

## 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)

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

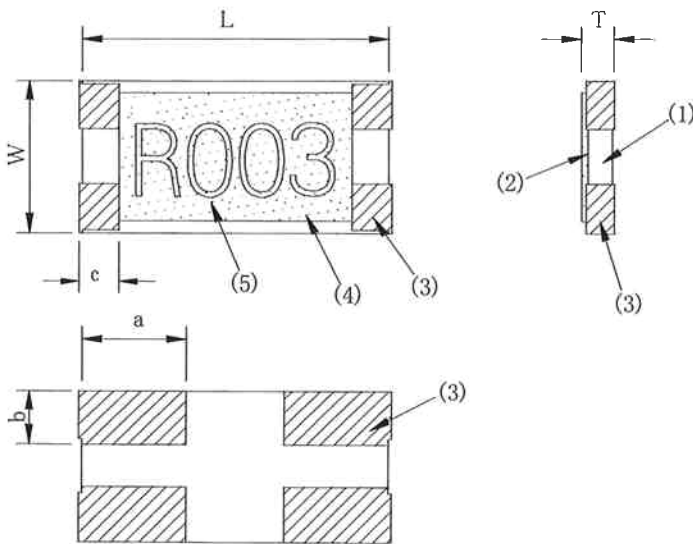
Explanation of Resistance Value

EX.) 3mΩ → R003

### 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

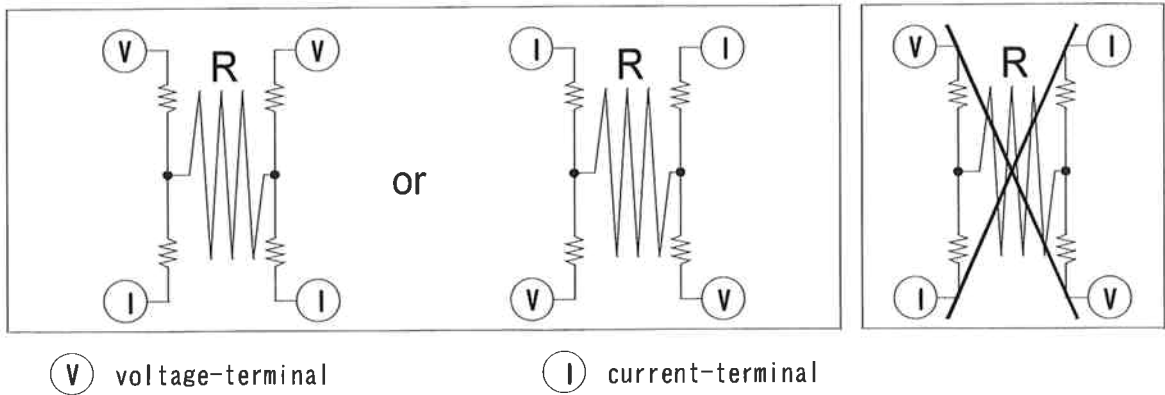
Top: Resistance value 3mΩ → R003

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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6. Schematic diagram



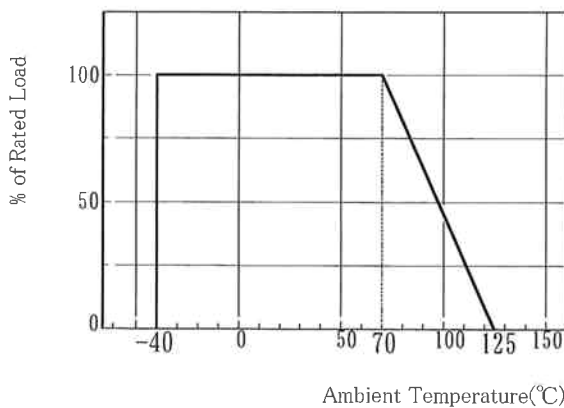
There is no difference between voltage-terminal and current terminal. But it is possibly causing to deteriorate its characteristics when you connect line across. You can't connect lines across each other

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



## 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	$[-40^{\circ}\text{C} \ 30\text{min} \rightarrow \text{R.T.} \ 3\text{min} \rightarrow +125^{\circ}\text{C} \ 30\text{min} \rightarrow \text{R.T.} \ 3\text{min}]$ 5continuous 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

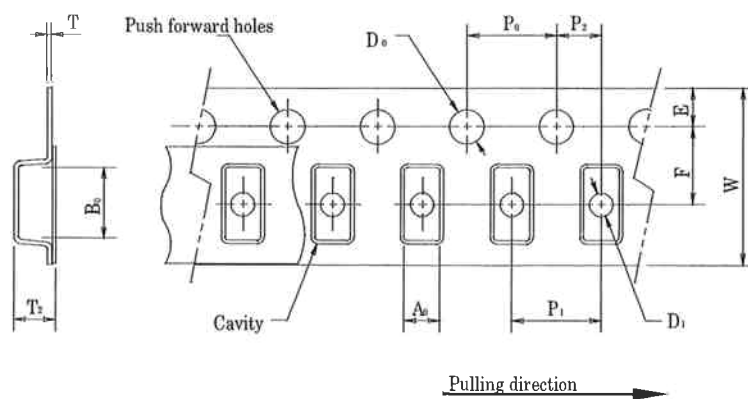
Packing quantity 1,000 or 5,000pieces/reel

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	$3.43 \pm 0.2$
B0	$6.63 \pm 0.2$
W	$12.0 \pm 0.3$
F	$5.5 \pm 0.05$
E	$1.75 \pm 0.1$
P0	$4.0 \pm 0.1$
P1	$4.0 \pm 0.1$
P2	$2.0 \pm 0.05$
D0	$1.5 +0.1/-0$
D1	$1.5 +0.2/-0$
T	0.3max
T2	1.5max

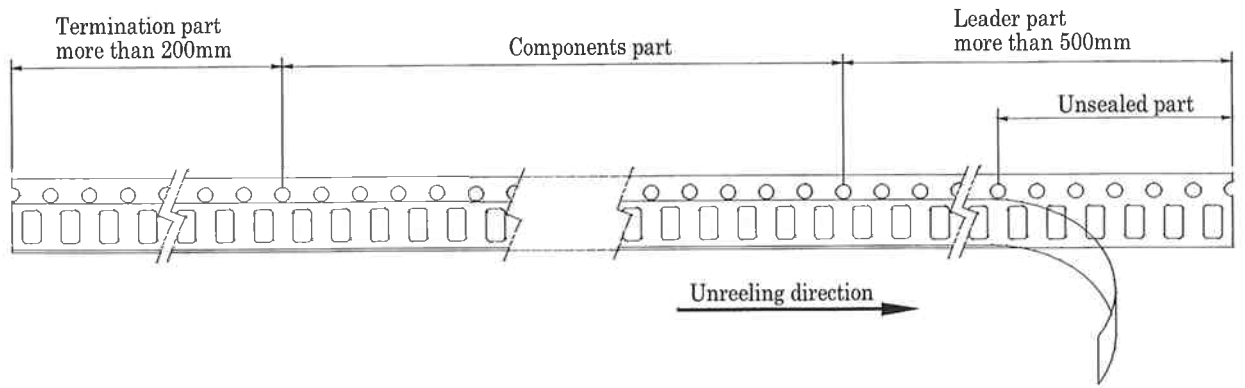


Figure-3 Peel back force of top cover tape

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

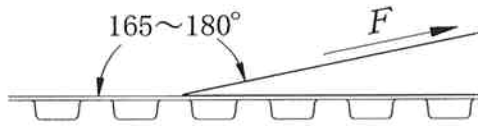
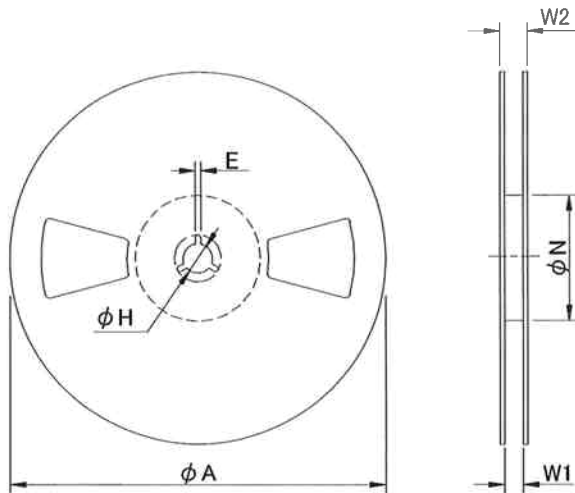


Figure-4 Reel form



Symbol	Dimensions(mm)	
	1000pcs/reel	5000pcs/reel
$\phi A$	180+0/-3	255 ± 1.0
$\phi H$	13.0 ± 0.2	13.0 ± 0.3
E	2.0 ± 0.5	2.0 ± 0.2
$\phi N$	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

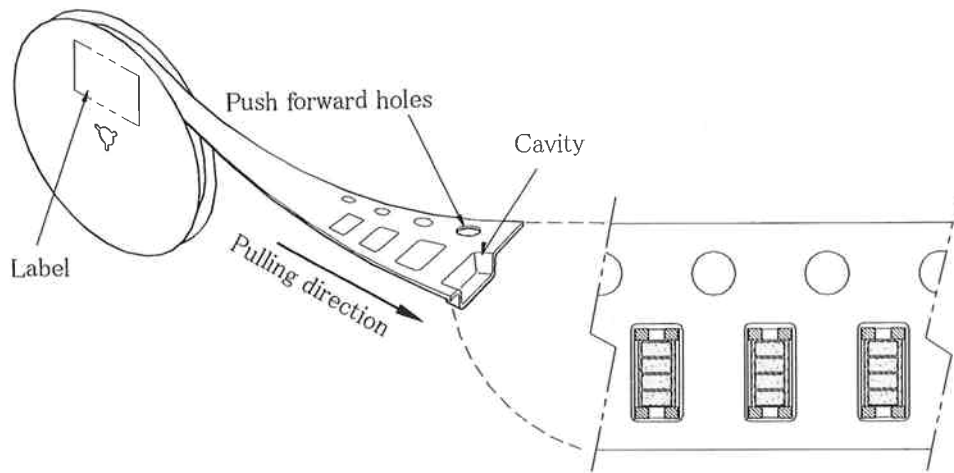


Figure-6 Reel label

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

[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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