249	39	442	63	787	87
143	16	255	40	453	64	806	88
147	17	261	41	464	65	825	89
150	18	267	42	475	66	845	90
154	19	274	43	487	67	866	91
158	20	280	44	499	68	887	92
162	21	287	45	511	69	909	93
165	22	294	46	523	70	931	94
169	23	301	47	536	71	953	95
174	24	309	48	549	72	976	96

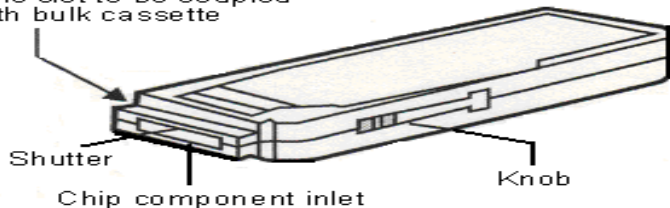
PACKAGING

REEL DIMENSION (mm)



TYPE	SIZE		A	B	C	D	W	M
RC0603	7"	5K/Reel	2.0±0.5	13.5±2.0	21±0.5	60±0.5	12.5±2.0	178±2.0
RC0805	10"	10K/Reel	2.0±0.5	13.5±2.0	21±0.5	80±0.5	12.5±2.0	254±2.0
RC1206	13"	20K/Reel	2.0±0.5	13.5±2.0	21±0.5	80±0.5	12.5±2.0	330±2.0
RC1210								
FCN162R								
FCN164R	7"	5K/Reel	2.0±0.5	13.5±2.0	21±0.5	60±0.5	12.5±2.0	178±2.0
FCN164C								
FCN128R								
RC0402								
FCN122R	7"	10K/Reel	2.0±0.5	13.5±2.0	21±0.5	60±0.5	12.5±2.0	178±2.0
FCN124R								
FCN124C								
RC1210								
RC2010	7"	4K/Reel	2.0±0.5	13.5±2.0	21±0.5	60±0.5	16±2.0	178±2.0
RC2512								
RC1812	7"	5K/Reel	2.0±0.5	13.5±2.0	21±0.5	60±0.5	16±2.0	278
RC1218								

This slot to be coupled with bulk cassette



Dimension of Bulk Case
110(L) x36(W) x12(H)mm

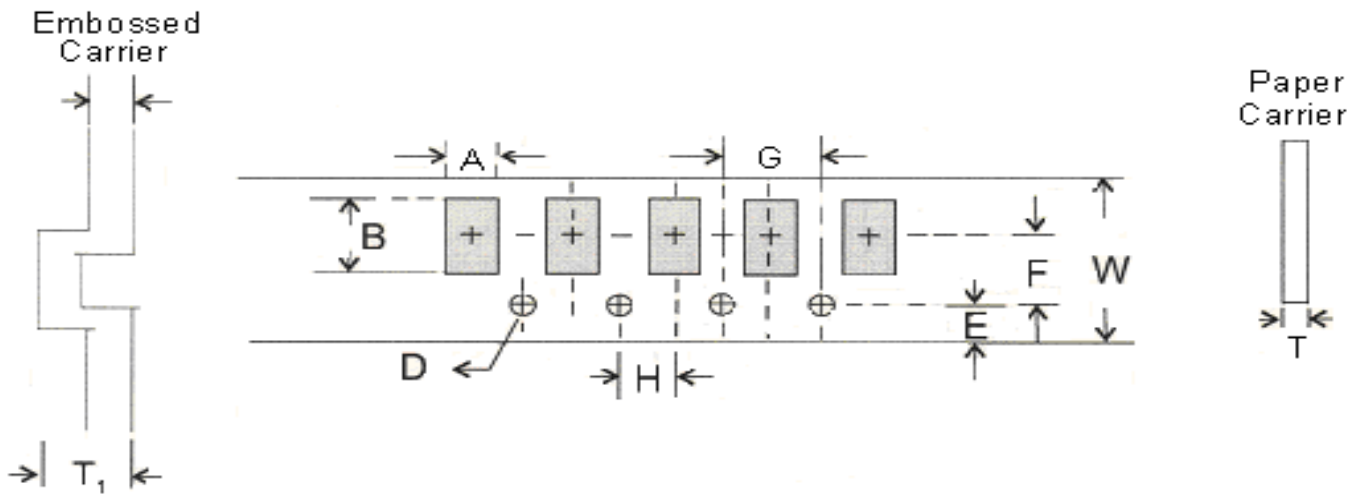
Bulk case was standardized in Mar, 1992(EIA-7201)

0603 25Kpcs

0402 50Kpcs

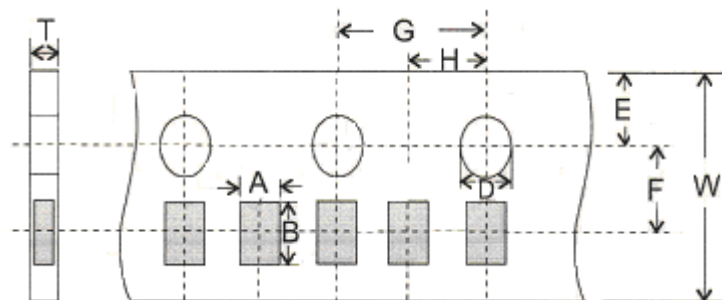
0805 10Kpcs

TAPPING SPECIFICATION



Unit: mm

	Size	A	B	W	E	F	G	H	T	D	T_1
Paper Type	028R	1.90 ± 0.1	3.50 ± 0.2	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.75 ± 0.10	1.5 ± 0.10	
	034C	1.90 ± 0.2	3.45 ± 0.2	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.75 ± 0.10	1.5 ± 0.10	
	034R	1.90 ± 0.2	3.45 ± 0.2	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.75 ± 0.10	1.5 ± 0.10	
	0603	1.05 ± 0.2	1.80 ± 0.2	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.60 ± 0.10	1.5 ± 0.10	
	0805	1.55 ± 0.2	2.30 ± 0.2	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.75 ± 0.10	1.5 ± 0.10	
	1206	1.90 ± 0.2	3.50 ± 0.2	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.75 ± 0.10	1.5 ± 0.10	
	1210	2.85 ± 0.2	3.50 ± 0.2	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.75 ± 0.10	1.5 ± 0.10	
	032R	1.80 ± 0.2	1.80 ± 0.2	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.75 ± 0.10	1.5 ± 0.10	
TE Embossed	2010	2.80 ± 0.2	5.60 ± 0.2	12 ± 0.1	1.75 ± 0.1	5.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.23 ± 0.15	1.5 ± 0.10	0.85 ± 0.15
	2512	3.40 ± 0.2	6.70 ± 0.2	12 ± 0.1	1.75 ± 0.1	5.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.23 ± 0.15	1.5 ± 0.10	0.85 ± 0.15
	LR25	3.40 ± 0.2	6.70 ± 0.2	12 ± 0.1	1.75 ± 0.1	5.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.23 ± 0.15	1.5 ± 0.10	0.85 ± 0.15



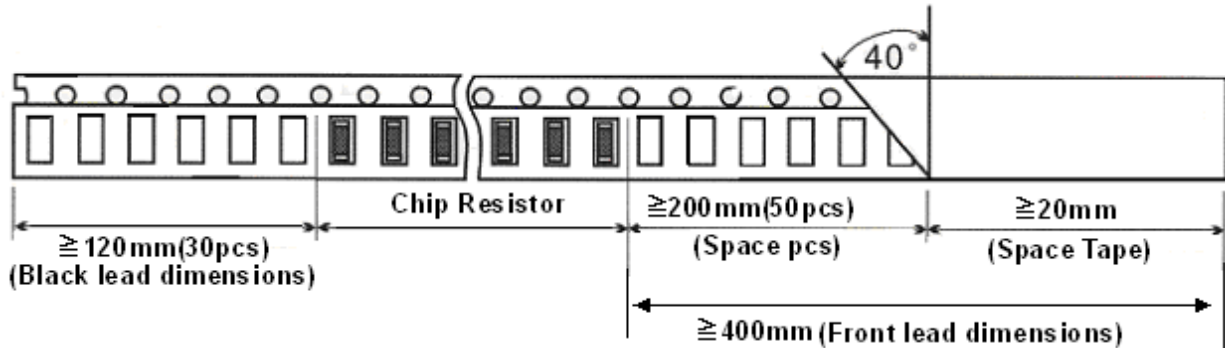
Unit: mm

	Size	A	B	W	E	F	G	H	T	D	T_1
Paper Type	022R	1.25 ± 0.1	1.25 ± 0.1	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.45 ± 0.10	1.5 ± 0.10	
	024C	1.20 ± 0.1	2.20 ± 0.1	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.60 ± 0.10	1.5 ± 0.10	
	024R	1.20 ± 0.1	2.20 ± 0.1	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.60 ± 0.10	1.5 ± 0.10	
	0402	0.7 ± 0.1	1.20 ± 0.1	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.45 ± 0.10	1.5 ± 0.10	

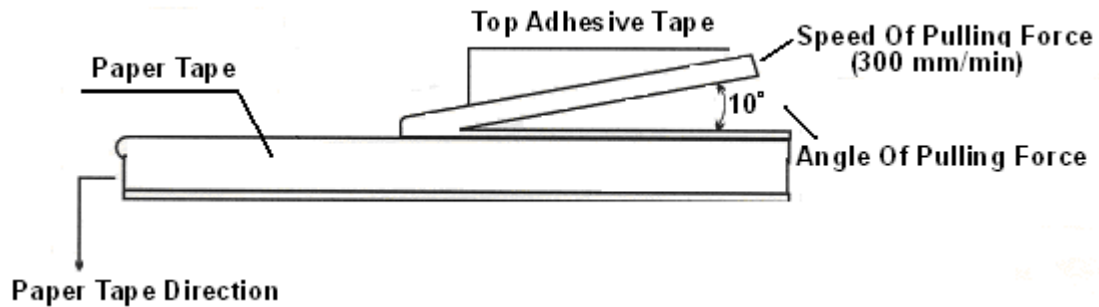
PACKING MATERIAL DATA / STORAGE DATE



Front & Back Lead Dimensions:



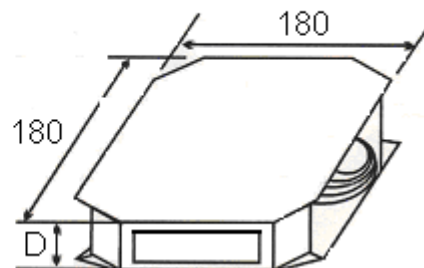
Top Adhesive Peel Off Strength: 10~70 gf



Package:

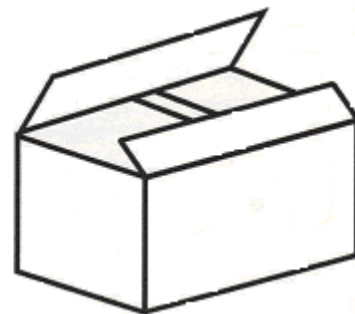
Inner Box Size

Reel	Size D(mm)
1	13
2	24
3	36
5	60
10	113



External Box Size

Contain K pcs	Length(mm)	Width(mm)	Depth(mm)
150K	129	67	67
300K	445	385	203



Storage Date:

Storage time at the environment temp: $25 \pm 5^\circ\text{C}$ · humidity: $60 \pm 15\%$ for two years.

PACKING MATERIAL DATA / STORAGE DATE

Marking code:

**Type: RC0603/RC0805/RC1206/RC1210/RC1812/RC2010/RC1218/RC2512/
FCN164R/FCN162R/FCN124R/FCN124C/FCN164C**

1%: marking code, please refer to E96 and E24 data from as below

Ex: 120K, The marking code is 1203 in E24.

121K, The marking code is 1213 in E96.

5%: marking code, please refer to E24 data from as below

Ex: 120K, The marking code is 124 in E24.

Note: RC0402/FCN122R resistor has no marking code.

Type: RC0603 1% marking code, please refer to E-96 multiplier code.

E192	E96	E48	E192	E96	E48	E192	E96	E48	E192	E96	E48	E192	E96	E48	
100	100	100	169	169	169	287	287	287	487	487	487	825	825	825	
101			172			291			493			835			
102	102		174	174		294	294		499	499		845	845		
104			176			298			505			856			
105	105	105	178	178	178	301	301	301	511	511	511	866	866	866	
106			180			305			517			876			
107	107		182	182		309	309		523	523		887	887		
109			184			312			530			898			
110	110	110	187	187	187	316	316	316	536	536	536	909	909	909	
111			189			320			542			920			
113	113		191	191		324	324		549	549		931	931		
114			193			328			556			940			
115	115	115	196	196	196	332	332	332	562	562	562	953	953	953	
117			198			336			569			965			
118	118		200	200		340	340		576	576		976	976		
120			203			344			583			988			
121	121	121	205	205	205	348	348	348	590	590	590				
123			208			352			597						
124	124		210	210		357	357		604	604		E24	E12	E6	E3
126			213			361			612			10	10	10	10
127	127	127	215	215	215	365	365	365	619	619	619	11			
129			218			370			626			12	12		
130	130		221	221		374	374		634	634		13			
132			223			379			642			15	15	15	
133	133	133	226	226	226	383	383	383	649	649	649	16			
135			229			388			657			18	18		
137	137		232	232		392	392		665	665		20			
138			234			397			673			22	22	22	22
140	140	140	237	237	237	402	402	402	681	681	681	24			
142			240			407			690			27	27		
143	143		243	243		412	412		698	698		30			
145			246			417			706			33	33	33	
147	147	147	249	249	249	422	422	422	715	715	715	36			
149			252			427			723			39	39		
150	150		255	255		432	432		732	732		43			
152			258			437			741			47	47	47	47
154	154	154	261	261	261	442	442	442	750	750	750	51			
156			264			448			759			56	56		
158	158		267	267		453	453		768	768		62			
160			271			459			777			68	68	68	
162	162	162	274	274	274	464	464	464	787	787	787	75			
164			277			470			796			82	82		
165	165		280	280		475	475		806	806		91			
167			284			481			816						