

DATA SHEET

CURRENT SENSOR - LOW TCR

AUTOMOTIVE GRADE

PE_L series

5%, 1%, 0.5%, 0.1%

sizes

0100/ 0201/ 0402/ 0603/ 0805/ 1206/ 2010/ 2512/ 2817/ 4527

RoHS compliant & Halogen free



SCOPE

This specification describes PE series current sensor - low TCR with lead-free terminations made by metal film with ceramic substrate.

APPLICATIONS

- Consumer goods
- Computer
- Telecom / Datacom
- Industrial / Power supply
- Automotive
- Alternative Energy

FEATURES

- AEC-Q200 qualified
- Halogen-free Epoxy
- RoHS compliant
- Reduce environmentally hazardous wastes
- High component and equipment reliability
- None forbidden-materials used in products/production
- Low resistances applied to current sensing

ORDERING INFORMATION - GLOBAL PART NUMBER

Global part numbers are identified by the series, size, tolerance, packing type, temperature coefficient, taping reel and resistance value.

GLOBAL PART NUMBER

PE XXXX X X X XX XXXX L
(1) (2) (3) (4) (5) (6) (7)

(1) SIZE

0100/ 0201/ 0402/ 0603/ 0805/ 1206/ 2010/ 2512/ 2817/ 4527

(2) TOLERANCE

B = $\pm 0.1\%$
D = $\pm 0.5\%$
F = $\pm 1\%$
J = $\pm 5\%$

(3) PACKAGING TYPE

R = Paper/ PE taping reel
K = Embossed taping reel

(4) TEMPERATURE COEFFICIENT OF RESISTANCE

E = ± 50 ppm/ $^{\circ}$ C
M = ± 75 ppm/ $^{\circ}$ C
F = ± 100 ppm/ $^{\circ}$ C
G = ± 200 ppm/ $^{\circ}$ C
I = ± 300 ppm/ $^{\circ}$ C
J = ± 350 ppm/ $^{\circ}$ C

(5) TAPING REEL

07 / 7W / 7T / 47 / 57 = 7 inch dia. Reel and specific rated power.
Detailed power rating are shown in the Table 2.

(6) RESISTANCE VALUE

5 m Ω to 1 Ω
There are 3~5 digits indicated the resistance value. Letter R is decimal point.
Detailed coding rules of resistance are shown in the table of "Resistance rule of global part number".

(7) DEFAULT CODE

Letter L is the system default code for ordering only. (Note)

Resistance code rule	Example
0RXXXX	0R001 = 1 m Ω
(1 to 910 m Ω)	0R1 = 100 m Ω
	0R91 = 910 m Ω

ORDERING EXAMPLE

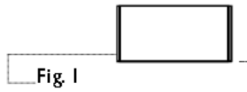
The ordering code of a PE2512 1W chip resistor, value 0.1 Ω with $\pm 1\%$ tolerance, supplied in 7-inch tape reel is: PE2512FKM070R1L

NOTE

1. All our RSMD products are RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead-Free Process"

MARKING

PE0100



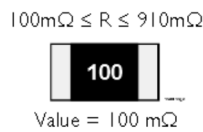
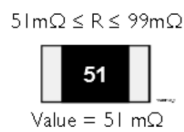
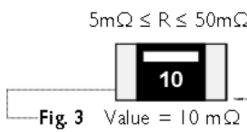
No marking

PE0201 / PE0402



No marking

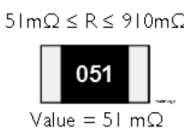
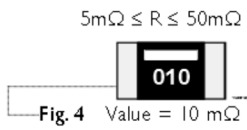
PE0603



2 digits
resistance range: $5\text{m}\Omega \leq R \leq 99\text{m}\Omega$

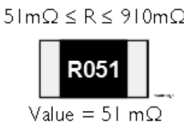
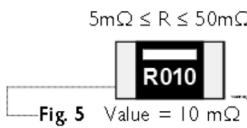
3 digits
resistance range: $100\text{m}\Omega \leq R \leq 910\text{m}\Omega$

PE0805



3 digits

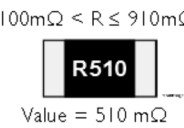
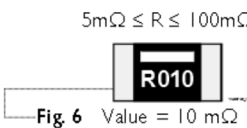
PE1206



4 digits

The "R" is used as a decimal point; the other 3 digits are significant.

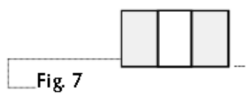
PE2010 / PE2512 (1W&2W)



4 digits

The "R" is used as a decimal point; the other 3 digits are significant.

PE2512 (3W&5W) / PE2817



No marking

PE4527



4 digits

The "R" is used as a decimal point; the other 3 digits are significant.

Outlines

For dimensions, please refer to Table I

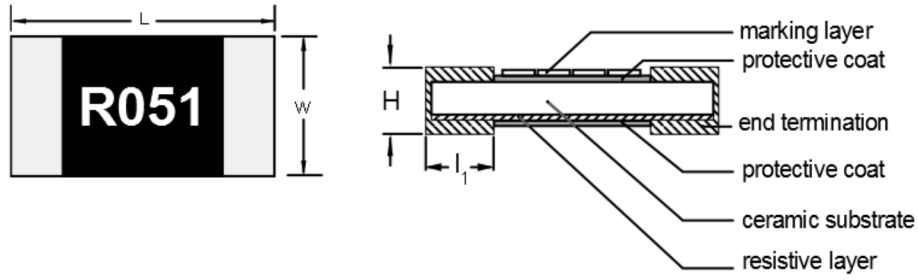


Fig 9 Chip resistor outlines for PE0100~PE4527

YMSC143_1

For dimensions, please refer to Table I

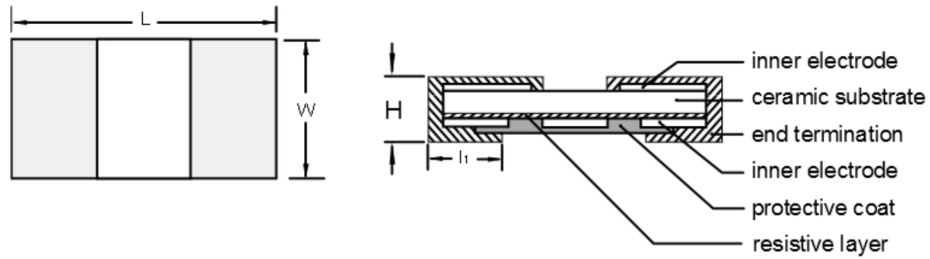


Fig 10 Chip resistor outlines for PE2512 (3W&5W) / PE2817

YMSC143_2

DIMENSION

Table I For outlines, please refer to Fig. 9 & Fig. 10

TYPE	RESISTANCE RANGE	L (mm)	W (mm)	H (mm)	l ₁ (mm)
PE0100	$100\text{ m}\Omega \leq R \leq 1\Omega$	0.40 ± 0.03	0.20 ± 0.03	0.14 ± 0.03	0.10 ± 0.03
PE0201	$50\text{ m}\Omega \leq R \leq 910\text{ m}\Omega$	0.60 ± 0.03	0.31 ± 0.04	0.27 ± 0.04	0.14 ± 0.06
PE0402	$10\text{ m}\Omega \leq R \leq 910\text{ m}\Omega$	$1.00 + 0.10 / - 0.15$	$0.50 + 0.10 / - 0.15$	0.35 ± 0.15	0.25 ± 0.10
PE0603	$5\text{ m}\Omega \leq R \leq 50\text{ m}\Omega$	1.60 ± 0.20	0.76 ± 0.25	0.35 ± 0.25	0.38 ± 0.25
	$51\text{ m}\Omega \leq R \leq 910\text{ m}\Omega$	1.52 ± 0.25	0.76 ± 0.25	0.45 ± 0.10	0.38 ± 0.25
PE0805	$5\text{ m}\Omega \leq R \leq 6\text{ m}\Omega$	2.03 ± 0.25	1.27 ± 0.25	0.35 ± 0.25	0.73 ± 0.25
	$7\text{ m}\Omega \leq R \leq 50\text{ m}\Omega$	2.03 ± 0.25	1.27 ± 0.25	0.35 ± 0.25	0.38 ± 0.25
	$51\text{ m}\Omega \leq R \leq 910\text{ m}\Omega$	2.03 ± 0.25	1.27 ± 0.25	0.55 ± 0.10	0.35 ± 0.20
PE1206	$5\text{ m}\Omega$	3.20 ± 0.25	1.60 ± 0.25	0.64 ± 0.25	0.64 ± 0.25
	$6\text{ m}\Omega \leq R \leq 910\text{ m}\Omega$	3.20 ± 0.25	1.60 ± 0.25	0.64 ± 0.25	0.51 ± 0.25
PE2010	$5\text{ m}\Omega \leq R \leq 6\text{ m}\Omega$	5.08 ± 0.25	2.54 ± 0.25	0.64 ± 0.25	1.47 ± 0.25
	$7\text{ m}\Omega \leq R \leq 910\text{ m}\Omega$	5.08 ± 0.25	2.54 ± 0.25	0.64 ± 0.25	0.51 ± 0.25
PE2512 1W&2W	$6\text{ m}\Omega \leq R \leq 910\text{ m}\Omega$	6.35 ± 0.25	3.18 ± 0.25	0.64 ± 0.25	0.76 ± 0.25
PE2512 3W&5W	$20\text{ m}\Omega \leq R \leq 910\text{ m}\Omega$	6.35 ± 0.25	3.15 ± 0.25	0.64 ± 0.25	0.90 ± 0.25
PE2817	$20\text{ m}\Omega \leq R \leq 910\text{ m}\Omega$	7.10 ± 0.25	4.20 ± 0.25	0.64 ± 0.25	1.00 ± 0.25
PE4527	$5\text{ m}\Omega$	11.75 ± 0.45	7.20 ± 0.45	0.65 ± 0.20	3.00 ± 0.45
	$6\text{ m}\Omega \leq R \leq 120\text{ m}\Omega$	11.75 ± 0.45	7.20 ± 0.45	0.65 ± 0.20	2.70 ± 0.45

Note:

1. For relevant physical dimensions, please refer to construction outlines.
2. Please contact with sales offices, distributors and representatives in your region before ordering.

ELECTRICAL CHARACTERISTICS

Table 2

SERIES	SIZE	POWER RATING @ 70°C (1)					TOLERANCE	RESISTANCE RANGE	TEMPERATURE COEFFICIENT OF RESISTANCE
		07	7W	7T	47	57			
PE	0100	1/32W	1/16W	---	---	---	±1%, ±5%	100 mΩ ≤ R ≤ 299 mΩ	±300 ppm/°C
								300 mΩ ≤ R ≤ 1Ω	±200 ppm/°C
	0201	1/20W	1/10W	---	---	---		50 mΩ ≤ R ≤ 70 mΩ	±350 ppm/°C
								70 mΩ < R ≤ 910 mΩ	±100 ppm/°C
	0402	1/16W	1/8W	1/6W	1/4W	---		10 mΩ ≤ R ≤ 910 mΩ	±100 ppm/°C
	0603	1/10W	1/5W	1/3W	2/5W	1/2W	±0.1% (only for 0805, >50 mΩ)	5 mΩ ≤ R ≤ 910 mΩ	±75 ppm/°C, ±100 ppm/°C
	0805	1/8W	1/4W	1/3W	1/2W	---	±0.5% (≥10 mΩ)	5 mΩ ≤ R ≤ 19 mΩ	±75 ppm/°C, ±100 ppm/°C
								20 mΩ ≤ R ≤ 910 mΩ	±50 ppm/°C, ±75 ppm/°C, ±100 ppm/°C
	1206	1/4W	1/2W	---	1W	---	±1% ±5%	5 mΩ ≤ R ≤ 910 mΩ	±50 ppm/°C, ±75 ppm/°C, ±100 ppm/°C
								6 mΩ ≤ R ≤ 910 mΩ	±100 ppm/°C
	2010	1/2W	1W	---	---	---		20 mΩ ≤ R ≤ 910 mΩ	±100 ppm/°C
								5 mΩ ≤ R ≤ 910 mΩ	±50 ppm/°C, ±75 ppm/°C, ±100 ppm/°C
	2512	1W	2W	---	---	---		20 mΩ ≤ R ≤ 910 mΩ	±100 ppm/°C
		---	---	3W	---	5W		5 mΩ ≤ R ≤ 120 mΩ	±75 ppm/°C, ±100 ppm/°C
2817	7W	---	---	---	---	±0.5%	20 mΩ ≤ R ≤ 910 mΩ	±100 ppm/°C	
4527	2W	3W	---	---	---	±1%, ±5%	5 mΩ ≤ R ≤ 120 mΩ	±75 ppm/°C, ±100 ppm/°C	

Note: 1. Global part number (code 10 - 11)

2. Please contact with sales offices, distributors and representatives in your region before ordering.

FUNCTIONAL DESCRIPTION

OPERATING TEMPERATURE RANGE

PE0100 to PE0402 Range: -55°C to +125°C (Fig.11)

PE0603 to PE4527 Range: -55°C to +170°C (Fig.12)

RATED VOLTAGE

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

$$V = \sqrt{P \times R}$$

Where

V = Continuous rated DC or AC (rms) working voltage (V)

P = Rated power (W)

R = Resistance value (Ω)

