

# DATA SHEET

LOW OHMIC CHIP RESISTORS

**PT series**

5%,1%

size 0201

**RoHS Compliant & Halogen Free**



**Phicom**

Product specification



## SCOPE

This specification describes PT0201 low ohmic chip resistors with lead-free terminations made by thick film process.

## APPLICATIONS

- Converters
- Consumer(Mobile、PNDs、...)
- Laptop

## FEATURES

- Products with lead free terminations meet RoHS requirements.
- Halogen Free Epoxy
- Reducing environmentally hazardous wastes
- High component and equipment reliability
- Saving of PCB space
- Low resistances applied to current sensing

## ORDERING INFORMATION - GLOBAL PART NUMBER

Part number is identified by the series name, size, tolerance, packaging type, temperature coefficient of resistance, taping reel, resistance value.

PT0201   X   X   X   XX   XXXX   L  
 (1) (2) (3) (4) (5) (6)

### (1) TOLERANCE

F = ±1%

J = ±5%

### (2) PACKAGING TYPE

R = Paper taping reel

### (3) TEMPERATURE COEFFICIENT OF RESISTANCE

— = base on spec.

### (4) TAPING REEL

07 = 7 inch dia. Reel

### (5) RESISTANCE VALUE

0R1 (100mΩ) ~ 0R91 (910mΩ)

### (6) Default Code

Letter L is system default code for order only.<sup>(NOTE)</sup>

## ORDERING EXAMPLE

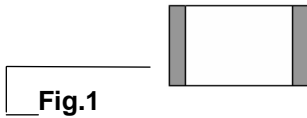
The ordering code for a PT0201 0.05W chip resistor, value 0.1Ω with ±1% tolerance, supplied in 7-inch tape reel with 10Kpcs quantify is: PT0201FR-070R1L.

## NOTE

1. All our RSMD products meet RoHS compliant and Halogen Free. "LFP" of the internal 2D reel label mentions "Lead Free Process".
2. On customized label, "LFP" or specific symbol can be printed.

**MARKING**

PT0201:



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 and printed with the resistance value. Finally, the two external terminations (matte tin) are added. See fig. 2.

**OUTLINES**

For dimension see Table 1

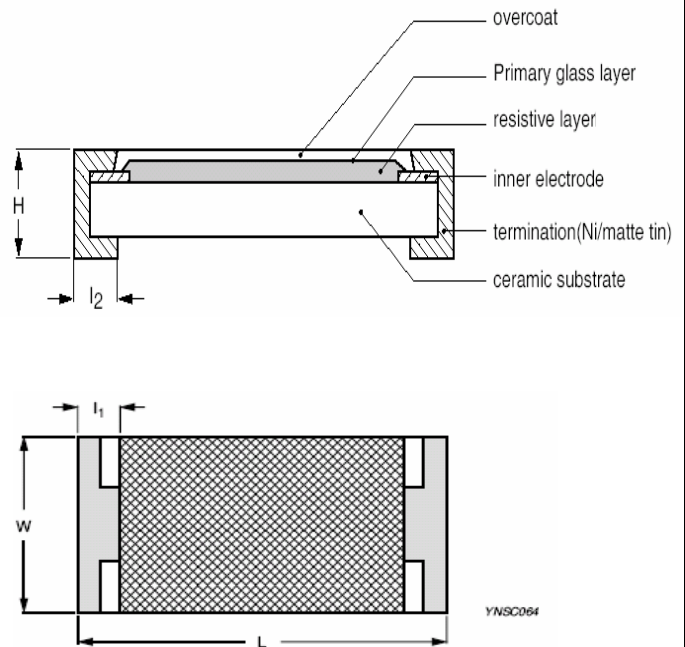


Fig.2 Chip resistor outlines

**DIMENSIONS**

Table 1

TYPE	PT0201
L (mm)	0.60±0.03
W (mm)	0.30±0.03
H (mm)	0.23±0.03
l1 (mm)	0.10±0.05
l2 (mm)	0.10±0.05

**ELECTRICAL CHARACTERISTICS**

Table 2

CHARACTERISTICS	PT0201 0.05W
Operating Temperature Range	-55°C to +125°C
Maximum Working Voltage	$\sqrt{(P * R)}$
Resistance Range	100mΩ ~910 mΩ
Temperature Coefficient	±200ppm/°C

**PACKING STYLE AND PACKAGING QUANTITY**

Table 3

PRODUCT TYPE	PACKING STYLE	REEL DIMENSION	QUANTITY PER REEL
PT0201	Paper taping reel	7" (178 mm)	10,000 Units

**FUNCTIONAL DESCRIPTION**

**POWER RATING**

PT0201 rated power at 70°C is 0.05W

**RATED VOLTAGE**

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

$$V = \sqrt{(P * R)}$$

Where

V=Continuous rated DC

or AC (rms) working voltage (v)

P=Rated power

R=Resistance value (Ω)

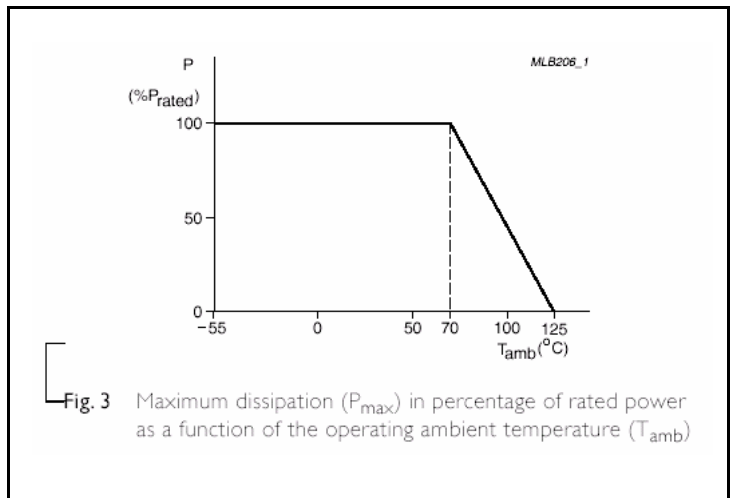


Fig. 3 Maximum dissipation (P<sub>max</sub>) in percentage of rated power as a function of the operating ambient temperature (T<sub>amb</sub>)

**TAPING REEL**

Table 4

DIMENSION	0201
Tape Width(mm)	8
ØA (mm)	180.0+0/-3
ØN (mm)	60.0+1/-0
ØC (mm)	13.0±0.2
ØD (mm)	21.0±0.8
W1 (mm)	9.0±0.2
W2 (mm)	12.0±0.2

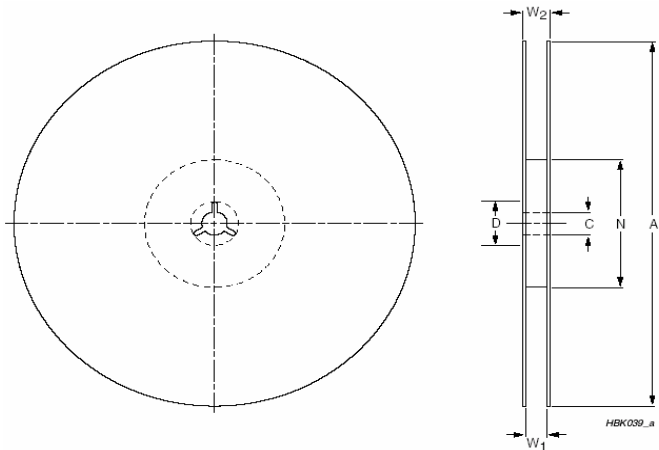


Fig.4 Reel

**PAPER TAPE SPECIFICATION**

Table 5

DIMENSION	0201
A <sub>0</sub> (mm)	0.38±0.10
B <sub>0</sub> (mm)	0.68±0.10
W (mm)	8.00±0.20
E (mm)	1.75±0.10
F (mm)	3.50±0.05
P <sub>0</sub> (mm)	4.00±0.10
P <sub>1</sub> (mm)	2.00±0.05
P <sub>2</sub> (mm)	2.00±0.05
D <sub>0</sub> (mm)	1.5+0.1/-0
T (mm)	0.42±0.10

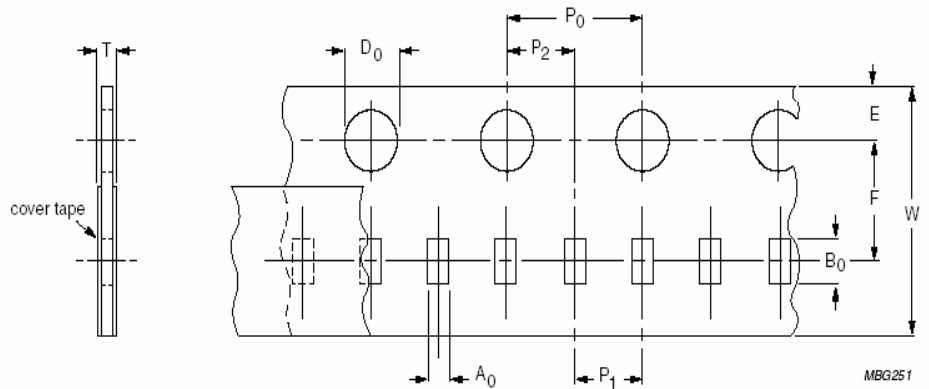


Fig.5 Paper tape

**PACKING METHOD**

**LEADER/TRAILER TAPE SPECIFICATION**

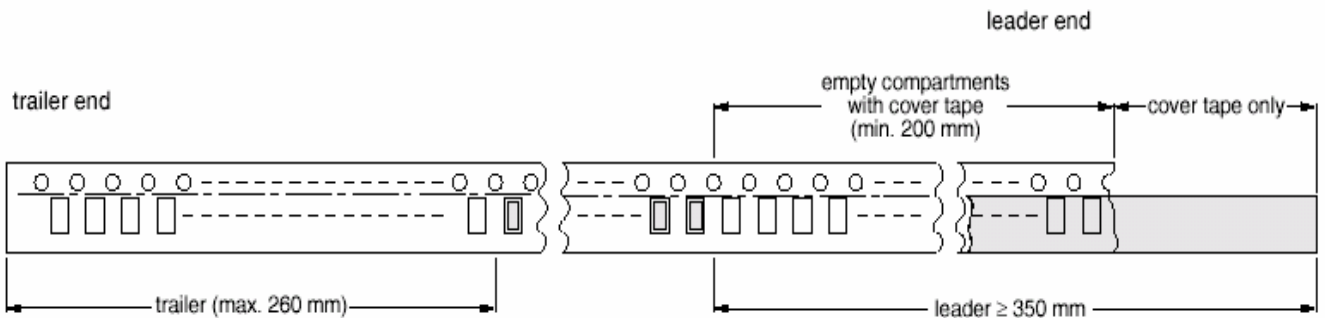


Fig.6 Leader/trailer tape

## TESTS AND REQUIREMENTS

TEST	TEST METHOD	PROCEDURE	REQUIREMENT
Life/ Endurance	MIL-STD-202 Method 108A IEC 60115-1 4.25.1	1,000 hours at 70±5 °C applied RCWV 1.5 hours on, 0.5 hour off, still air required	± ( 2 % + 0.5mΩ)
High Temperature Exposure/ Endurance at upper category temperature	MIL-STD-202 Method 108A IEC 60115-1 4.25.3	1,000 hours at maximum operating temperature depending on specification, un-powered No direct impingement of forced air to the parts Tolerances: 125±3 °C	± ( 1.0 % + 0.5mΩ)
Moisture Resistance	MIL-STD-202 Method 106G IEC 60115-1 4.24.2	Each temperature / humidity cycle is defined at 8 hours (Method 106G), 3 cycles / 24 hours for 10d with 25 °C / 65 °C 95% R.H, without steps 7a & 7b, un-powered Parts mounted on test-boards, without condensation on parts Measurement at 24±2 hours after test conclusion.	± ( 1% + 0.5mΩ) No visible damage
Thermal Shock	MIL-STD-202G Method 107G	-55/+125 °C Note: Number of cycles required is 300. Devices unmounted Maximum transfer time is 20 seconds. Dwell time is 15 minutes. Air – Air	± ( 0.5% + 0.5mΩ)
Short time overload	IEC 60115-1 4.13	2.5 times RCWV or maximum overload voltage whichever is less for 5 sec at room temperature	± ( 1% + 0.5mΩ) No visible damage
Board Flex/ Bending	IEC60115-1 4.33	Device mounted on PCB test board as described, only 1 board bending required 5 mm bending Bending time: 60±1 seconds Ohmic value checked during bending	± ( 1.0 % + 0.5mΩ)
Solderability - Wetting	IPC/JEDECJ-STD-002B test B IEC 60068-2-58	Electrical Test not required Magnification 50X SMD conditions: 1st step: Method B, aging 4 hours at 155 °C dry heat 2nd step: leadfree solder bath at 245±3 °C Dipping time: 3±0.5 seconds	Well tinned (≥95% covered) No visible damage
- Leaching	IPC/JEDECJ-STD-002B test D IEC 60068-2-58	Leadfree solder, 260 °C, 30 seconds immersion time	No visible damage
- Resistance to Soldering Heat	MIL-STD-202G Method 210F IEC 60068-2-58	Condition B, no pre-heat of samples Leadfree solder, 260±5 °C, 10±1seconds immersion time Procedure 2 for SMD: devices fluxed and cleaned with isopropanol	± ( 1% + 0.5mΩ) No visible damage

**REVISION HISTORY**

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 0	2010-11-29		- First issue of this specification
Version 1	2012-01-29		- Range extension