

4- terminals current sensing chip resistors product specification

1. Scope

This specification applies to 4-terminals current sensing chip resistors for use in electronic equipments.

2. Part number

RL3264L4 - **** - F - T*

(1) (2) (3) (4)

Explanation of Resistance Value

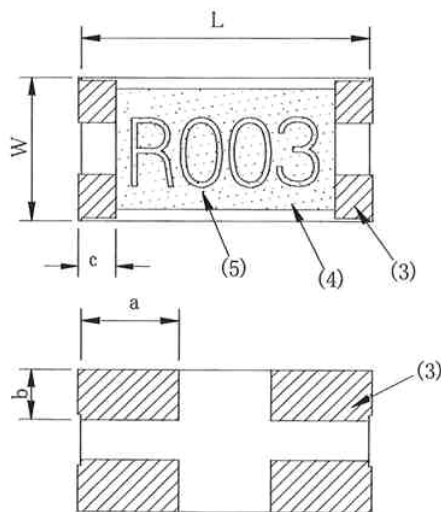
EX.) $3m\Omega \rightarrow R003$

- (1) Type
- (2) Nominal Resistance
- (3) Resistance Tolerance
- (4) Packaging form (T1 = 1,000pcs/reel ,T5 = 5,000pcs/reel)

3. Structure

Metallized Ni-alloy resistor and electrode on ceramic substrate, covered with heat resistive epoxy resin.

4. Dimensions



- (1)Substrate Alumina 96%
- (2)Resistor Ni-alloy
- (3)Terminals Sn-Pb or Sn(on Cu)
Sn is free from lead
- (4)Over Coat Heat resistive epoxy resin
- (5)Marking Epoxy resin

Symbol	Dimensions (mm)
L	6.4 ± 0.2
W	3.2 ± 0.2
T	0.5 ± 0.15
a	2.1 ± 0.2
b	1.2 ± 0.2
c	0.6 ± 0.2

5. Marking

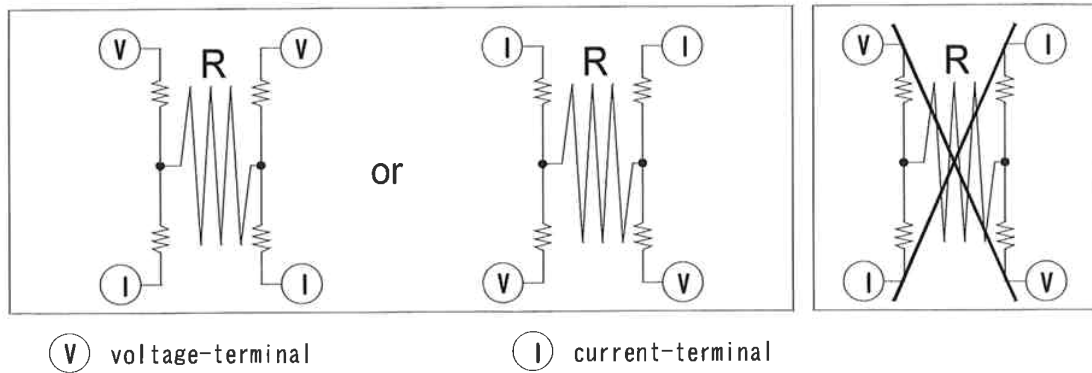
Top: Resistance value $3m\Omega \rightarrow R003$

Bottom: No marking



Autho	Check	Approval	Title	Description
K. Inomata	K. Nagano	A. Nakajima	4-terminals current sensing chip resistor	Specification
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				Rev. 2
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6. Schematic diagram



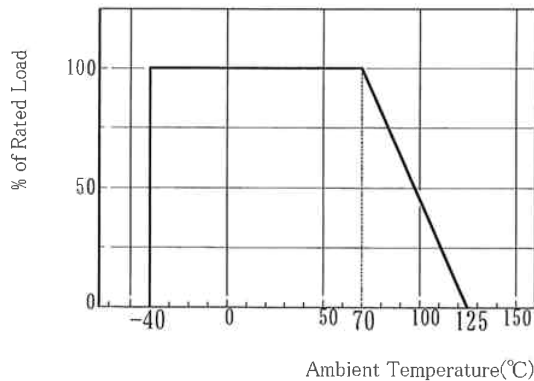
There is no difference between voltage-terminal and current terminal. But it is possibly causing to deteriorate its characteristics when you connect line across. You can't connect lines across each other

Resistance value of this product is called resistance value for current sensing and shows resistance value of sign R in the upper diagram. Resistance value between terminals shows resistance value added at terminal resistance.

7. Specification

Item	Specification
Resistance Value for Current Sensing	3 mΩ ~ 500 mΩ (E-12/3,4,5,6,7,8,50,500 mΩ)
Resistance Tolerance	±0.5% D ±1.0% F
Terminal Resistance	3 mΩ ~ 8 mΩ 1 mΩ under 10 mΩ ~ 47 mΩ 5 mΩ under 50 mΩ ~ 500 mΩ 20 mΩ under
Temperature Coefficient of Resistance	3 mΩ ~ 5 mΩ ±100ppm/°C 6 mΩ ~ 500 mΩ ± 50ppm/°C
Power Rating	1W (Derating Curve...Figure-1)
Maximum over current	$I = \sqrt{38/R}$ [A] (10m sec. max.) Resistance Value (Ω) Maximum Current 27A Interval 60 sec min.
Operating Temperature Range	-40~+125°C
Rated Ambient Temperature	+70°C

Figure - 1 Derating Curve



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8. Characteristics

Item	Conditions	Specification
Short Time Over Load	Voltage of 1.5 times the rated voltage shall be applied for 5s.	$\pm(0.5\% + 0.0005\Omega)$
Load life	Rated voltage for 90min followed by a pause of 30min at a temperature of $70 \pm 3^\circ\text{C}$. Cycles shall be repeated for 1000h.	$\pm(0.5\% + 0.0005\Omega)$
Moisture Load life	Rated voltage for 90min followed by a pause of 30min at a temperature of $60 \pm 2^\circ\text{C}$ with relative humidity of 90%. Cycles shall be repeated for 1000h.	$\pm(0.5\% + 0.0005\Omega)$
Temperature Cycle	$[-40^\circ\text{C} \ 30\text{min} \rightarrow \text{R.T.} \ 3\text{min} \rightarrow +125^\circ\text{C} \ 30\text{min} \rightarrow \text{R.T.} \ 3\text{min}]$ 5 continuous cycles.	$\pm(0.5\% + 0.0005\Omega)$
Soldering Heating	Dipped into solder for $10 \pm 1\text{sec}$ at $260 \pm 5^\circ\text{C}$	$\pm(0.5\% + 0.0005\Omega)$
Substrate Bending	Between fulcrums :90mm Bend width : 2mm Glass-epoxy board $t=1.6\text{mm}$	$\pm(0.5\% + 0.0005\Omega)$
Solderability	Dipped into solder for $3 \pm 0.5\text{sec}$ at $235 \pm 5^\circ\text{C}$ or $245 \pm 5^\circ\text{C}$ (lead free)	A new solder shall cover min of 90 %

9. Packaging

Packing quantity 1,000 or 5,000 pieces/reel

Taping form Figure-2

Peel back force of cover tape Figure-3

Reel form Figure-4

Taping direction Figure-5

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

Part number _____

Quantity per reel _____

Manufacturing month code _____

Manufacturer _____

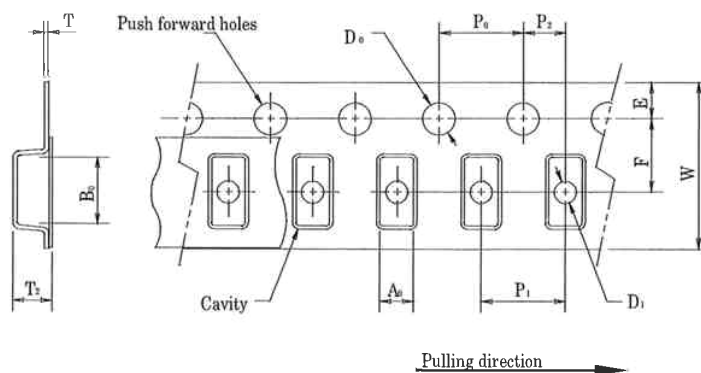
Inspection number (Lot number) _____

The country of origin _____

Double dashed line shows lead free

No mark when finish of terminals is solder

Figure-2 Plastic Tape···Taping form



Symbol	Dimensions(mm)
A0	3.43 ± 0.2
B0	6.63 ± 0.2
W	12.0 ± 0.3
F	5.5 ± 0.05
E	1.75 ± 0.1
P0	4.0 ± 0.1
P1	4.0 ± 0.1
P2	2.0 ± 0.05
D0	$1.5 + 0.1/-0$
D1	$1.5 + 0.2/-0$
T	0.3max
T2	1.5max

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4-terminal current sensing
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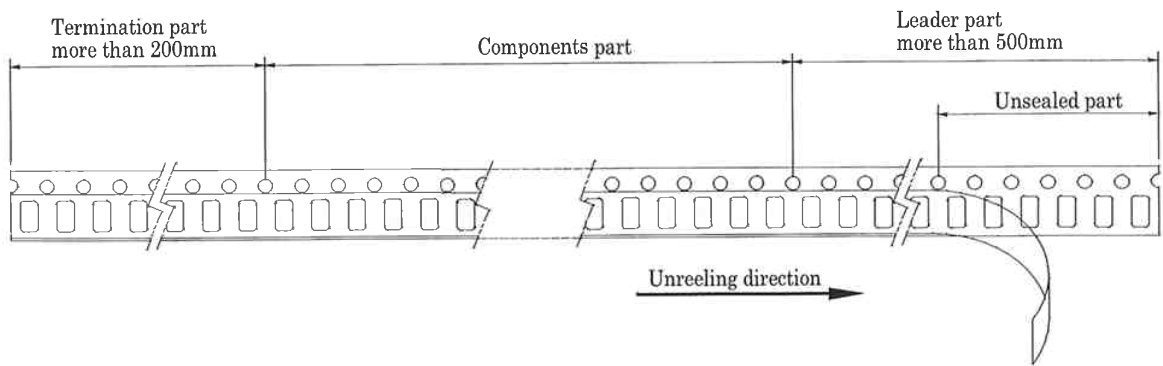


Figure-3 Peel back force of top cover tape

F = Peel back force: 0.1 - 0.7N (10 - 71gf)

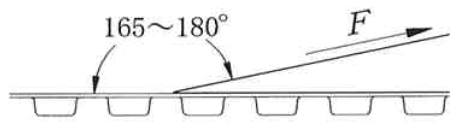
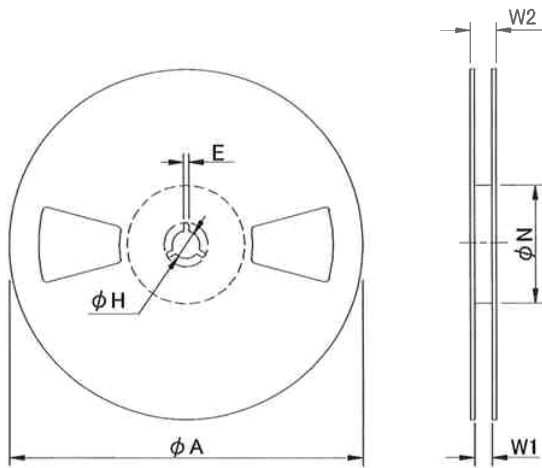


Figure-4 Reel form



Symbol	Dimensions(mm)	
	1000pcs/reel	5000pcs/reel
ϕA	180+0/-3	255 ± 1.0
ϕH	13.0 ± 0.2	13.0 ± 0.3
E	2.0 ± 0.5	2.0 ± 0.2
ϕN	60+1/-0	80 ± 0.5
W1	13.0 ± 0.3	13.5 ± 1.0
W2	17.0 ± 1.4	18.4 or less

(unit: mm)

Material: Plastic

Figure-5 Taping direction

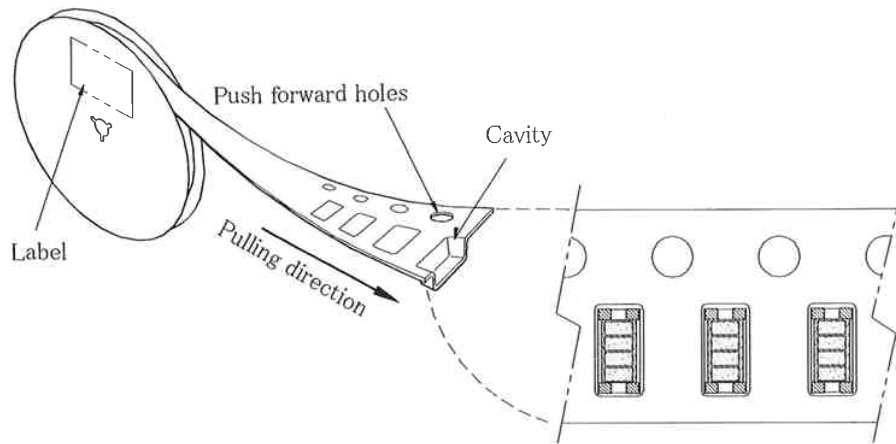


Figure-6 Reel label

RL3264L4 - R003 - F	Part number
Q.T.Y. 5,000 [P.C.S.]	Quantity for each reel
INSPECTED q	Manufacturing month code
Y.D.S.Co.,LTD.	Manufacturer
430101	Inspection number (Lot number)
MADE IN JAPAN	The country of origin
=====	Double dashed line shows lead free
	No mark when finish of terminals is solder

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[Revision history]

Rev.	Date of enactment	Author	Check	Approval	Revision content
0	Dec.07.2001	K.Inomata	S.Inoue	T.Nagasaki	First edition
1	Dec.10.2005	K.Inomata	K.Nagano	A.Nakajima	Correction of the misentry of the demension at Fig.4 (225 → 255)
2	Apr.07.2006	K.Inomata	K.Nagano	A.Nakajima	Addition T* on Part number and Addition the caption about Packaging form in Section 2.

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