Innovative Service Around the Globe YAGEO

DATA SHEET

CURRENT SENSOR - LOW TCR

AUTOMOTIVE GRADE

PV series

5%, 1%,

sizes 2512

RoHS compliant & Halogen free



YAGEO

Product specification – December 09, 2025 V.0

SCOPE

This specification describes PV series current sensor – high power and low TCR with lead-free terminations made by metal substrate.

APPLICATIONS

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

FEATURES

- AEC-Q200 qualified
- RoHS compliant
- Pb free without RoHS exemption
- Halogen-free Epoxy
- Environmental hazards reduction
- High component and equipment reliability
- Non-forbidden materials used in products/production
- Low resistances applied to current sensing
- Anti-sulfur

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

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

(1) SIZE

2512

(2) TOLERANCE

F = ±1%

J = ±5%

(3) PACKAGING TYPE

K = Embossed taping reel

(4) TEMPERATURE COEFFICIENT OF RESISTANCE

E = ± 50 ppm/°C

(5) TAPING REEL

7T = 7 inch dia. Reel & standard power (3W)

47 = 7 inch dia. Reel & standard power (4W)

(6) RESISTANCE VALUE

5 mΩ ≤ R ≤ 100mΩ

(7) DEFAULT CODE

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

Resistance rule of global part number

Resistance code rule	Example
	0R01 = 10 mΩ

ORDERING EXAMPLE

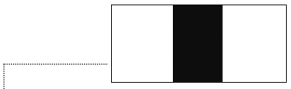
The ordering code of a PV2512 4W chip resistor, TCR50, value 0.010Ω with ±1% tolerance, supplied in 7-inch tape reel is: PV2512FKE470R01L

NOTE

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

MARKING

PV2512



No Marking

Fig. 1 Value = 5mΩ ≤ R ≤ 100mΩ

CONSTRUCTION

The resistors are constructed using outstanding TCR level material, which makes YAGEO PV resistors excellent for current sensing application in battery charger circuit & DC-DC converter.

The composition of the resistive material is adjusted to give the approximate required resistance and is covered with a protective coating.

Finally, the three external terminations (Cu / Ni / matte Tin) are added, as shown in Fig. 2.

Outlines

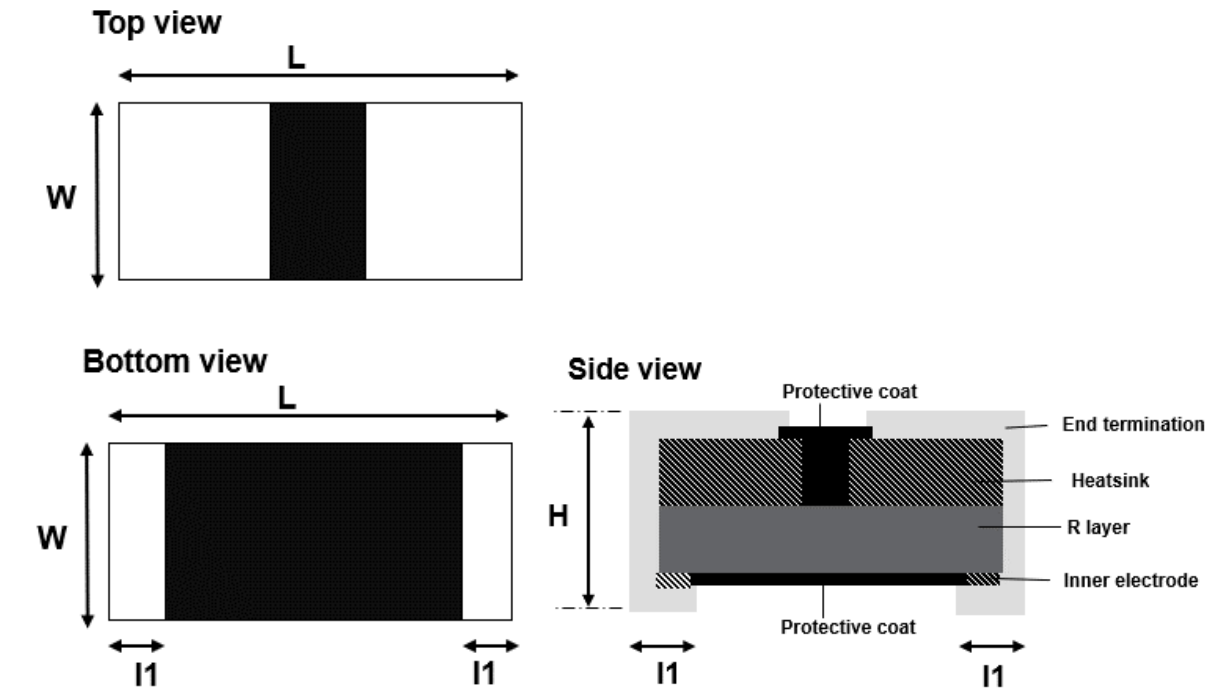


Fig. 2 Chip resistor outlines

DIMENSION

Table 1 For outlines, please refer to Fig. 2

TYPE	RESISTANCE RANGE	L (mm)	W (mm)	H (mm)	I_1 (mm)
PV2512	5mΩ ≤ R ≤ 100mΩ	6.35±0.25	3.18±0.25	0.60±0.25	0.76±0.25

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

TYPE	SIZE	POWER RATING	TOLERANCE	RESISTANCE RANGE	TEMPERATURE COEFFICIENT OF RESISTANCE
PV	2512	3W	±1%	5mΩ ≤ R ≤ 100mΩ	±50ppm/°C
		4W	±5%		

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

FUNCTIONAL DESCRIPTION

OPERATING TEMPERATURE RANGE

PV2512 Range: –55°C to +170°C

POWER RATING

Standard rated power at 70°C/95°C:

For detail power value, please refer to Table 2.

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)

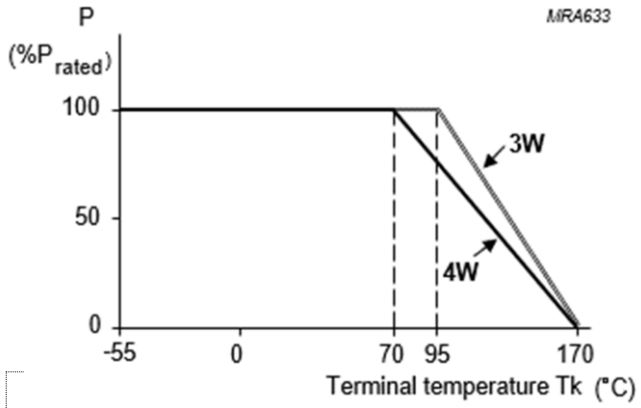


Fig. 3 Maximum dissipation (P_{max}) in percentage of rated power as a function of the operating terminal temperature(Tk)

PACKING STYLE AND PACKAGING QUANTITY

Table 3 Packing style and packaging quantity

PACKING STYLE	REEL DIMENSION	PV2512
Embossed taping reel (K)	7" (178 mm)	4,000

EMBOSSED TAPE

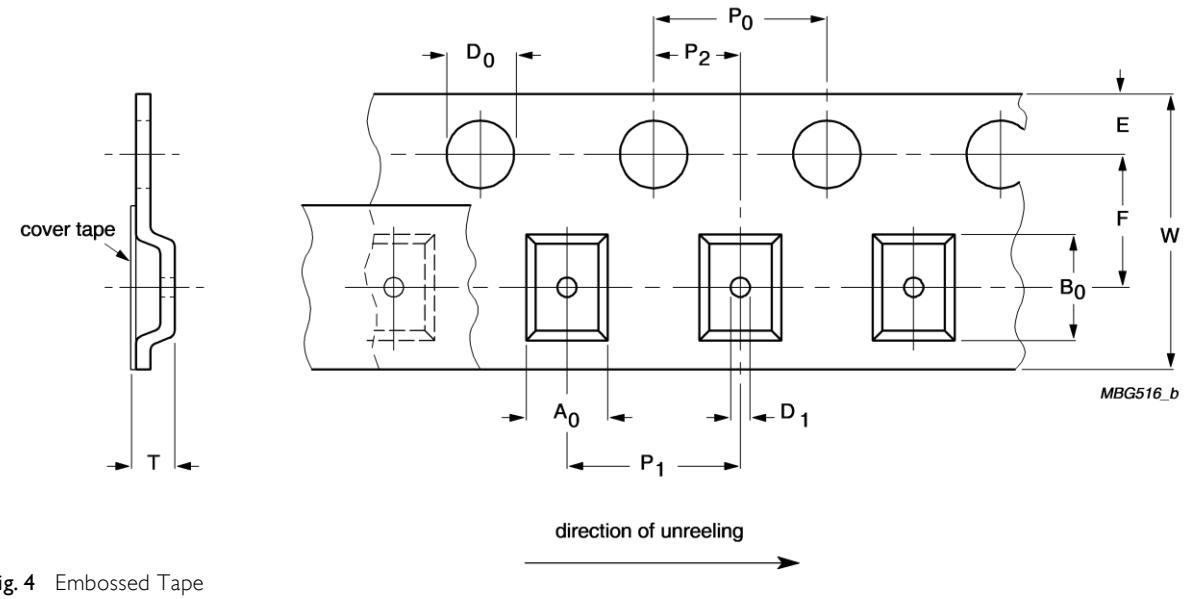


Fig. 4 Embossed Tape

Table 4 Dimensions of embossed tape for relevant chip resistors size

SIZE	SYMBOL										Unit: mm
	A_0	B_0	W	E	F	P_0	P_1	P_2	$\varnothing D_0$	$\varnothing D_1$	T
PV2512	3.40±0.15	6.70±0.15	12.00±0.30	1.75±0.10	5.50±0.10	4.00±0.10	4.00±0.10	2.00±0.10	1.55±0.05	1.50±0.10	0.80±0.15

REEL SPECIFICATION

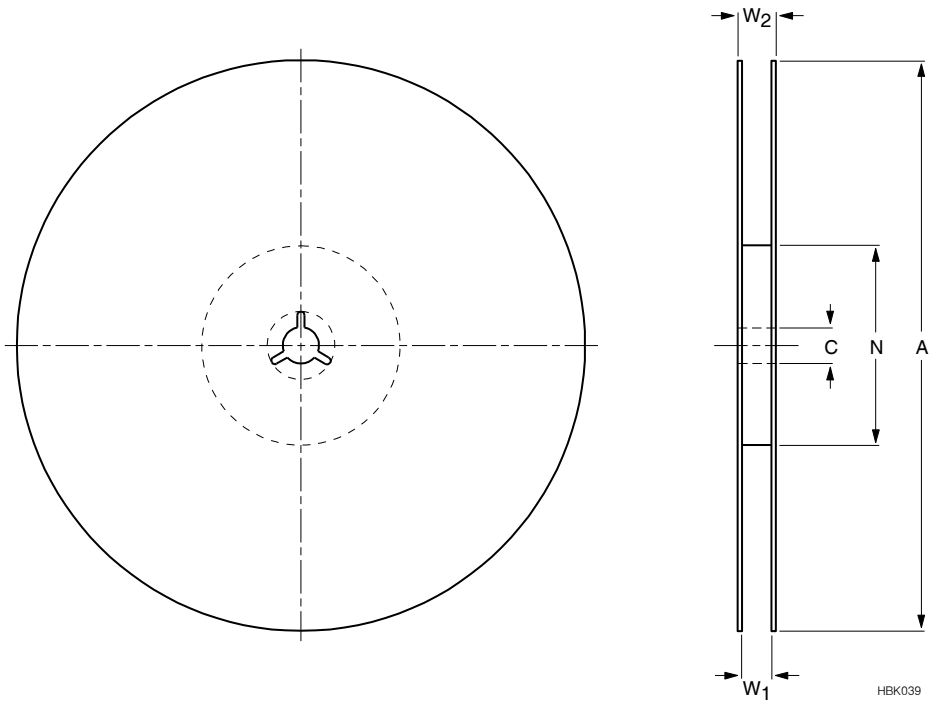


Fig. 5 Reel

Table 5 Dimensions of reel specification for relevant chip resistors size

SIZE	QUANTITY PER REEL	SYMBOL						Unit: mm
		12 mm TAPE WIDE	A	N	C	D	W_1	$W_{2\ MAX.}$
PV2512	4000	7" (Ø178 mm)	178.0±1.0	60.0+1/-0	13.50±0.5	21.0±0.8	13.6±0.5	16.5±0.5

LEADER/TRAILER TAPE SPECIFICATION

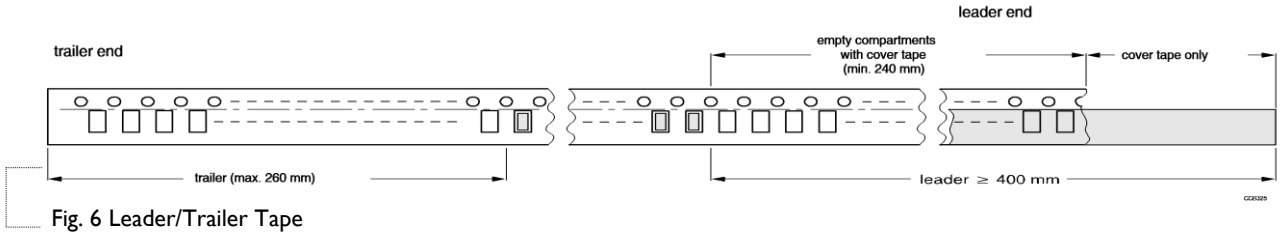


Fig. 6 Leader/Trailer Tape

FOOTPRINT AND SOLDERING PROFILES

For recommended soldering profiles, please refer to data sheet “Chip resistors mounting”.

FOOTPRINT

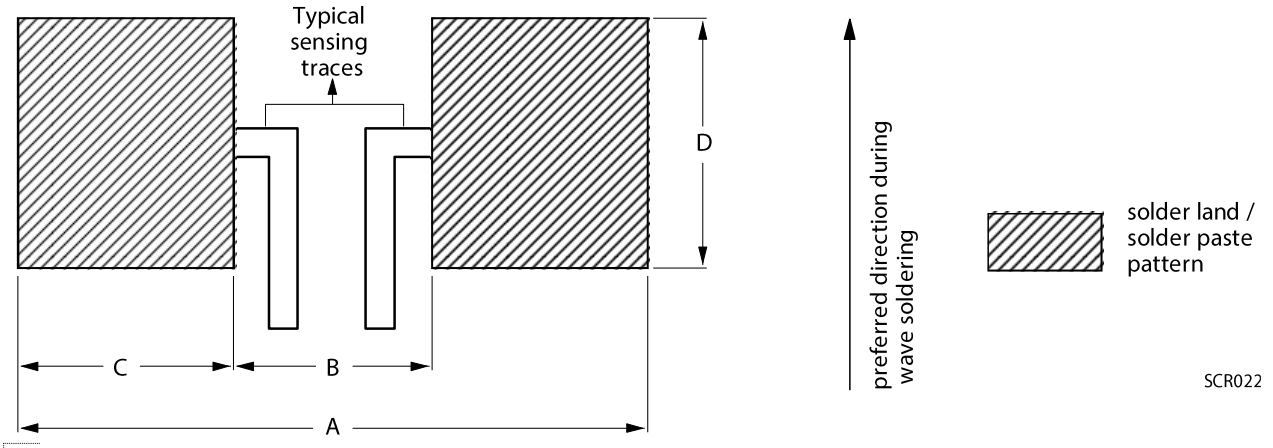


Fig. 7 Single resistor chips recommended dimensions of footprints

Table 6 Footprint dimensions

Unit: mm

SIZE	RESISTANCE RANGE	A	B	C	D
PV2512	5mΩ ≤ R ≤ 100mΩ	7.5	4.4	1.55	3.6

TESTS AND REQUIREMENTS

Table 7 Test condition, procedure and requirements

TEST	TEST METHOD	PROCEDURE	REQUIREMENT
Short time overload	IEC 60115-1 8.1	5 times of rated power for 5 seconds at room temperature	±(1%+0.0005Ω) No visible damage
High Temperature Exposure	MIL-STD-202 method 108 IEC 60068-2-2	1,000 hours at 170 °C unpowered,	±(1%+0.0005Ω)
Temperature Cycling	JESD22-A104	-55/+155°C, 1000 cycles Dwell time is 15 minutes. Devices mounted Air – Air.	±(1%+0.0005Ω)
Biased Humidity	MIL-STD-202 Method 103	1,000 hours; 85°C / 85% RH 10% of operating power	±(1%+0.0005Ω)
Life/ Operational Life/ Endurance	MIL-STD-202 method 108 IEC 60115-1 7.1	1,000 hours, maximum TK at 100% rated power (reference Fig. 3), power by 1.5h and 0.5h off	±(1%+0.0005Ω)
Resistance to Solvents	MIL-STD-202 Method 215	Immerse in isopropyl alcohol for 5 min with ultrasonic at room temperature	No visible damage
Board Flex / Bending	AEC-Q200-005	Chips mounted on a glass epoxy resin PCB (FR4) Bending: 2 mm Holding time: minimum 60 seconds	±(1%+0.0005Ω)
Vibration	MIL-STD-202 Method 204	5 g's for 20 min., 12 cycles each of 3 orientations Test from 10-2000 Hz	±(1%+0.0005Ω)
Resistance to Soldering Heat	MIL-STD-202-method 210	Specimen passed 3 times reflow temperature at 260°C, with solder.	±(0.5%+0.0005Ω) No visible damage
Temperature Coefficient of Resistance (T.C.R.)	MIL-STD-202 Method 304	At +25/+125°C Formula: $T.C.R=\frac{R_2-R_1}{R_1(t_2-t_1)}\times 10^6(ppm/°C)$ Where t_1 = +25°C or specified room temperature t_2 = +125°C test temperature R_1 = resistance at reference temperature in ohms R_2 = resistance at test temperature in ohms	Refer to table 2

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 0	Dec. 09, 2025	-	- First issue of this specification

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