

Anti-Corrosive Precision Chip Resistors

(PR) Anti-Corrosive Series of Moisture-Proof Chip Resistors for High Humidity Precision Applications

▶ Preview

Token Electronics has introduced a new line of anti-corrosive precision chip resistors that eliminates moisture concerns associated with typical Nickel Chromium precision resistors. The PR Series is an ideal low-cost alternative for expensive and hard-to-find tantalum nitride chip resistors.

A proprietary passivation layer is introduced between the nichrome resistive element with a superior alumina substrate and the epoxy overcoat to ensure stable performance and long life in the harshest and wettest environments.

In MIL-STD-202F method moisture testing, the PR Series demonstrated excellent stability over time and no significant shift in resistance after the 1000 hour life test. Applications require operation in humid or high moisture environments or have experienced corrosion problems with standard Nichrome thin film resistors. For those applications, long term extended humidity testing is essential before a part can be considered for usage on a design.



Designated the PR Series, it is available in industry standard 0402, 0603, 0805, 1206, 2010, to 2512 sizes and has a resistance range from 10 Ω to 1M Ω , with tolerances tight to $\pm 0.10\%$ and TCRs as low as 25ppm/ $^{\circ}\text{C}$. The PR Series has an operating temperature range of -55°C to $+155^{\circ}\text{C}$. The PR chip also offers outstanding electrical stability and environmental stability performance that would be expected from a precision resistor.

The standard packaging is tape and reel in 4Kpc, 5Kpc, and 10Kpc quantities depending on part size. Most sizes and resistance values are also offered in stock, making them an outstanding choice to support quick turn shortages. Pricing varies with size, tolerance, and TCR and ranges in reel quantities.

The chip PR series is lead-free and RoHS compliant. Detailed specifications, both mechanical and electrical, please contact our sales representative for more information.

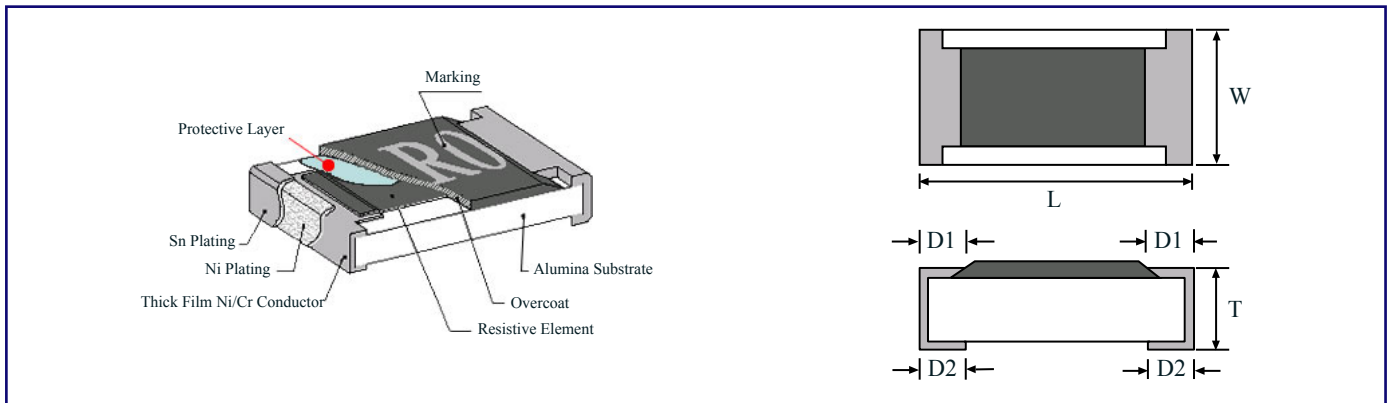
▶ Features

- Tight Tolerance down to $\pm 0.1\%$
- Wide R-Value Range 10 Ω ~ 1Meg Ω
- Extremely Low TCR down to ± 25 PPM/ $^{\circ}\text{C}$
- Special Passivated NiCr Film for Anti-Acid and Anti-Damp
- Long Term Life Stability with Advance Thin Film Technology
- Demonstrated the Anti-Corrosion Claims
Characterized by Ta_2N

▶ Applications

- Telecommunication Device
- Automotive, Medical Equipment
- Outdoor Electronic Applications
- High-end Multimedia Electronics
- Automatic Equipment Controller Devices
- High-end Computer, Industrial Equipment

► (PR) Surface Mount Series Dimensions (Unit: mm)

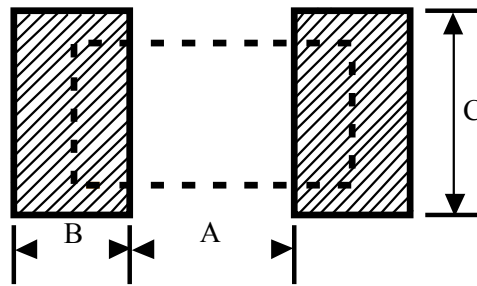


Codes	L	W	T	D1	D2
PR02 (0402)	1.00±0.05	0.50±0.05	0.30±0.05	0.20±0.10	0.20±0.10
PR03 (0603)	1.55±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20
PR05 (0805)	2.00±0.15	1.25±0.15	0.55±0.10	0.30±0.20	0.40±0.25
PR06 (1206)	3.05±0.15	1.55±0.15	0.55±0.10	0.42±0.20	0.35±0.25
PR10 (2010)	4.90±0.15	2.40±0.15	0.55±0.10	0.60±0.30	0.50±0.25
PR12 (2512)	6.30±0.15	3.10±0.15	0.55±0.10	0.60±0.30	0.50±0.25

► Standard Electrical Specifications

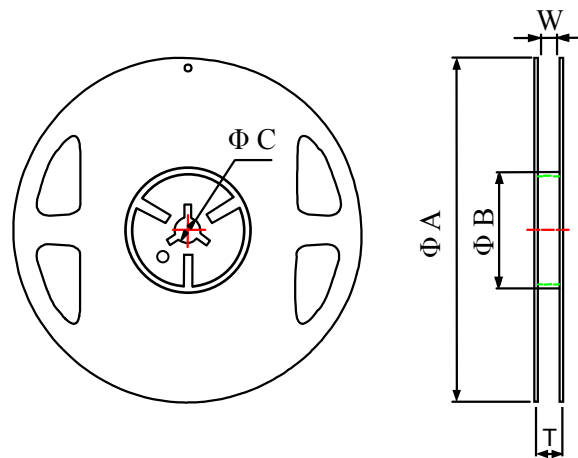
Type	Power Rating at 70°C	Operating Temp. Range	Max Operating Voltage	Max Overloading Voltage	Resistance Tolerance	Resistance Range	TCR
PR02 (0402)	1/16W	-55 ~ +155°C	25V	50V	±0.10% ±0.25% ±0.50%	25Ω~25KΩ	±25PPM / °C ±50PPM / °C
PR03 (0603)	1/16W	-55 ~ +155°C	50V	100V	±0.10% ±0.25% ±0.50%	25Ω~332KΩ	±25PPM / °C ±50PPM / °C
PR05 (0805)	1/10W	-55 ~ +155°C	100V	200V	±0.10% ±0.25% ±0.50%	10Ω~800KΩ	±25PPM / °C ±50PPM / °C
PR06 (1206)	1/8W	-55 ~ +155°C	150V	300V	±0.10% ±0.25% ±0.50%	10Ω~1MΩ	±25PPM / °C ±50PPM / °C
PR10 (2010)	1/4W	-55 ~ +155°C	150V	300V	±0.10% ±0.25% ±0.50%	10Ω~1MΩ	±25PPM / °C ±50PPM / °C
PR12 (2512)	1/2W	-55 ~ +155°C	150V	300V	±0.10% ±0.25% ±0.50%	10Ω~1MΩ	±25PPM / °C ±50PPM / °C

▶ Recommend Land Pattern (Unit: mm)



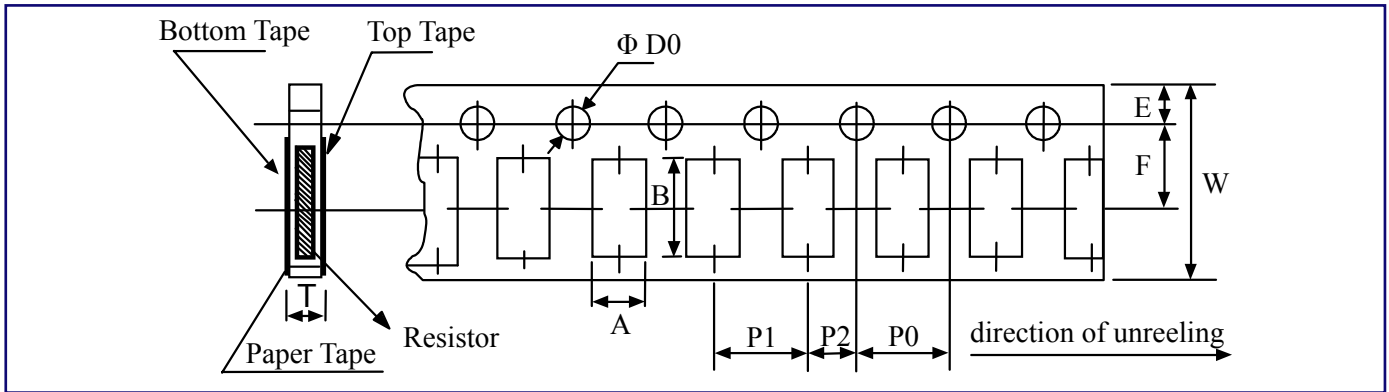
Codes	A	B	C
PR12 (2512)	4.90	1.60	3.10±0.2
PR10 (2010)	3.60	1.40	2.50±0.2
PR06 (1206)	2.00	1.15	1.70±0.2
PR05 (0805)	1.00	1.00	1.35±0.2
PR03 (0603)	0.80	1.00	0.90±0.2
PR02 (0402)	0.50	0.50	0.60±0.2

▶ Surface Mount Chip (PR) Packaging Quantity & Reel Specifications (Unit: mm)



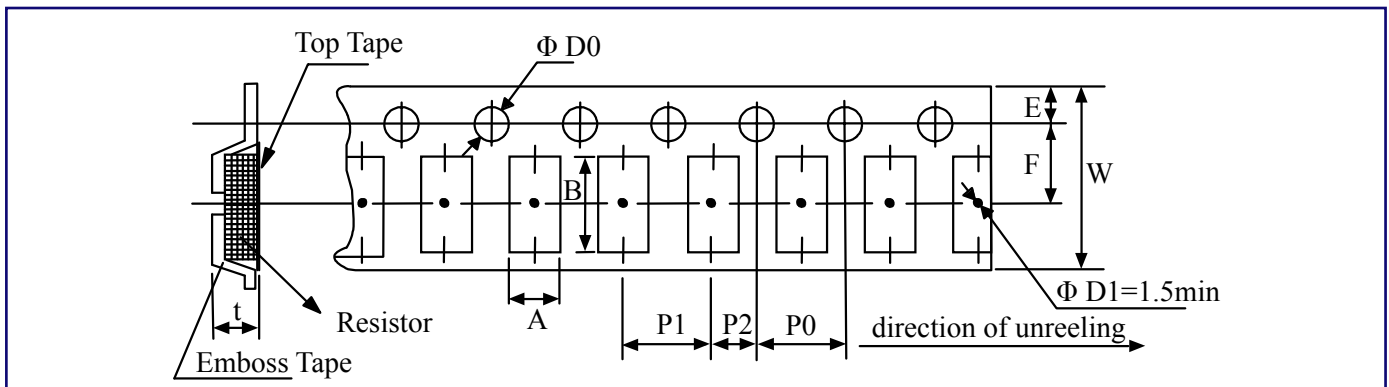
Codes	ΦA	ΦB	ΦC	W	T	Paper Tape (PCS)	Emboss Plastic Tape (PCS)
PR02 (0402)	178.0±1.0	60.0±1.0	13.5±0.7	9.5±1.0	11.5±1.0	10,000	-
PR03 (0603)	178.0±1.0	60.0±1.0	13.5±0.7	9.5±1.0	11.5±1.0	5,000	-
PR05 (0805)	178.0±1.0	60.0±1.0	13.5±0.7	9.5±1.0	11.5±1.0	5,000	-
PR06 (1206)	178.0±1.0	60.0±1.0	13.5±0.7	9.5±1.0	11.5±1.0	5,000	-
PR10 (2010)	178.0±1.0	60.0±1.0	13.5±0.7	13.5±1.0	15.5±1.0	-	4,000
PR12 (2512)	178.0±1.0	60.0±1.0	13.5±0.7	13.5±1.0	15.5±1.0	-	4,000

Paper Tape Specifications (Unit: mm)



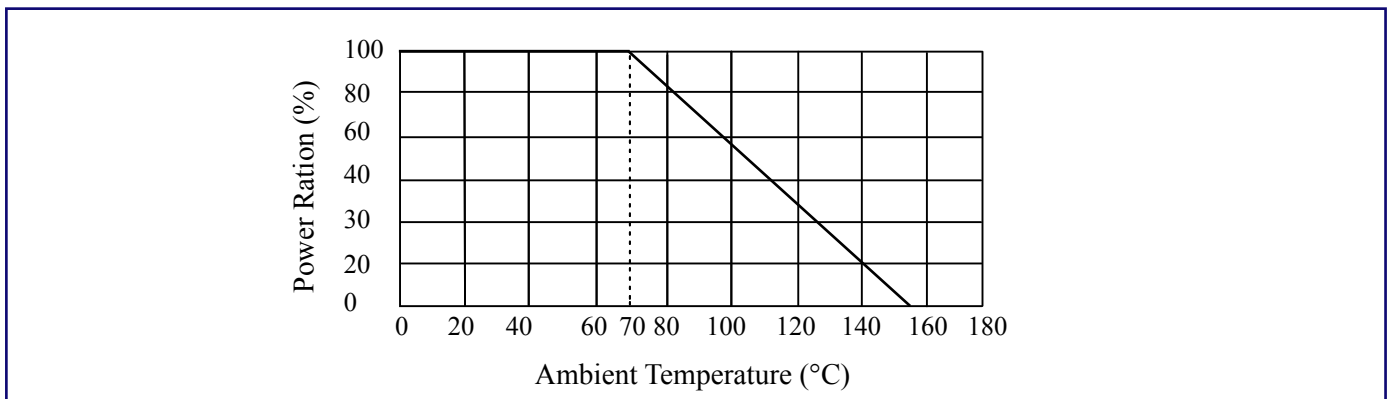
Codes	A	B	W	E	F	P0	P1	P2	ΦD0	T
PR02	0.70±0.05	1.16±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	2.00±0.05	2.00±0.05	1.55±0.05	0.40±0.03
PR03	1.10±0.05	1.90±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.05	0.60±0.03
PR05	1.60±0.05	2.37±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.05	0.75±0.05
PR06	2.00±0.05	3.55±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.05	0.75±0.05

Emboss Plastic Tape Specifications (Unit: mm)



Codes	A±0.10	B±0.10	W±0.10	E±0.10	F±0.05	P0±0.05	P1±0.10	P2±0.05	ΦD0±0.10	T±0.20
PWR10	2.85	5.45	12.0	1.75	5.5	4.00	4.00	2.00	1.50	1.00
PWR12	3.40	6.65	12.0	1.75	5.5	4.00	4.00	2.00	1.50	1.00

Power Derating Curve

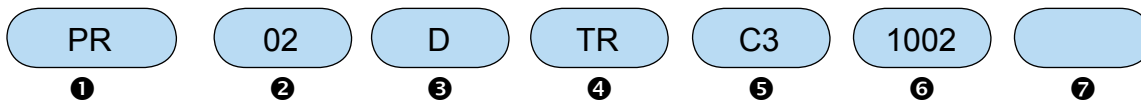


► Packaging

Test Item	Specification		Test Method
	Size 0603/0805/1206/2010/2512	Size 0402	
Short Time Overload	≤ ±0.02%	≤ ±0.1%	RCWV*2.5 or Max Overloading Voltage, 2 seconds
Thermal Shock	≤ ±0.02%	≤ ±0.1%	MIL-STD-202F Method 107G -55°C~125°C, 100 cycles
Load Life	≤ ±0.05%	≤ ±0.25%	MIL-STD-202F Method 108A RCWV, 70°C, 1.5 hours ON, 0.5 hours OFF, total 1000~1048 hours
Humidity (Steady State)	≤ ±0.05%	≤ ±0.5%	MIL-STD-202F Method 103B 40°C, 90~95%RH, RCWV 1.5 hours ON, 0.5 hours OFF, total 1000~1048 hours
Resistance to Dry Heat	≤ ±0.05%	≤ ±0.5%	JIS-C-5202-7.2 1000 hours @ +155°C without load
Resistance to Soldering Heat	≤ ±0.02%	≤ ±0.1%	MIL-STD-202F Method 210E 260±5°C, 10±1seconds
Solderability	95%min coverage		MIL-STD-202F Method 208H 245°C±5°C, 3±0.5(sec)

Note: Storage Temperature: 25±3°C; Humidity: <80%RH

► How to Order



① Part Number

② Dimensions(L×W) (mm)

Code	Dimensions(L×W)	EIA
02	1.00×0.50mm	0402
03	1.60×0.80mm	0603
05	2.00×1.25mm	0805
06	3.00×1.50mm	1206
10	4.90×2.40mm	2010
12	6.30×3.10mm	2512

③ Resistance Tolerance (%)

Code	Resistance Tolerance
B	±0.10%
C	±0.25%
D	±0.50%

④ Package

Code	Package
TR	Taping Reel
P	Bulk

⑤ TCR (ppm/°C)

Code	Marking
C3	±25ppm/°C
C2	±50ppm/°C

⑥ Resistance (Ω)

Code	Resistance
1000	100Ω
2201	2200Ω
1002	10000Ω
4992	49900Ω
1003	100000Ω

⑦ Marking

Code	Marking
	Standard Marking for E96/E24
N	No Marking

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