Innovative Service Around the Globe YAGEO

DATA SHEET

CURRENT SENSOR - LOW TCR

AUTOMOTIVE GRADE

PZ_L series

1%

sizes

2010/2512

RoHS compliant & Halogen free

YAGEO

Product Specification – October 07, 2025 V.0



SCOPE

This specification describes PZ 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
- Moisture sensitivity level: MSL 1
- Halogen-free Epoxy
- Total lead free without RoHS exemption
- 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

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

(1) SIZE

2010/2512

(2) TOLERANCE

F = ± 1%

(3) PACKAGING TYPE

K = Embossed taping reel

(4) TEMPERATURE COEFFICIENT OF RESISTANCE

F = ± 100 ppm/°C

(5) TAPING REEL

07 / 7W / 7T / 47 = 7 inch dia. Reel and specific rated power.

Detailed power rating are shown in the Table 2.

(6) RESISTANCE VALUE

15 mΩ to 33mΩ

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 rule of global part number

Resistance code rule	Example
0RXXX (1 to 910 mΩ)	0R001 = 1 mΩ
	0R1 = 100 mΩ
	0R91 = 910 mΩ

ORDERING EXAMPLE

The ordering code of a PZ2512 1W TCR 100 ppm chip resistor, value 0.018Ω with ± 1% tolerance, supplied in 7-inch tape reel is: PZ2512FKF070R018L

NOTE

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

MARKING

PZ2010/PZ2512



Fig. 1 Value = 15 mΩ

4 digits

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

Outlines

For dimensions, please refer to Table 1

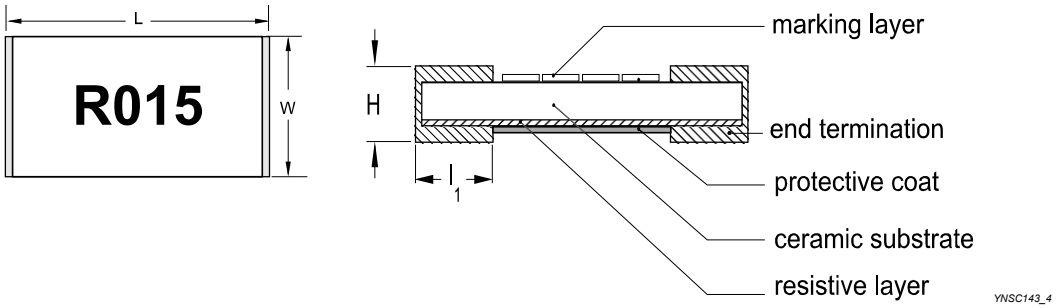


Fig. 2 Chip resistor outlines for PZ

DIMENSION

Table 1 For outlines, please refer to Fig. 9 & Fig. 10

TYPE	RESISTANCE RANGE	L (mm)	W (mm)	H (mm)	l_1 (mm)
PZ2010	15 mΩ ≤ R ≤ 20 mΩ	5.08±0.25	2.54±0.25	0.64±0.25	1.47±0.25
PZ2512	18 mΩ ≤ R ≤ 33 mΩ	6.35±0.25	3.18±0.25	0.64±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

SERIES SIZE	POWER RATING @ 70°C (1) 07	7W	7T	47	TOLERANCE	RESISTANCE RANGE	TEMPERATURE COEFFICIENT OF RESISTANCE	UNIT WEIGHT (mg/pcs)
2010	1/2W	1W	--	2W	± 1%	15 mΩ ≤ R ≤ 20 mΩ	±100 ppm/°C	27.447
2512	1/2W	2W	--	--		18 mΩ ≤ R ≤ 33 mΩ	±100 ppm/°C	43.821

FUNCTIONAL DESCRIPTION

OPERATING TEMPERATURE RANGE

PZ2010 to PZ2512 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:

$$V = \sqrt{(PxR)}$$

Where

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

P = Rated power (W)

R = Resistance value (Ω)

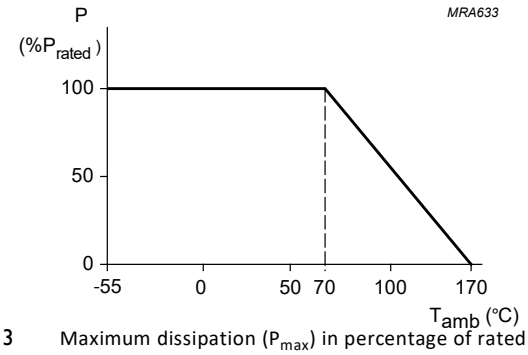


Fig. 3 Maximum dissipation (P_{max}) in percentage of rated power as a function of the operating ambient temperature (T_{amb})

PACKING STYLE AND PACKAGING QUANTITY

Table 3 Packing style and packaging quantity

PACKING STYLE	REEL DIMENSION	PRODUCT SIZE / QUANTITY 2010	2512
Embossed taping reel (K)	7" (178 mm)	4,000	4,000

EMBOSSED TAPE

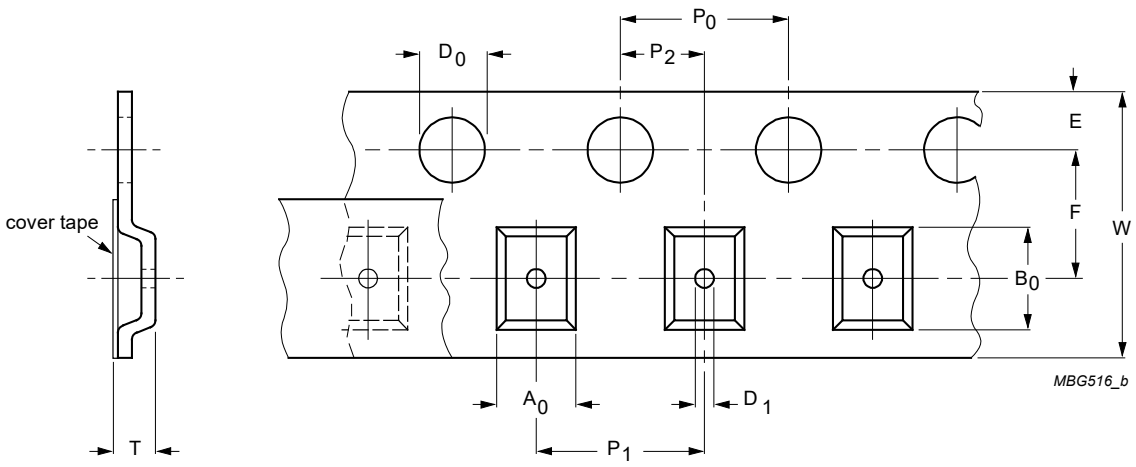


Fig.4 Embossed Tape

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
PZ2010	3.00±0.15	5.60±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	1.00±0.15	1.22±0.15
PZ2512	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	1.00±0.15	1.22±0.15

REEL SPECIFICATION

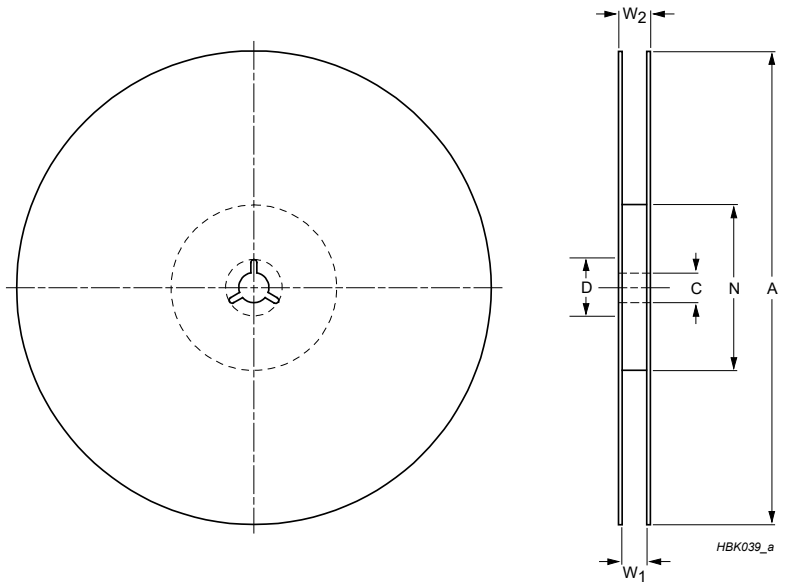


Fig. 5 Reel

Table 5 Dimensions of reel specification for relevant chip resistors size

SIZE	QUANTITY PER REEL	REEL SIZE			SYMBOL					Unit: mm
		8 mm TAPE WIDE	12 mm TAPE WIDE	24 mm TAPE WIDE	A	N	C	D	W_1	$W_{2\ MAX.}$
PZ2010	4,000	---	7" (Ø178 mm)	---	180.0+0/-3	60.0+1/-0	13.0±0.2	21.0±0.8	12.3+1/-0	18.4
PZ2512	4,000	---	7" (Ø178 mm)	---	180.0+0/-3	60.0+1/-0	13.0±0.2	21.0±0.8	12.3+1/-0	18.4

LEADER/TRAILER TAPE SPECIFICATION

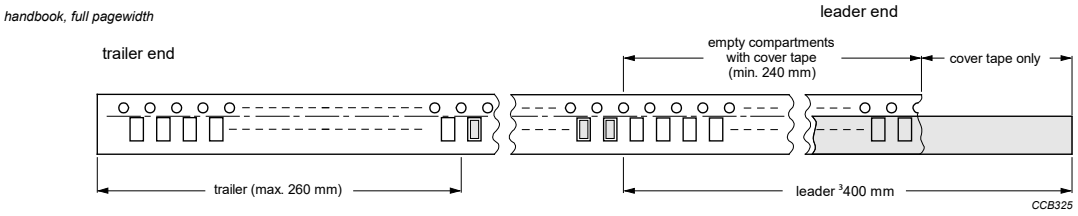


Fig. 6 Leader/Trailer Tape

FOOTPRINT AND SOLDERING PROFILES

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

FOOTPRINT

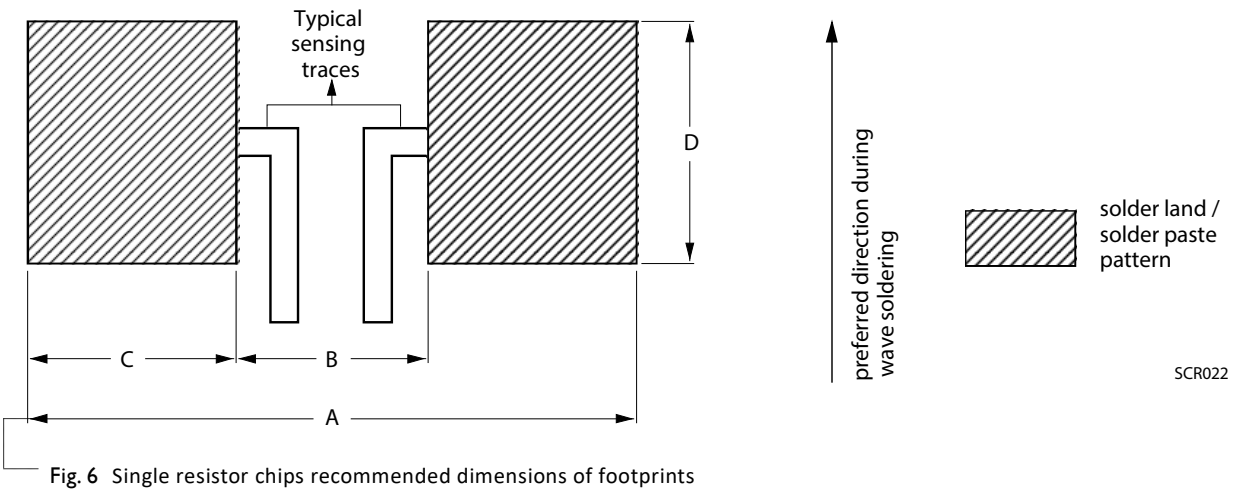


Fig. 6 Single resistor chips recommended dimensions of footprints

Table 6 Footprint dimensions

Unit: mm

SIZE	RESISTANCE RANGE	A	B	C	D
PZ2010	5 mΩ ≤ R ≤ 6 mΩ	6.12	1.40	2.36	3.05
PZ2512	18 mΩ ≤ R ≤ 33 mΩ	7.36	4.06	1.65	3.68

TESTS AND REQUIREMENTS

Table 7 Test condition, procedure and requirements

TEST	TEST METHOD	PROCEDURE	REQUIREMENTS
Short time overload	IEC60115-1 8.1	5 times of rated power for 5 seconds at room temperature	± (1%+0.0005Ω)
High Temperature Exposure/ Endurance at Upper Category Temperature	AEC -Q200 Test 3 MIL-STD-202G-Method 108	1,000 hours at maximum operating temperature depending on specification, unpowered No direct impingement of forced air to the parts Tolerances: 170± 3ºC	± (1%+0.0005Ω)
Temperature Cycling	AEC -Q200 Test 4 JESD22-A104	-55/+155°C, 1000 cycles Dwell time is 15 minutes. Devices mounted Air – Air.	± (1%+0.0005Ω)
Biased Humidity	AEC -Q200 Test 7 MIL-STD-202 Method 103	1,000 hours; 85ºC / 85% RH 10% of operating power	± (1%+0.0005Ω)
Life	AEC -Q200 Test 8 MIL-STD-202-Method 108	1,000 hours at 70± 2ºC applied rated power 1.5 hours on, 0.5 hour off, still air required	± (1%+0.0005Ω)
Resistance to Solvents	AEC -Q200 Test 12 MIL-STD-202 Method 215	Immerse in isopropyl alcohol for 5 min with ultrasonic at room temperature	No Visible damage
Mechanical Shock	AEC -Q200 Test 13 MIL-STD-202 Method 213	Three shocks in each direction, applied along the three mutually perpendicular axes of the test specimen (18 shocks) Peak value: 100 g's Duration: 6 ms Velocity change: 12.3 ft/s Waveform: Half sine	± (0.5%+0.0005Ω)
Vibration	AEC -Q200 Test 14 MIL-STD-202 Method 204	5 g's for 20 min., 12 cycles each of 3 orientations Test from 10-2000 Hz.	± (0.5%+0.0005Ω)
Resistance to Soldering Heat	AEC -Q200 Test 15 MIL-STD-202 Method 210	Specimen passed 3 times reflow temperature at 260ºC, with solder	± (0.5%+0.0005Ω) No visible damage
Solderability - Wetting	AEC -Q200 Test 18 J-STD-002	(1) Baking 4 hours at 155ºC dry heat, dipping at 245± 3ºC for 5± 0.5 seconds. (2) Baking 4 hours at 155ºC dry heat, dipping at 260± 3ºC for 30± 0.5 seconds.	Well tinned (>95% covered) No visible damage
Board Flex / Bending	AEC -Q200 Test 21 AEC-Q200-005	Chips mounted on a glass epoxy resin PCB (FR4), Bending 2 mm for 60+5 seconds	± (1.0%+0.0005Ωs)
Terminal Strength (SMD)	AEC -Q200 Test 22 AEC-Q200-006	Applied a 17.7N (1.8Kg) for 60± 1 seconds.	± (1.0%+0.0005Ω) No visible damage

TEST	TEST METHOD	PROCEDURE	REQUIREMENTS
Temperature Coefficient of Resistance (T.C.R.)	MIL-STD-202 Method 304 IEC 60115-1 4.8	At +25/+125 ºC Formula: $T.C.R = \frac{R_2 - R_1}{R1(t_2 - t_1)} \times 10^6 (ppm/^\circ C)$ Where t_1=+25ºC or specified room temperature t_2=+125ºC 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	Oct. 07, 2025	-	- New datasheet for current sensor - low TCR PZ series sizes of 2010/2512, 1%

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