



LIAN GIMN ENTERPRISE CO., LTD.

Data Sheet

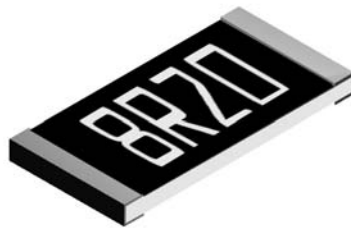
Customer :

Product Type: Anti-Corrosive Thin Film Precision Chip Resistor

Part No.: PR Series

Issued Date: 31-Oct-08

Document No PR Series REV.A4



Produced by (QC)	Checked by (QC)	Approved by (QC)	Prepared by (Sales)	Accepted by (Customer)
31-Oct-08	31-Oct-08	31-Oct-08	31-Oct-08	
Chun	Roland	Judy		

Anti-Corrosive Thin Film Precision Chip Resistor (PR Series)

1. Scope

This specification applies to all sizes of rectangular-type fixed chip resistors with Passivated NiCr as material.

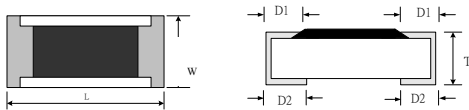
2. Features

- Long term life stability and demonstrated the Anti – Corrosion claims characterized by Ta₂N
- Special passivated NiCr film for Anti-Acid and Anti-Damp
- Tight tolerance down to $\pm 0.1\%$
- Extremely low TCR down to ± 25 PPM/ $^{\circ}\text{C}$
- Wide resistance range 25 ohm ~ 1Meg ohm

3. Applications

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

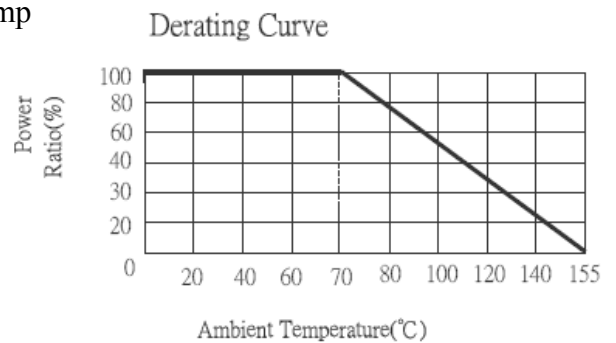
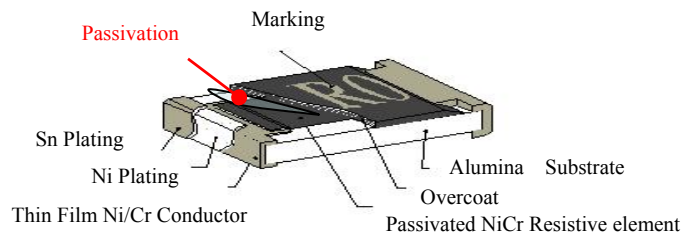
5. Dimensions



Unit : mm

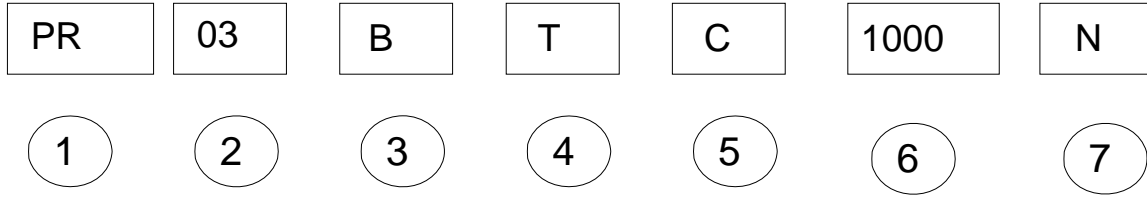
Codes	L	W	T	D1	D2
PR02	1.00 \pm 0.05	0.50 \pm 0.05	0.30 \pm 0.05	0.20 \pm 0.10	0.20 \pm 0.10
PR03	1.55 \pm 0.10	0.80 \pm 0.10	0.45 \pm 0.10	0.30 \pm 0.20	0.30 \pm 0.20
PR05	2.00 \pm 0.15	1.25 \pm 0.15	0.55 \pm 0.10	0.30 \pm 0.20	0.40 \pm 0.25
PR06	3.05 \pm 0.15	1.55 \pm 0.15	0.55 \pm 0.10	0.42 \pm 0.20	0.35 \pm 0.25
PR10	4.90 \pm 0.15	2.40 \pm 0.15	0.55 \pm 0.10	0.60 \pm 0.30	0.50 \pm 0.25
PR12	6.30 \pm 0.15	3.10 \pm 0.15	0.55 \pm 0.10	0.60 \pm 0.30	0.50 \pm 0.25

4. Construction





6. Product Identification



(1) Product Type

Product Type	
PR	Anti-Corrosive Thin Film Precision Chip Resistor

(2) Dimensions(LxW)

Codes	Dimensions (LxW)	EIA
PR02	1.00X0.50mm	0402
PR03	1.55X0.80mm	0603
PR05	2.00X1.25mm	0805
PR06	3.05X1.55mm	1206
PR10	4.90X2.40mm	2010
PR12	6.30X3.10mm	2512

(3) Resistance Tolerance

Codes	Resistance Tolerance
B	±0.10%
C	±0.25%
D	±0.50%
F	±1.00%

(4) Packaging

Codes	Type
T	Taping Reel
B	Bulk

(5) TCR

Codes	Type
C	±25 PPM/°C
D	±50 PPM/°C

(6) Resistance

Codes	Type
1000	100Ω
2201	2200Ω
1002	10000Ω
4992	49900Ω
1003	100000Ω

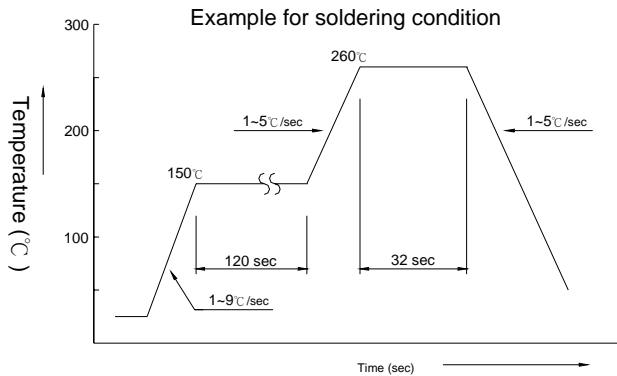
(7) Special

Codes	Type
	Standard
N	No Marking

7. Electrical Characteristics

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

8. Reflow



Solder : Sn96.5/Ag3/Cu0.5

9. Environmental Characteristics

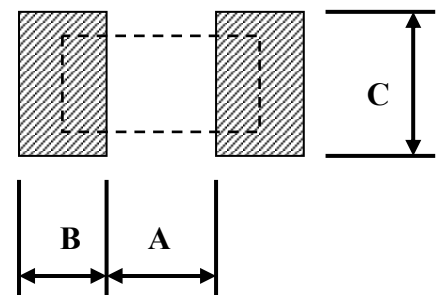
Test Item	Specification		Test Method
	Size 0603 / 0805 1206 / 2010 2512	Size 0402	
Short Time Overload	$\leq \pm 0.02\%$	$\leq \pm 0.1\%$	RCWV*2.5 or Max Overloading Voltage , 2 seconds
Thermal Shock	$\leq \pm 0.02\%$	$\leq \pm 0.1\%$	MIL-STD-202F Method 107G -55°C~150°C,100 cycles
Load Life	$\leq \pm 0.05\%$	$\leq \pm 0.25\%$	MIL-STD-202F Method 108A RCWV , 70°C , 1.5 hours ON , 0.5 hours OFF, total 1000~1048 hours
Humidity (Steady State)	$\leq \pm 0.05\%$	$\leq \pm 0.5\%$	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	$\leq \pm 0.05\%$	$\leq \pm 0.5\%$	JIS-C-5202-7.2 1000 hours @ +155°C without load
Resistance to Soldering Heat	$\leq \pm 0.02\%$	$\leq \pm 0.1\%$	MIL-STD-202F Method 210E 260±5°C , 10±1 seconds
Solderability	95%min coverage		MIL-STD-202F Method 208H 245°C±5°C , 3±0.5 (sec)

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

10. Recommend Land Pattern

Unit : mm

Codes	A	B	C
PR02	0.50	0.50	0.60±0.2
PR03	0.80	1.00	0.90±0.2
PR05	1.00	1.00	1.35±0.2
PR06	2.00	1.15	1.70±0.2
PR10	3.60	1.40	2.50±0.2
PR12	4.90	1.60	3.10±0.2





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11. Marking



3digit marking for Example: 14C=13K7 Ω 13C=13K3 Ω

68B=4K99 Ω 68X=49.9 Ω

1. Remark: 0603 3digit marking

Marking Table

Code	E96	Code	E96	Code	E96	Code	E96				
01	100	25	178	49	316	73	562				
02	102	26	182	50	324	74	576				
03	105	27	187	51	332	75	590				
04	107	28	191	52	340	76	604				
05	110	29	196	53	348	77	619				
06	113	30	200	54	357	78	634				
07	115	31	205	55	365	79	649				
08	118	32	210	56	374	80	665				
09	121	33	215	57	383	81	681				
10	124	34	221	58	392	82	698				
11	127	35	226	59	402	83	715				
12	130	36	232	60	412	84	732				
13	133	37	237	61	422	85	750				
14	137	38	243	62	432	86	768				
15	140	39	249	63	442	87	787				
16	143	40	255	64	453	88	806				
17	147	41	261	65	464	89	825				
18	150	42	267	66	475	90	845				
19	154	43	274	67	487	91	866				
20	158	44	280	68	499	92	887				
21	162	45	287	69	511	93	909				
22	165	46	294	70	523	94	931				
23	169	47	301	71	536	95	953				
24	174	48	309	72	549	96	976				
Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	10 ⁰	10 ¹	10 ²	10 ³	10 ⁴	10 ⁵	10 ⁶	10 ⁷	10 ⁻¹	10 ⁻²	10 ⁻³

11-2 Remark: 0603 3digit marking for E24

Example: 101=100Ω 102=1KΩ

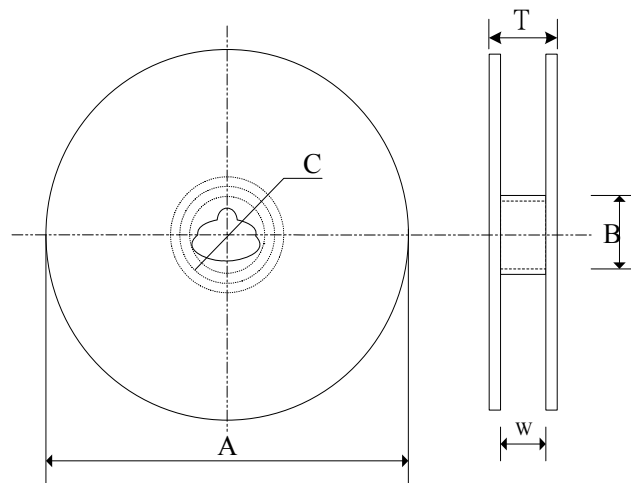
E24	10	11	12	13	15	16	18	20	22	24	27	30	33	36	39	43	47	51	56	62	68	75	82	91
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11-3 Remark: 0805~2512 4digit marking for Example:

Resistance	100Ω	2.2KΩ	10KΩ	49.9KΩ	100KΩ
marking	1000	2201	1002	4992	1003

12. Packaging

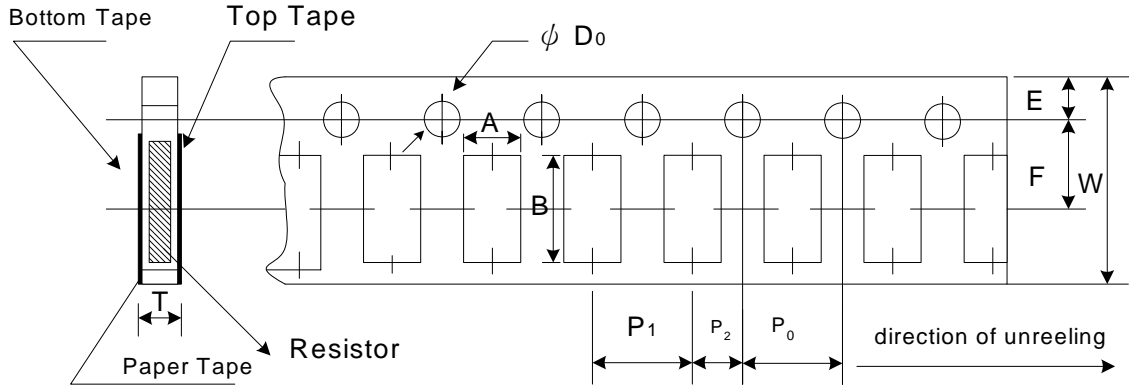
12-1-1 Reel Specifications & Package Quantity



Unit :mm

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

12-1-2 Paper Tape Specifications



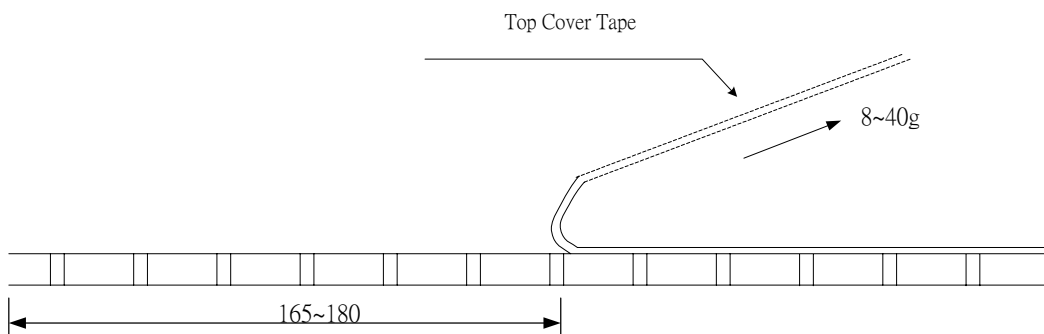
Unit: mm

Codes	A	B	W	E	F	P0	P1	P2	ψD0	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

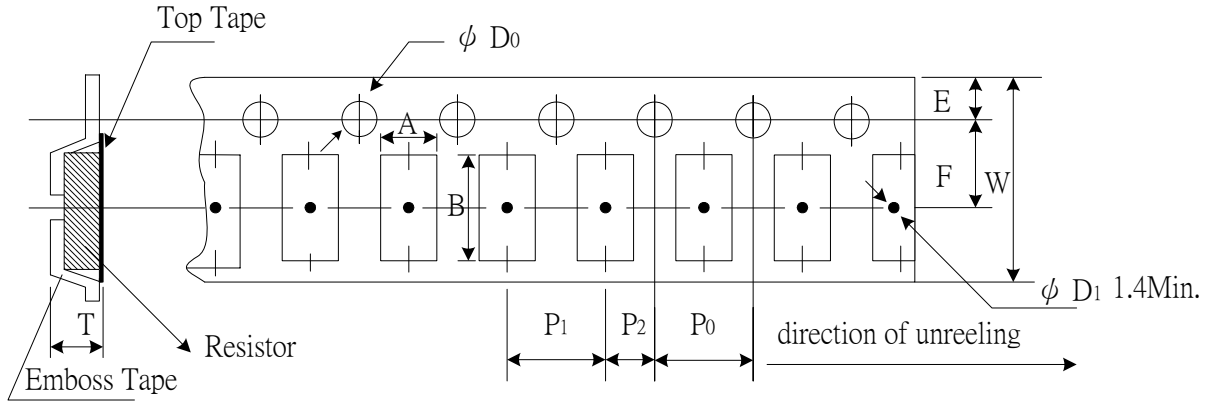
Peel force of top cover tape

The peel speed shall be about 300mm/min±5%

The peel force of top cover tape shall be between 8to 40g



12-1-4 Emboss Plastic Tape Specifications



Unit: mm

Codes	A	B	W	E	F	P ₀	P ₁	P ₂	ψD ₀	T
PR10	2.85±0.10	5.45±0.10	12.0±0.10	1.75±0.10	5.5±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.00±0.20
PR12	3.40±0.10	6.65±0.10	12.0±0.10	1.75±0.10	5.5±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.00±0.20

Peel force of top cover tape

The peel speed shall be about 300mm/min±5%

The peel force of top cover tape shall be between 20to80g

