

# Specifications

Products Name	Low Resistance Chip Resistor
Product Series	FLRV11050FCR***F
Classification	Generic specification

## FLRV11050F Low Resistance Chip Resistor Specification

1. Scope

This specification applies to FLRV11050F Series Low Resistance Chip Resistor for use in electric equipment.

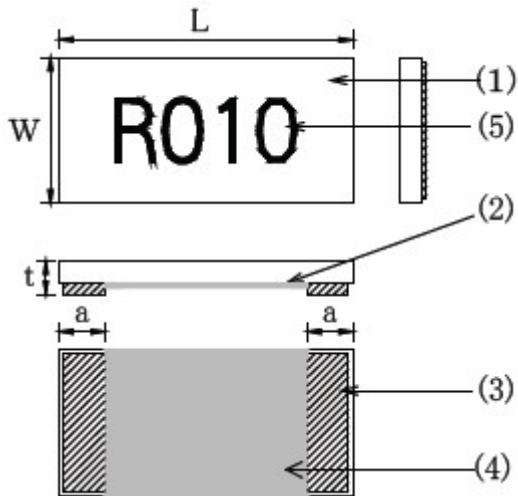
2. Part number

<b><u>FLR</u></b>	<b><u>V11050</u></b>	<b><u>F</u></b>	<b><u>C</u></b>	<b><u>R***</u></b>	<b><u>F</u></b>
(1)	(2)	(3)	(4)	(5)	(6)
(1) Product series					Foil Low Resistance
(2) Size					Short-side electrode 11.0*5.0mm size
(3) Electrode type					Face-down type
(4) Characteristic type					High operating temperature type
(5) Nominal Resistance					(example) 10mΩ → R010
(6) Resistance tolerance					F (±1.0%) G(±2.0%) J(±5.0%)

3. Structure

The ceramic substrate is adhered to the metal foil (Ni-Cu) resistive element; terminals are formed on top of the foil.

4. Dimensions



No.	Components	Material / Process
(1)	Substrate	Alumina 96%
(2)	Resistor	Ni-Cu alloy
(3)	Terminals	Plated Sn+Ni (on Cu)
(4)	Protection coat	Epoxy resin (Green)
(5)	Marking	Epoxy resin (Black)

Symbol	Dimensions (mm)	
L	11.00±0.20	
W	5.00±0.20	
a	8mΩ ~ : 2.36±0.30	5-7mΩ : 3.60±0.30
t	0.65±0.20	

5. Marking

Resistance value code is marked on the top surface.

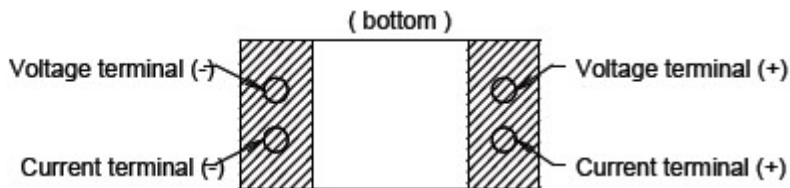
Example) 10mΩ → R010

6. Schematic diagram, Measurement point

Schematic diagram



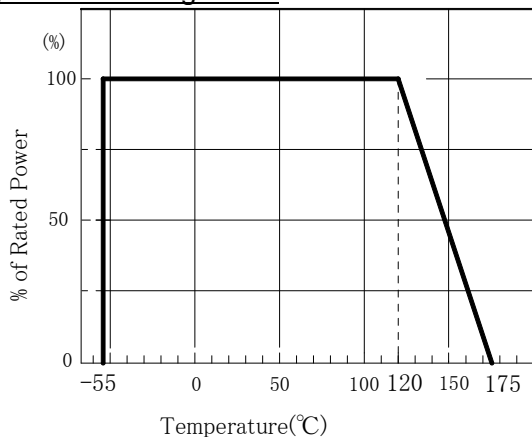
Measurement point



7. Specification

Parameter	Specification	
Resistance Value	5m to 1,000mΩ (for standard resistances)	
Resistance Tolerance	F (±1.0%)	
Temperature Coefficient of Resistance	±50ppm/°C	
Rated Load	5.0W	Refer to Derating curve, Figure-1
Operating Temperature Range	-55~+175°C	
Rated ambient temperature	+120°C	
Rated Voltage	$\sqrt{\text{Power} \times \text{Resistance}}$ (V)	
Maximum Over Current	which smaller between $\sqrt{96W \div \text{resistance}}$ & 120A 10msec on, 60sec off in maximum of 10 times with recommended footprint set forth hereunder.	

Figure-1 Derating Curve



## 8. Reliability testing

Test Item	Test Conditions		Specification
Short Time Over Load	Voltage of 1.5 times the rated voltage shall be applied for 5S.		$\pm(1.0\%+0.0005\Omega)$
Load life	Rated voltage for 90 min followed by a pause of 30 min at a temperature of $70\pm 3^{\circ}\text{C}$ . Cycles shall be repeated for 1000h.		$\pm(2.0\%+0.0005\Omega)$
Moisture Load life	Rated voltage for 90 min followed by a pause of 30 min at a temperature of $60\pm 2^{\circ}\text{C}$ with relative humidity of 90%. Cycles shall be repeated for 1000h.		$\pm(2.0\%+0.0005\Omega)$
Temperature Cycle	[-55°C 30 min -> R.T. 3 min -> +155°C 30 min -> R.T. 3 min]	100 continuous cycles	$\pm(1.0\%+0.0005\Omega)$
		1000 continuous cycle	$\pm(2.0\% +0.0005\Omega)$
Soldering Heating	260 $\pm$ 5°C solder, 10 $\pm$ 1sec dip		$\pm(1.0\%+0.0005\Omega)$
Substrate Bending	Test board length: 90mm Bend depth: 2mm Test board: Glass-Epoxy t=1.6mm		$\pm(1.0\%+0.0005\Omega)$
Solderability	245 $\pm$ 5°C solder, 3+1/-0 sec dip.		A new solder shall cover minimum of 90%

## 9. Packaging

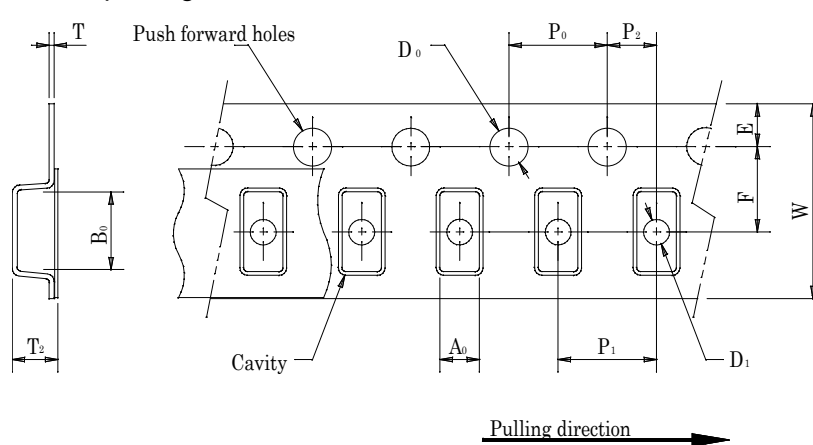
Packing quantity: 1,000 pieces/reel.

Tape diagram/dimension	Figure-2
Peeling strength of seal tape	Figure-3
Reel form·Labeling position	Figure-4
Taping direction	Figure-5

Marking The following items shall be printed on the reel label. (Figure-6)

Part number
Quantity for each reel
Manufacturing month code
Manufacturer
Inspection number (Lot number)
The country of origin
Lead free designation by double broken line

Figure-2 Tape diagram/dimension: Material: Plastic



Symbol	Dimensions (mm)
A0	5.40 $\pm$ 0.10
B0	11.50 $\pm$ 0.10
W	24.00 $\pm$ 0.30
F	11.50 $\pm$ 0.10
E	1.75 $\pm$ 0.10
P0	4.00 $\pm$ 0.10
P1	8.00 $\pm$ 0.10
P2	2.00 $\pm$ 0.10
D0	1.50 $\pm$ 0.10
D1	1.50 $\pm$ 0.10
T	0.30 $\pm$ 0.05
T2	1.20 $\pm$ 0.15

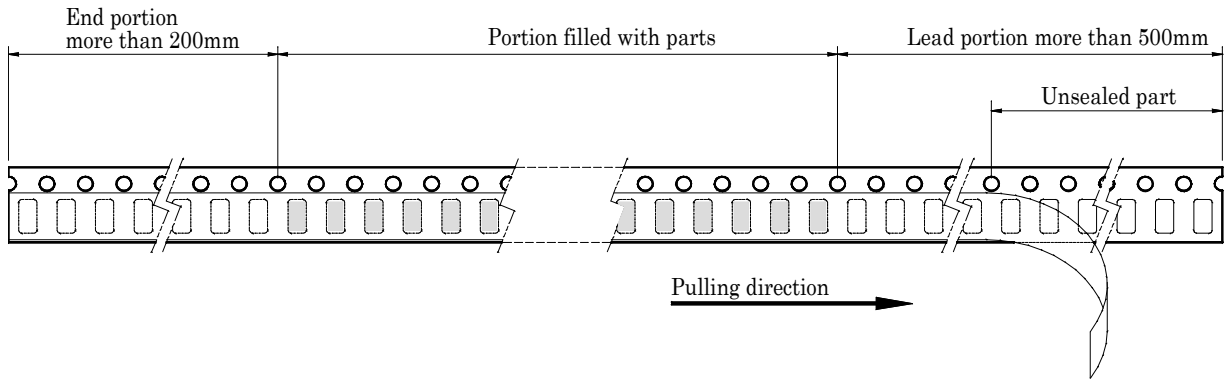


Figure-3 Peeling strength of seal tape:

$F$  = peeling strength: 0.1~0.7N (10~71gf)

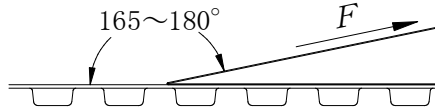


Figure-4 Reel form · Labeling position:

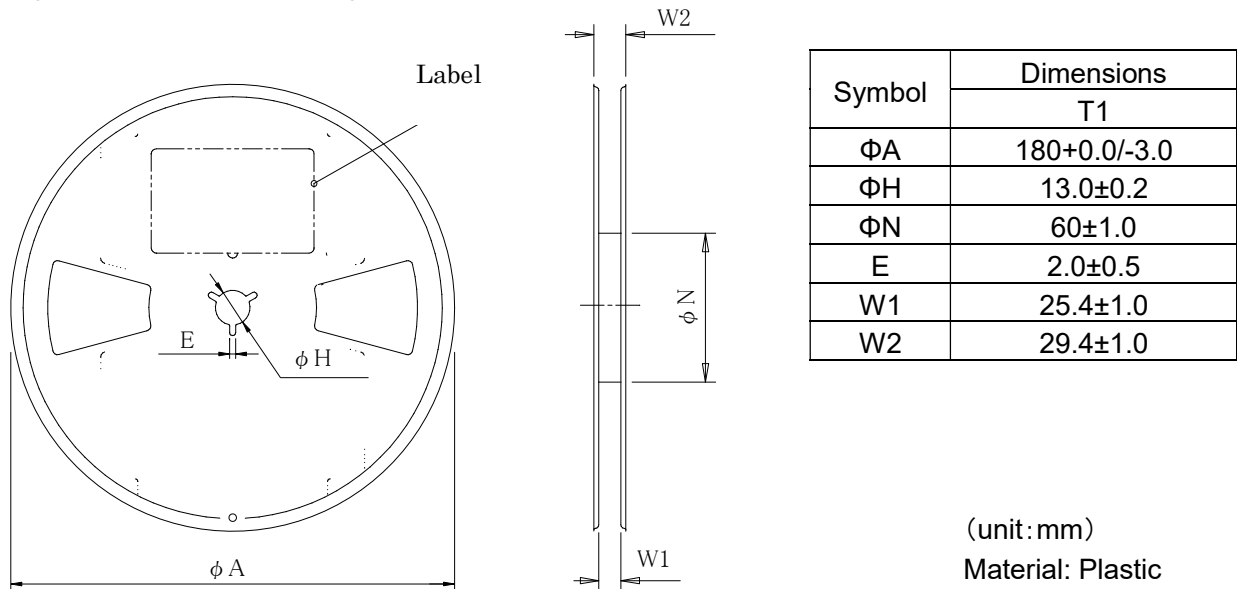


Figure-5 Taping direction:

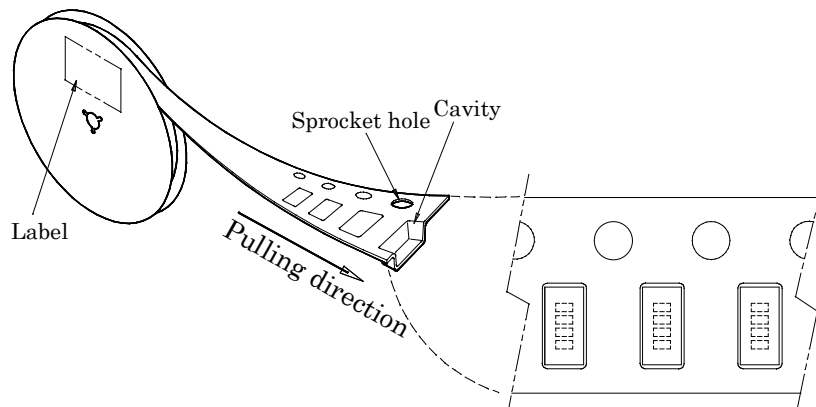


Figure-6 Label contents:

FLRV11050FCR020F

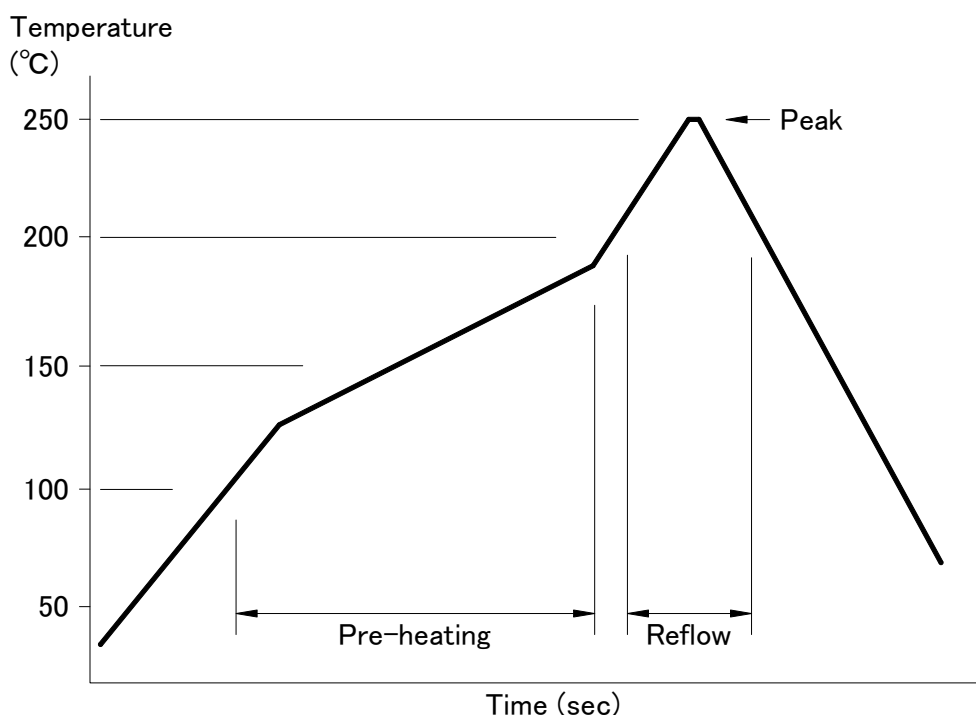
Q.T.Y            1,000 [PCS]  
 INSPECTED        **U**  
 Y.E.D CO.,LTD.  
 90917010  
 MADE IN JAPAN  
 =====

Part number \_\_\_\_\_  
 Quantity for each reel \_\_\_\_\_  
 Manufacturing month code \_\_\_\_\_  
 Manufacturer \_\_\_\_\_  
 Inspection number (Lot number) \_\_\_\_\_  
 The country of origin \_\_\_\_\_  
 Lead free designation by double broken line \_\_\_\_\_

10. Recommended implementation temperature profile

10.1 Reflow temperature profile

Twice reflows are allowed by the following temperature profile



Surface temperature of resistance and time		
Pre-heating	130~180°C	60~90sec
Reflow	220°C Max	30~90sec
Peak	240~260°C	10sec Max

10.2 Flow temperature profile

Less than 260°C    10sec Max

10.3 Hand solder attachment conditions

Work in 3 seconds or less is [temperature of 350°C] possible.

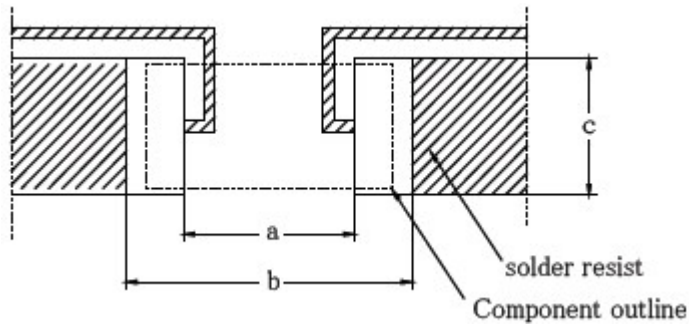
When soldering with a soldering iron, heating is performed on a land and the point does not hit the main part of a product. Please carry out.

11. Recommended land pattern (for current sensing)

Board materials: Glass epoxy (FR-4)  $t=0.6\text{mm}$

Thickness of copper foil: 100  $\mu\text{m}$

Note: The terminal temperature should not exceed  $120^{\circ}\text{C}$  at the rated power.



Symbol	Dimensions (mm)	
a	8m $\Omega$ ~ : 5.00	5-7m $\Omega$ : 2.80
b	14.00	
c	5.75	

12. Storage note

- (1) To maintain good solderability, Store the components in the temperature and humidity controlled room.  
Temperature:  $5\sim 35^{\circ}\text{C}$  Humidity: 45~85% RH
- (2) Store the components at the place avoiding moisture, dust and corrosive harmful gas (hydrogen chloride, sulfuric acid gas and hydrogen sulfide) that may cause the decrease in solderability.
- (3) Store the components at the place avoiding direct sunlight.