

Specifications

Products Name	Low Resistance Chip Resistor
Product Series	FLRV3216WMR***F
Classification	Generic specification

FLRV3216W Low Resistance Chip Resistor Specification

1. Application

This specification is applicable to FLRV3216W series for low resistance chip resistors.

2. Part numbering system

FLR V3216 W M R* F**

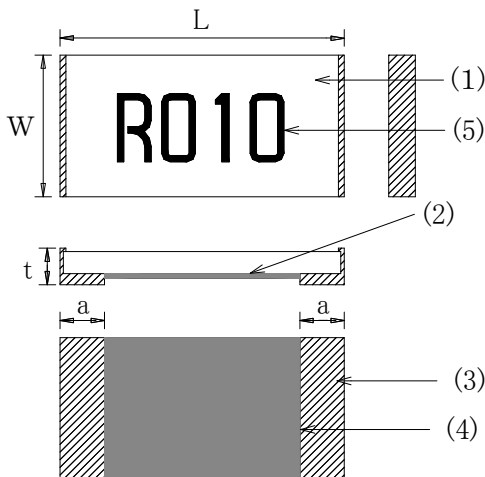
(1) (2) (3) (4) (5) (6)

(1) Product series	Foil Low Resistance
(2) Size	Short-side electrode 3.2*1.6mm size
(3) Side-electrode type	Wrap around
(4) Characteristic type	Low TEMF type
(5) Nominal Resistance	(example) 100mΩ → R100
(6) Resistance tolerance	F (±1.0%) G(±2.0%) J(±5.0%)

3. Structure

Ceramic substrate is adhered to metal foil resistive element.
Terminals are formed on top of the foil.

4. Dimensions



(1) Substrate	: Alumina
(2) Resistive element	: Ni-Cu alloy
(3) Terminal	: Plated Ni/Sn over Cu
(4) Protective coating	: Epoxy (green)
(5) Marking	: Epoxy (black)

Symbol	Dimensions (mm)	
	5~8m ohm	9m ohm~
L	3.20±0.20	3.20±0.20
W	1.60±0.20	1.60±0.20
a	1.25±0.20	0.68±0.20
t	0.50±0.20	0.50±0.20

5. Marking

Resistance value code is marked on the top surface. Example) 100mΩ → R100

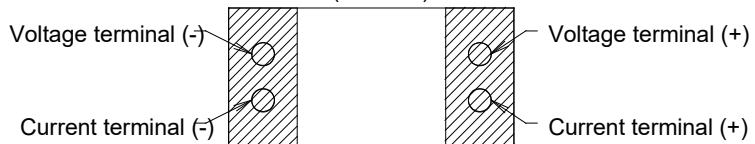
6. Schematic Diagram, Measurement Point

Schematic diagram



Measurement point

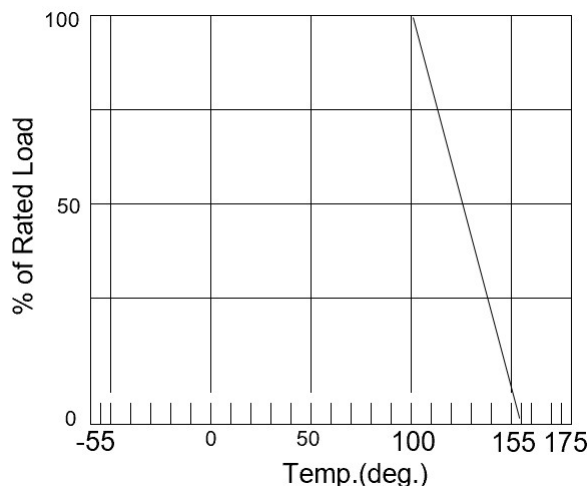
(bottom)



7. Specification

Parameter	Specification
Resistance Value	5 to 1,000mΩ (possible state of Value)
Resistance Tolerance	±1.0% (F), ±2.0% (G), ±5.0% (J)
Temperature Coefficient of Resistance	±50ppm/°C
Power Rating	1W (Derating Curve···Figure-1)
Maximum Over Current	Which smaller between: $I = \sqrt{12/R}$ [A] Power: 12(W) R: Resistance(Ω) I=35A (10m sec. max.) Interval 60 sec. Minimum. 10times.
Operating Temperature Range	-55 ~ +155°C
Rated Ambient Temperature	+100°C

Figure-1 Derating curve



8. Performance

Test Item	Test Conditions	Specification
Short Time Over Load	Voltage of 1.5 times the rated power shall be applied for 5s.	±1.0%
Load life	Rated power on for 90 min, off for 30 min at 70±3°C for 1000h.	±1.0%
Moisture Load life	Rated power for 90 min, off for 30 min at 60±2°C, relative humidity of 90% for 1000h.	±2.0%
Temperature Cycle	[-55°C 30 min → R.T. 3min → +155°C 30 min → R.T. 3min]	±1.0%
		±2.0%
Resistance to soldering heat	260±5°C solder, 10±1sec dip	±0.5%
Board Bending	Test board length: 90mm Bend depth: 2mm Test board: Glass-Epoxy t=1.6mm	±1.0%
Solderability	245±5°C solder, 3+1/-0 sec dip.	90% terminal surface coverage by fresh solder

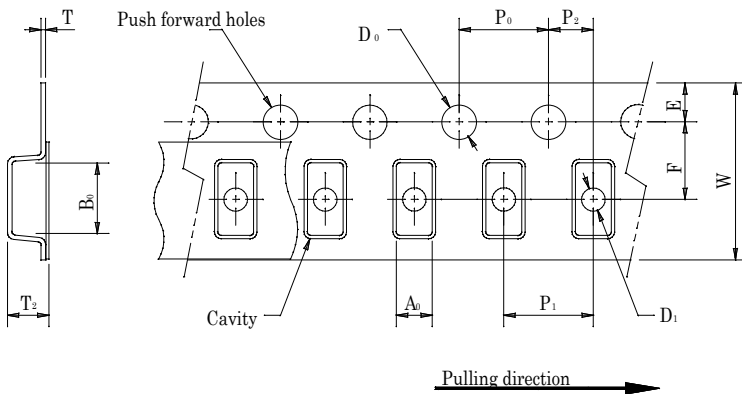
9. Packaging

Packing quantity	5,000 pieces/reel
Taping form	Figure-2
Peeling strength of seal tape	Figure-3
Reel form	Figure-4
Taping direction	Figure-5

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

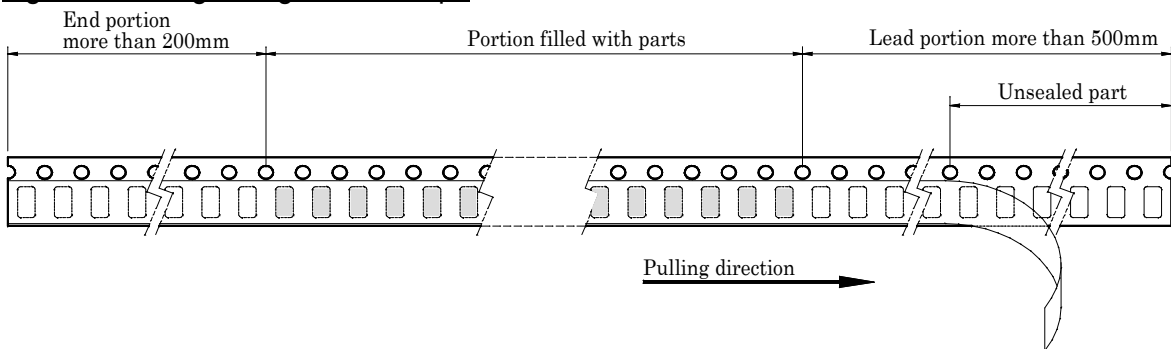
Part number
Quantity for each reel
Manufacturing month code
Manufacturer
Inspection number (Lot number)
The country of origin
Double dashed line which shows lead free

Figure-2 Paper Tape ··· Taping form



Symbol	Dimensions (mm)
A ₀	2.05 ±0.20
B ₀	3.65 ±0.20
W	8.00 ±0.30
F	3.50 ±0.10
E	1.75 ±0.10
P ₀	4.00 ±0.01
P ₁	4.00 ±0.10
P ₂	2.00 ±0.10
D ₀	1.50 ±0.10
D ₁	1.50 ±0.10
T	0.20 ±0.05
T ₂	0.87 ±0.20

Figure-3 Peeling strength of seal tape



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

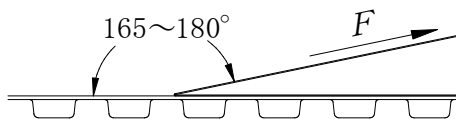
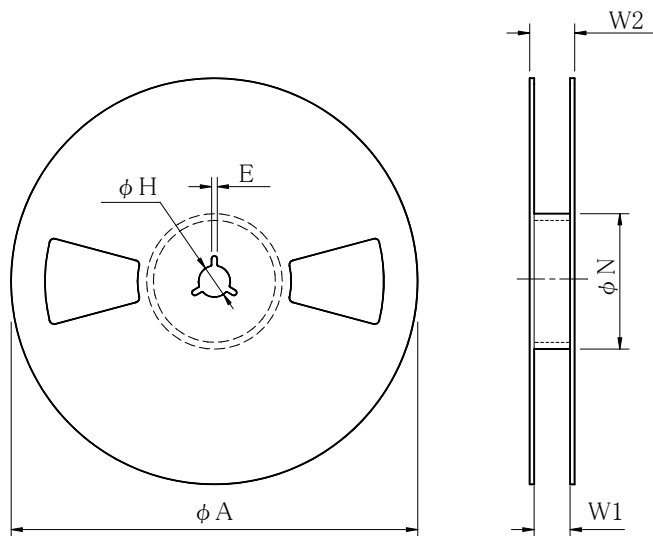


Figure-4 Reel form



Symbol	Dimensions
	T5
ΦA	178.0±5.0
ΦH	13.2±0.5
ΦN	60.0±2.0
E	2.3±0.5
W1	9.0±1.0
W2	Less than 18.4

(unit: mm)
Material: Plastic

Figure-5 Taping direction

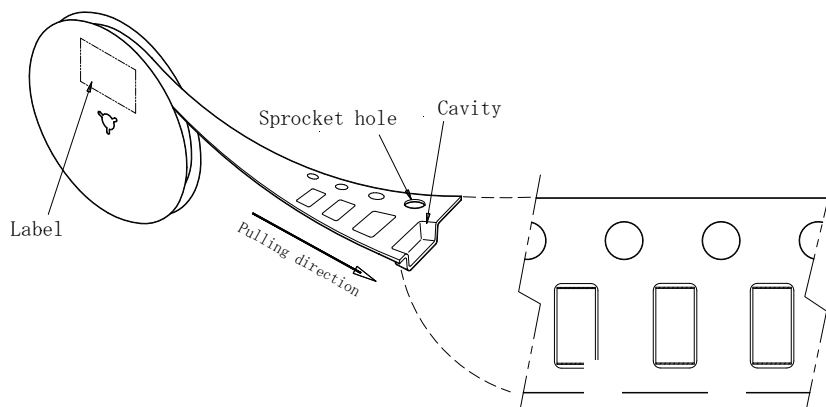
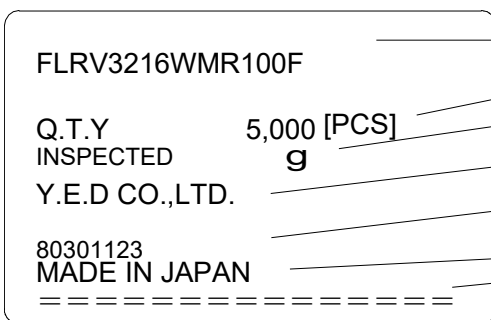


Figure-6 Label contents

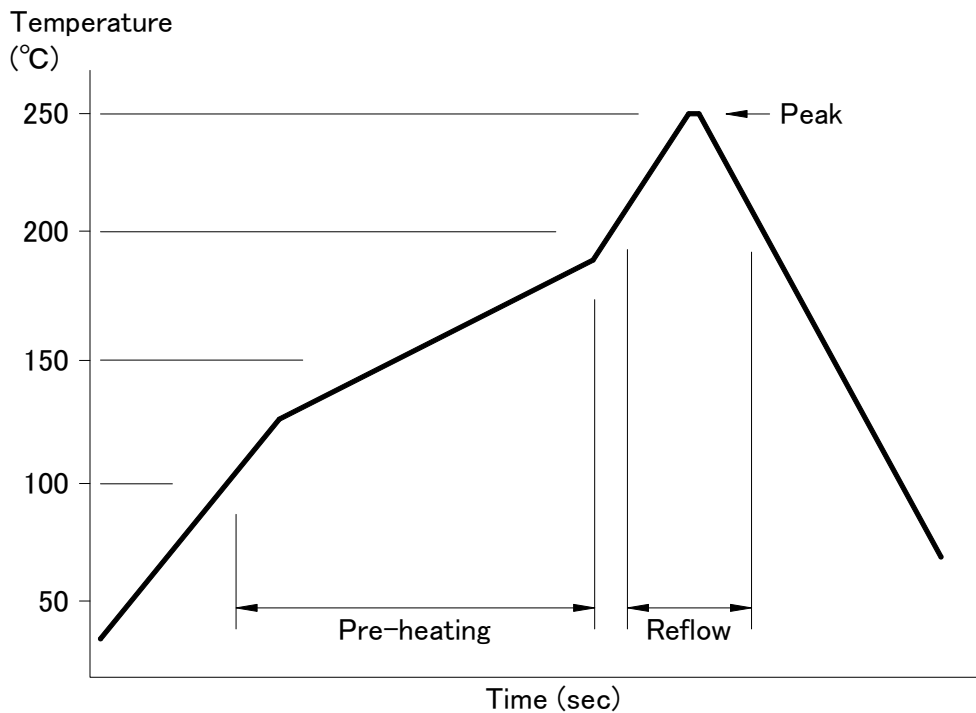


- Part number _____
- Quantity for each reel _____
- Manufacturing month code _____
- Manufacturer _____
- Inspection number (Lot number) _____
- The country of origin _____
- Double dashed line shows lead free _____

10. Recommended implementation temperature profile

10.1 Reflow temperature profile

Twice reflows are allowed by the following temperature profile



Phase	Temperature Range	Time Range
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.

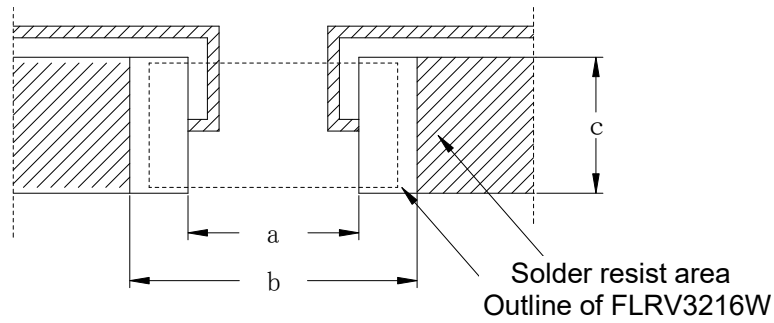
When soldering with a soldering iron, heating is performed on a land and the point does not hit the main part of a product. Please carry out.

11. Recommended land pattern (for current sensing)

Substrate material: Glass epoxy (FR-4)

Thickness: 0.6mm

Copper thickness (both sides): 100µm



Resistance	Dimensions (mm)		
	a	b	c
5~8mΩ	0.70	4.00	1.84
9mΩ~	1.84	4.00	1.84

12. Storage note

- (1) To maintain good solderability, Store the components in the temperature and humidity controlled room.
Temperature: 5~35°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.