TOKEN ELECTRONICS IND. CO., LTD.

HONESTY PERFECTION SHARING

Chip Resistor / 贴片电阻器

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All Updated and Final Specifications, Please Confirm with TOKEN ELECTRONICS REPRESENITIVES.

http://www.token.com.tw

rfq@tokenonline.net

Taiwan: No. 137, Sec. 1, Chung Shin Rd., Wu Ku Hsiang, Taipei Hsien, Taiwan, R.O.C
TEL: 886-2-2981 0109; FAX: 886-2-2988 7487

China: 12F, Zhongxing Industry Bld., Chuangye Rd., Nanshan District, Shenzhen, Guangdong
TEL: 86-755-2605 5363, 2605 5364; FAX: 86-755-2605 5365

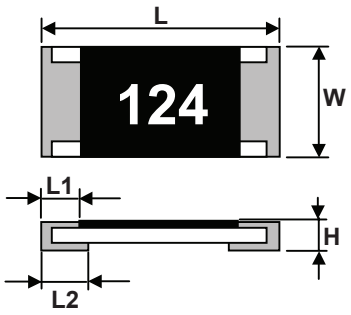
Chip Resistor

FCR, RCA, RCN Series - SMD Resistors

Token FCR, RCA, RCN Series SMD Resistor are formed by vacuum depositing a resistive alloy on a usually flat substrate of ceramic. Photo-lithographic or similar techniques are used to define the final geometry and interconnecting traces. This technology provides for close ratio matching and tracking in a network, as well as low stand-alone temperature coefficient and resistance tolerance. Types includes precision smd (FCR), smd array (RCA), and networks (RCN).

Chip Thick Film Dimension (Unit: mm)

Type	L	W	H	L1	L2
FCR 03	1.60 ± 0.10	0.80 ± 0.10	0.45 ± 0.10	0.30 ± 0.20	0.30 ± 0.20
FCR 05	2.00 ± 0.15	1.25 ± 0.15	0.50 ± 0.10	0.40 ± 0.20	0.35 ± 0.15
FCR 06	3.10 ± 0.15	1.55 ± 0.15	0.55 ± 0.10	0.50 ± 0.25	0.50 ± 0.25

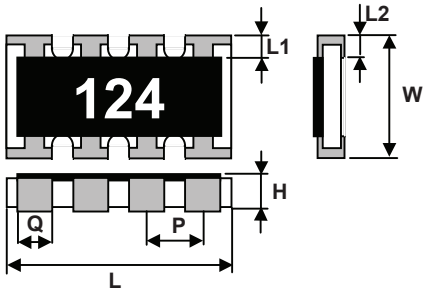


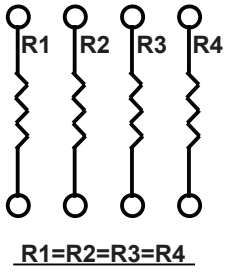
Chip Thick Film Characteristic

Type	Power Ratingat 70°C	Max. RCWV	Max. Overload Voltage	Resistance Tolerance(%)	Resistance Range (Ω)		Standard ResistanceValues
					Min.	Max.	
FCR03	1/10W	50V	100V	± 1% (F) ± 5% (J)	10Ω 1Ω	1MΩ 10MΩ	E-96 E-24
FCR05	1/8W	150V	300V	± 1% (F) ± 5% (J)	10Ω 1Ω	1MΩ 10MΩ	E-96 E-24
FCR06	1/4W	200V	300V	± 1% (F) ± 5% (J)	10Ω 1Ω	1MΩ 10MΩ	E-96 E-24

Chip Array Dimension (Unit: mm)

Type	L	W	H	L1	L2	P	Q
RCA03-4D(0603)	3.2±0.2	1.6±0.15	0.5±0.1	0.30±0.15	0.35Max	0.8±0.1	0.5±0.1





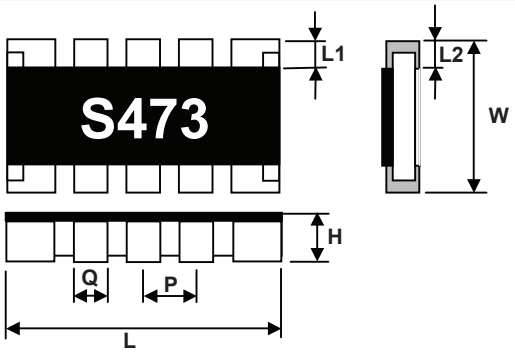
Chip Array Characteristic

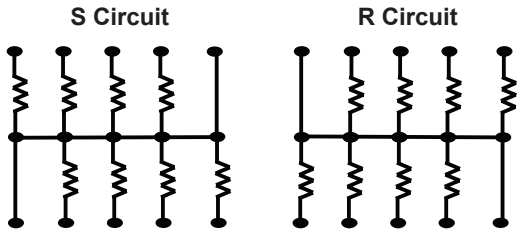
Type	Rated Power at70°C	Max. Working Voltage	Max. Overload Voltage	T.C.R. (ppm/°C)	Resistance Range		Jumper Rated Current	Jumper Resistance Value	Operating Temperature Range
					F(±1%) E-96	G(±2%) J(±5%) E-24			
RCA03-4D (0603)	0.063	50V	100V	± 200	100Ω~470KΩ	10Ω~1MΩ	1A	50mΩ MAX	-55°C~+125°C

Chip Resistor

Chip Network Dimension (Unit: mm)

Type	L	W	H	L1	L2	P	Q
RCN06-10R RCN06-10S	6.4 ± 0.2	3.1 ± 0.2	0.55 ± 0.1	0.5 ± 0.3	0.5 ± 0.2	1.27 ± 0.1	0.8 ± 0.2





Chip Network Characteristic

Type	Rated Power at70°C	Max. Working Voltage	Max. Overload Voltage	T.C.R. (ppm/°C)	Resistance Range J (±5%) E-12	Number of Terminals	Number of Elements	Operating Temperature Range
RCN06-10R RCN06-10S	1/16W	50V	100V	±200	10Ω~1MΩ	10	8	-55°C~+125°C

Chip Specifications

Item	Specification	Test Method
DC Resistance	J: ±5%, F: ±1%	JIS C 5202 5.1
Temperature Coefficient of Resistance(TCR)	J: ±200ppm/°C F: ±100ppm/°C	JIS C 5202 5.2 / IEC 115-1 4.8.4.2; T1 T2 Test emperature: 25°C→-55°C 25°C →-55°C
Short Time Overload	J:ΔR≤ ± (2%+0.1Ω) F:ΔR≤ ± (1%+0.05Ω)	JIS C 5202 5.5 / IEC 115-1 4.13; 2.5xRated voltage (Max. Overload Voltage) for 5 sec. measure resistance after 30 minutes
Resistance to Solder Heat	J:ΔR≤ ± (1%+0.1Ω) F:ΔR≤ ± (0.5%+0.05Ω) No mechanical damage	JIS C 5202 6.4 / IEC 115-1 4.18; With 260 ± 5 °C for 10 ± 1 sec.
Solderability	Over 95% of termination must becovered with solder	JIS C 5202 7.4 / IEC 115-1 4.17; After immersing flux, dip in the 235 ± 5°C molten solderbath for 2 ± 0.5 sec.
Temperature Cycle	J:ΔR≤ ± (1%+0.1Ω) F:ΔR≤ ± (0.5%+0.05Ω) No mechanical damage	JIS C 5202 7.4 / IEC 115-1 4.19; Repeat 5 cycles as follow; -55°C(30minutes)+25°C(10~15minutes) +125°C(30minutes)+25°C(10~15minutes)
Terminal Strength	ΔR≤ ± (0.5%+0.05Ω) No mechanical damage	JIS C 5202 6.1; 500g for 10 seconds
Load Life	J:ΔR≤ ± (3%+0.1Ω) F:ΔR≤ ± (1%+0.05Ω)	JIS C 5202 7.10 / IEC 115-1 4.25.1; Permanent resistance change after 1000+48/-0 hours (1.5 hours ON,0.5hour OFF) at RCWV or Max. Keep the element at 70 ± 3°Cambient
Load Life Humidity	J:ΔR≤ ± (3%+0.1Ω) F:ΔR≤ ± (1%+0.05Ω)	JIS C 5202 7.9 / IEC 115-1 4.24.2; Maintain the temperature of the element at 40 ± 2 °Cand 90~95% RH with the ratedvoltage applied. Cycle ON for 1.5hours and Off for 0.5 hour for 1000+48/-0 hours.After one hour, measure the resistance value.
Intermittent Overload	ΔR≤ ± (5%+0.1Ω) No mechanical damage	JIS C 5202 5.8; 2.5xRated Voltage(Max.OverloadVoltage), 1secON,25sec OFF, test 10,000 cycles

Chip Resistor

Chip Resistance Marking

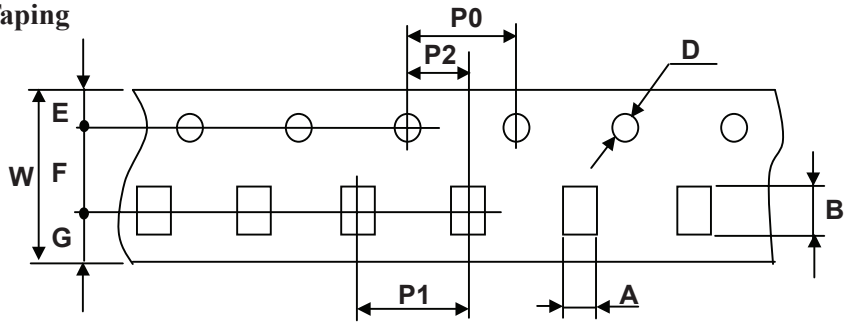
3 digit marking
for E24(J)
100~10Ω
122~1.2KΩ
473~47KΩ
105~1MΩ

4 digit marking
for E96(F)
22R1~22.1Ω
1020~102Ω
1542~15.4KΩ

3 digit marking
for E96(F)
02C
$102 \times 10^2 = 10.2K\Omega$

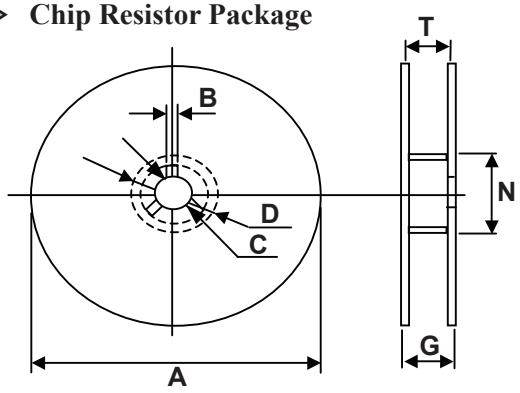
15E
$140 \times 10^4 = 1.4M\Omega$

Chip Characteristic Taping



Codes	A	B	W	F	E	P1	P2	P0	D	G
FCR03	1.10±0.20	1.90±0.20	8.0±0.3	3.50±0.05	1.75±0.10	4.0±0.1	2.00±0.05	4.0±0.1	1.5±0.1 -0	2.75
FCR05	1.65±0.20	2.45±0.20	8.0±0.3	3.50±0.05	1.75±0.10	4.0±0.1	2.00±0.05	4.0±0.1	1.5±0.1 -0	2.75
FCR06	2.00±0.10 -0.15	3.57±0.10 -0.15	8.0±0.3	3.50±0.05	1.75±0.10	4.0±0.1	2.00±0.05	4.0±0.1	1.5±0.1 -0	2.75

Chip Resistor Package



Symbol	Dimension
A	178 ± 2.0
N	80.0 ± 0.5
C	13.0 ± 0.5
D	20min
B	20 ± 0.5
G	100 ± 1.5
T	14.9 max.

Chip Resistor Part Number Explanation

RCN	06	-	10	R	103	J	TP
❶	❷		❸	❹	❺	❻	❼

❶ Type: SMDNetwork

❷ Size:06

❸ Number of Terminals:10

❹ Circuit Structure;R Circuit,S Circuit

❺ Nominal Resistance

Code	Resistance Tolerance
3-Digit	E12 Series EX 10Ω=100 100Ω=101

❻ Resistance Tolerance

Code	Resistance Tolerance
J	±5%

❼ TCR

Code	Packaging
TP	Taping (Paper)
BA	Bulk Case

Continued from the preceding page.

Chip Resistor Part Number Explanation

FCR	03	100	J	TP
❶	❷	❸	❹	❺

❶ Type: SMD

❷ Size

Code	Size
03	0603
05	0805
06	1206

❸ Nominal Resistance

Code		
SMD Elements	3-Digit	E24 Series EX 10Ω=100 47Ω=470
	4-Digit	E96 Series EX 10.2Ω=10R2 10KΩ=1002
Jumper		000

❹ Resistance Tolerance

Code	Resistance Tolerance
F	±1%
J	±5%

❺ TCR

Code	Packaging
TP	Taping (Paper)
BA	Bulk Case

Chip Resistor Part Number Explanation

RCA	03	-	4	D	101	J	TP
❶	❷		❸	❹	❺	❻	❼

❶ Type: SMDArray

❷ Size:03(0603)

❸ Number of circuits: 4(4 circuits)

❹ Electrode Structure: D(protruding electrode)

❺ Nominal Resistance

Code		
SMD Elements	3-Digit	E24 Series EX 10Ω=100 47Ω=470
	4-Digit	E96 Series EX 10.2Ω=10R2 10KΩ=1002
Jumper		000

❻ Resistance Tolerance

Code	Resistance Tolerance
F	±1%
G	±2%
J	±5%

❼ TCR

Code	Packaging
TP	Taping (Paper)
BA	Bulk Case

Precision Chip Resistors - AR Series

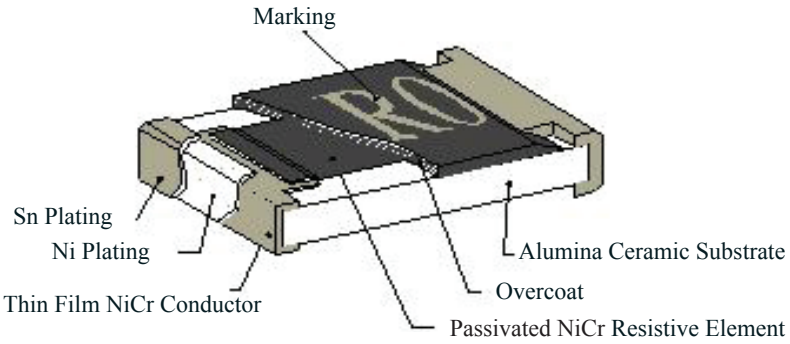
Features

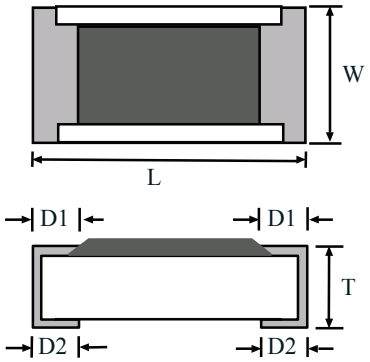
- Thin Film Passivated NiCr Resistor
- Very Tight Tolerance from ±0.01% ~ ±1%
- Extremely Low TCR from ±5PPM/°C ~ ±50PPM/°C
- Wide R-Value range
- Products with Pb-free Terminations Meet RoHS Requirments

Precision Chip Resistor Applications

- Medical Equipment
- Testing / Measurement instrument
- Consumer Product
- Printer Equipment
- Automatic Equipment Controller
- Converters
- Communication Device, Cell phone, GPS, PDA

Precision Chip Resistor Construction





Precision Chip Resistor Dimensions (Unit: mm)

Codes	L	W	T	D1	D2
AR02	1.00±0.05	0.50±0.05	0.30±0.05	0.20±0.10	0.20±0.10
AR03	1.55±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20
AR05	2.00±0.15	1.25±0.15	0.55±0.10	0.30±0.20	0.40±0.25
AR06	3.05±0.15	1.55±0.15	0.55±0.10	0.42±0.20	0.35±0.25
AR10	4.90±0.15	2.40±0.15	0.55±0.10	0.60±0.30	0.50±0.25
AR12	6.30±0.15	3.10±0.15	0.55±0.10	0.60±0.30	0.50±0.25

Precision Chip Resistor Standard Electrical Specifications

Type	Power Rating at 70°C	Operating Temp. Range	Max Operating Voltage	Max Overloading Voltage	Resistance Tolerance (±%)	Resistance Range	TCR (±PPM/°C)
AR02 (0402)	1/16W	-55 ~+155°C	25V	50V	0.01, 0.05, 0.1, 0.25, 0.5	50Ω~2KΩ	5
					0.01, 0.05, 0.1, 0.25, 0.5	50Ω~12KΩ	10, 15
					0.01, 0.05	50Ω~12KΩ	25, 50
					0.1, 0.25, 0.5, 1	10Ω~100KΩ	25, 50
AR03 (0603)	1/16W	-55 ~+155°C	50V	100V	0.01, 0.05, 0.1, 0.25, 0.5	50Ω~8KΩ	5
					0.01, 0.05, 0.1, 0.25, 0.5	25Ω~100KΩ	10, 15
					0.01	25Ω~100KΩ	25, 50
					0.05	4.7Ω~150KΩ	25, 50
					0.1, 0.25, 0.5, 1	4.7Ω~402KΩ	25, 50
					0.25, 0.5, 1	2Ω~4.6Ω	25, 50

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Chip Resistor

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Type	Power Rating at 70°C	Operating Temp. Range	Max Operating Voltage	Max Overloading Voltage	Resistance Tolerance (±%)	Resistance Range	TCR (±PPM/°C)
AR05 (0805)	1/10W	-55 ~+155°C	100V	200V	0.01, 0.05, 0.1, 0.25, 0.5	50Ω~16KΩ	5
					0.01, 0.05, 0.1, 0.25, 0.5	25Ω~200KΩ	10, 15
					0.01	25Ω~200KΩ	25, 50
					0.05	4.7Ω~500KΩ	25, 50
					0.1, 0.25, 0.5, 1	4.7Ω~1MΩ	25, 50
					0.25, 0.5, 1	1Ω~4.6Ω	25, 50
AR06 (1206)	1/8W	-55 ~ +155°C	150V	300V	0.01, 0.05, 0.1, 0.25, 0.5	50Ω~30KΩ	5
					0.01, 0.05, 0.1, 0.25, 0.5	25Ω~500KΩ	10, 15
					0.01	25Ω~500KΩ	25, 50
					0.05	4.7Ω~1MΩ	25, 50
					0.1, 0.25, 0.5, 1	4.7Ω~1MΩ	25, 50
					0.25, 0.5, 1	1Ω~4.6Ω, 1MΩ~2MΩ	25, 50
AR10 (2010)	1/4W	-55 ~ +155°C	150V	300V	0.01, 0.05, 0.1, 0.25, 0.5	50Ω~30KΩ	5
					0.01, 0.05, 0.1, 0.25, 0.5	25Ω~500KΩ	10, 15
					0.01	25Ω~500KΩ	25, 50
					0.05	4.7Ω~1MΩ	25, 50
					0.1, 0.25, 0.5, 1	4.7Ω~1MΩ	25, 50
					0.25, 0.5, 1	1Ω~4.6Ω, 1MΩ~2MΩ	25, 50
AR12 (2512)	1/2W	-55 ~ +155°C	150V	300V	0.01, 0.05, 0.1, 0.25, 0.5	50Ω~50KΩ	5
					0.01, 0.05, 0.1, 0.25, 0.5	25Ω~500KΩ	10, 15
					0.01	25Ω~500KΩ	25, 50
					0.05	4.7Ω~1MΩ	25, 50
					0.1, 0.25, 0.5, 1	4.7Ω~1MΩ	25, 50
					0.25, 0.5, 1	1Ω~4.6Ω, 1MΩ~2MΩ	25, 50

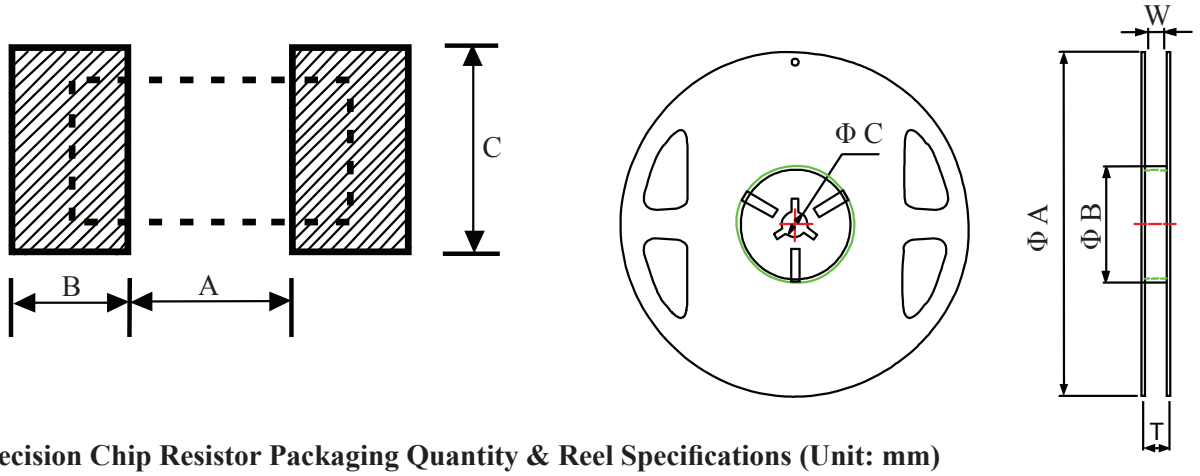
Higher Power Rating Electrical Specifications - Precision Chip Resistors

Type	Power Rating at 70°C	Operating Temp. Range	Max Operating Voltage	Max Overloading Voltage	Resistance Tolerance (±%)	Resistance Range	TCR (±PPM/°C)
AR03 (0603)	1/10W	-55 ~ +155°C	50V	100V	0.10, 0.25, 0.50	10Ω~332KΩ	25, 50
AR05 (0805)	1/8W	-55 ~ +155°C	150V	300V	0.10, 0.25, 0.50	4.7Ω~1MΩ	25, 50
AR06 (1206)	1/4W	-55 ~ +155°C	200V	400V	0.10, 0.25, 0.50	4.7Ω~1MΩ	25, 50

● Token has the ability to manufacture above options based on customer's requirement.

Recommend Land Pattern (Unit: mm) - Precision Chip Resistors

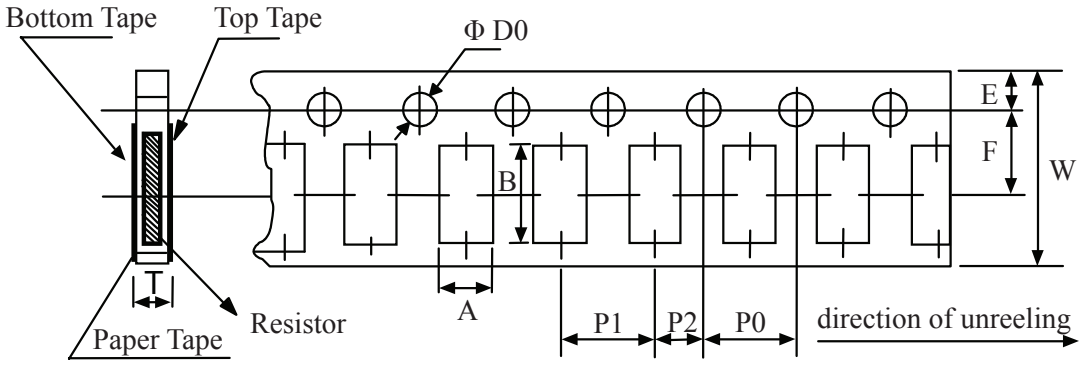
Codes	A	B	C
AR12	4.90	1.60	3.10±0.2
AR10	3.60	1.40	2.50±0.2
AR06	2.00	1.15	1.70±0.2
AR05	1.00	1.00	1.35±0.2
AR03	0.80	1.00	0.90±0.2
AR02	0.50	0.50	0.60±0.2



Precision Chip Resistor Packaging Quantity & Reel Specifications (Unit: mm)

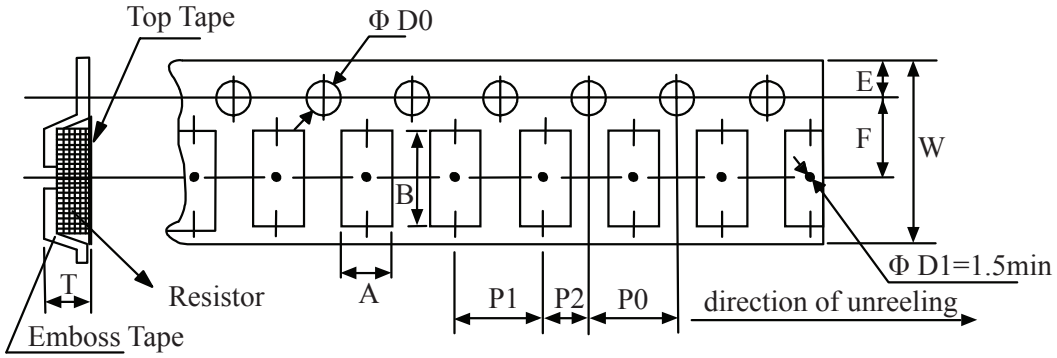
Codes	ΦA	ΦB	ΦC	W	T	Paper Tape (PCS)	Emboss Plastic Tape (PCS)
AR02	178±1	60.0+0.5	13.0±0.20	9.00±0.50	12.0±0.15	10,000	-
AR03	178±1	60.0+0.5	13.0±0.20	9.00±0.50	12.0±0.15	5,000	-
AR05	178±1	60.0+0.5	13.0±0.20	9.00±0.50	12.0±0.15	5,000	-
AR06	178±1	60.0+0.5	13.0±0.20	9.00±0.50	12.0±0.15	5,000	-
AR10	178±1	60.2±0.5	13.0±1.00	13.2±1.50	16.0±0.20	-	4,000
AR12	178±1	60.2±0.5	13.0±0.50	13.2±1.50	16.0±0.20	-	4,000

Precision Chip Resistor Paper Tape Specifications (Unit: mm)



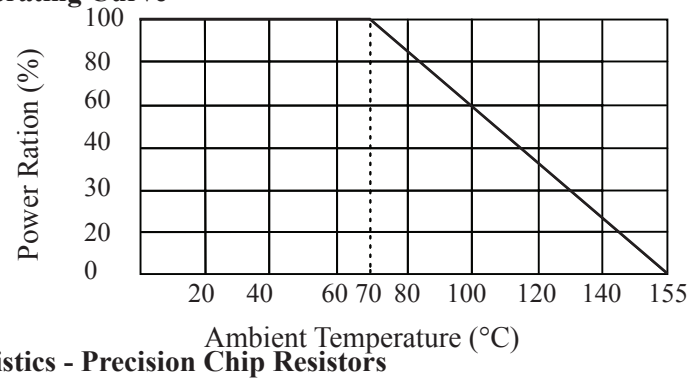
Codes	A	B	W	E	F	P0	P1	P2	ΦD0	T
AR02	0.70±0.05	1.16±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	2.00±0.05	2.00±0.05	1.55±0.05	0.40±0.03
AR03	1.10±0.05	1.90±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.05	0.60±0.03
AR05	1.60±0.05	2.37±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.05	0.75±0.05
AR06	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) - Precision Chip Resistors



Codes	A	B	W	E	F	P0	P1	P2	ΦD0	T
AR10	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
AR12	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

Precision Chip Resistor Derating Curve



Environmental Characteristics - Precision Chip Resistors

Item	Specification		Test Method
	Tol.≤0.05%	Tol.>0.05%	
Temperature Coefficient of Resistance	AS Spec		MIL-STD-202F Method 304 +25/-55/+25/+125/+25°C
Short Time Overload	ΔR±0.05%	ΔR±0.5%	JIS-C-5202-5.5 RCWV*2.5 or Max Overloading Voltage , 5 seconds.
	ΔR±0.5% for high power rating		
Dielectric Withstand Voltage	By type		MIL-STD-202F Method 301 Apply Max Overload Voltage for l minute
Insulation Resistance	>1000M Ω		MIL-STD-202F Method 302 Apply 100VDC for 1minute
Thermal Shock	ΔR±0.05%	ΔR±0.25%	MIL-STD-202F Method 107G -55°C~150°C, 100cycles
Load Life	ΔR±0.05%	ΔR±0.2%	MIL-STD-202F Method 108A RCWV, 70°C, 1.5 hours ON, 0.5 hours OFF, 1000~1048 hours
	>7KΩ ΔR±0.5%		
	ΔR±0.5% for high power rating		
humidity (Steady State)	ΔR±0.05%	ΔR±0.3%	MIL-STD-202F Method 103B 40°C, 90~95%RH, RCWV 1.5 hours ON, 0.5 hours OFF, total 1000~1048 hours
	ΔR±0.5% for high power rating		
Resistance to dry heat	ΔR±0.05%	ΔR±0.2%	JIS-C-5202-7.2 96 hours @ +155°C without load
Low Temperature Operation	ΔR±0.05%	ΔR±0.2%	JIS-C-5202-7.1 1hour, -65°C, followed by 45minutes of RCWV
	ΔR±0.5% for high power rating		
Bending Strength	ΔR±0.05%	ΔR±0.2%	JIS-C-5202-6.1.4 Bending Amplitude 3mm for 10seconds
Solderability	95%min coverage		MIL-STD-202F Method 208H; 260°C±5°C, 2±0.5(sec)
Resistance to Soldering Heat	ΔR±0.05%	ΔR±0.2%	MIL-STD-202F Method 210E; 260±5°C, 10±1 second

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

How to Order

AR	03	T	T	D		1000
❶	❷	❸	❹	❺	❻	❼

❶ Product Type

❷ Dimensions(L×W)

Code	Dimensions(L×W)
02	1.00×0.50mm
03	1.60×0.80mm
05	2.00×1.25mm
06	3.00×1.50mm
10	4.90×2.40mm
12	6.30×3.10mm

❸ Resistance Tolerance

Code	Resistance Tolerance
T	±0.01%
B	±0.10%
C	±0.25%
D	±0.50%
F	±1.00%

❹ Packaging

Code	Packaging
T	Taping Reel
P	Bulk

❺ TCR

Code	TCR
S	±5ppm /°C
B	±10ppm /°C
N	±15ppm /°C
C	±25ppm /°C
D	±50ppm /°C

❻ Higher Power Rating

Code	Power Rating
	Standard / Special
V	1/4W
W	1/8W
X	1/10W

❻ Resistance

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

Anti-Corrosive Thin Film Precision Chip Resistor - PR Series

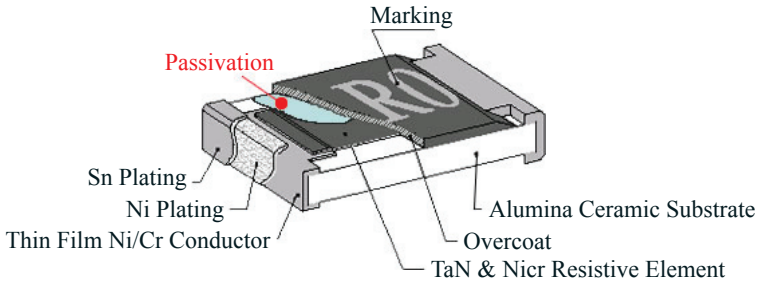
Precision Chip Resistor Features

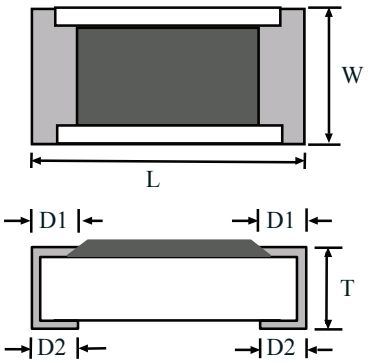
Special Passivated NiCr Film for Anti-Acid and Anti-Damp.
Very Tight Tolerance from ±0.1%.
Extremely Low TCR from ±25 PPM/°C.
Wide R-Value Range.

Precision Chip Resistor Applications

Automotive; High-end Computer; Industrial Equipment.
Automatic Equipment Controller; Medical Equipment.
Telecommunication Device; High-end Multimedia Electronics.

Precision Chip Resistor Construction





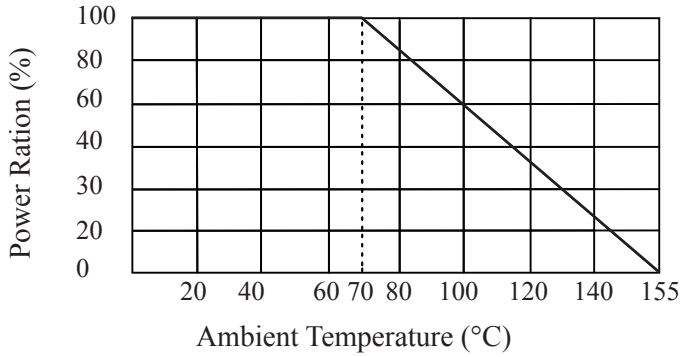
Precision Chip Resistor Dimensions (Unit: mm)

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

Precision Chip Resistor Standard Electrical Specifications

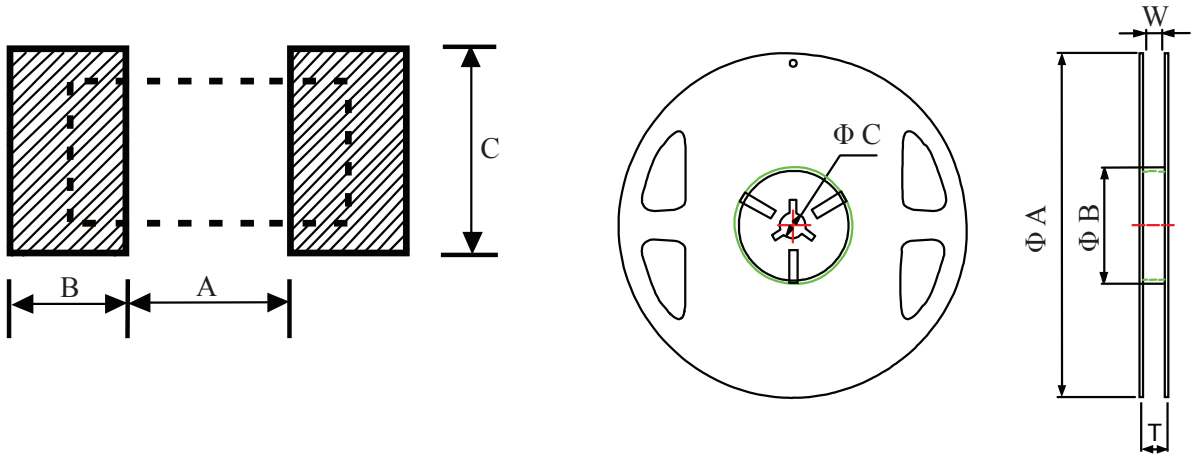
Type	Power Ratingat 70°C	Operating Temp. Range	Max Operating Voltage	Max Overloaing Voltage	Resistance Tolerance	Resistance Range	TCR (PPM / °C)
PR02 (0402)	1/16W	-55 ~ +155°C	25V	50V	±0.10% ±0.25% ±0.50%	25Ω~25KΩ	±25 ±50
PR03 (0603)	1/16W	-55 ~ +155°C	50V	100V	±0.10% ±0.25% ±0.50%	25Ω~200KΩ	±25 ±50
PR05 (0805)	1/10W	-55 ~ +155°C	100V	200V	±0.10% ±0.25% ±0.50%	25Ω~400KΩ	±25 ±50
PR06 (1206)	1/8W	-55 ~ +155°C	150V	300V	±0.10% ±0.25% ±0.50%	25Ω~500KΩ	±25 ±50
PR10(2010)	1/4W	-55 ~ +155°C	150V	300V	±0.10% ±0.25% ±0.50%	25Ω~600KΩ	±25 ±50
PR12 (2512)	1/2W	-55 ~ +155°C	150V	300V	±0.10% ±0.25% ±0.50%	25Ω~600KΩ	±25 ±50

Derating Curve - Precision Chip Resistors



Recommend Land Pattern (Unit: mm) - Precision Chip Resistors

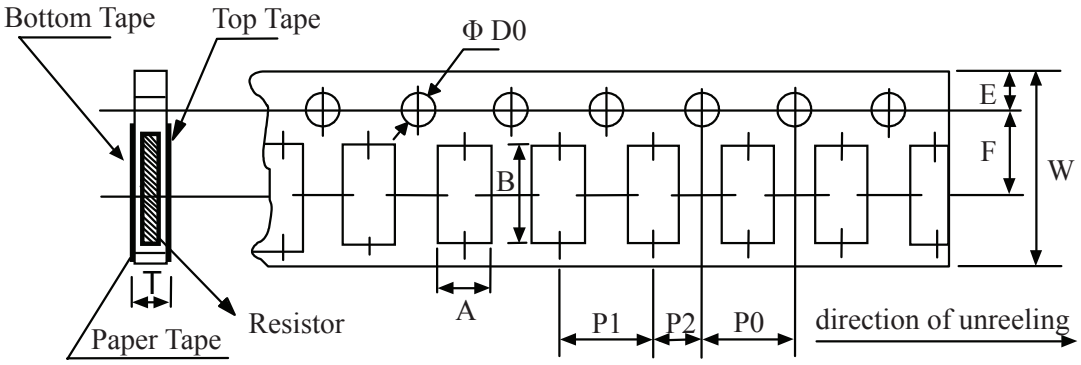
Codes	A	B	C
PR12	4.90	1.60	3.10±0.2
PR10	3.60	1.40	2.50±0.2
PR06	2.00	1.15	1.70±0.2
PR05	1.00	1.00	1.35±0.2
PR03	0.80	1.00	0.90±0.2
PR02	0.50	0.50	0.60±0.2



Packaging Quantity & Reel Specifications (Unit: mm) - Precision Chip Resistors

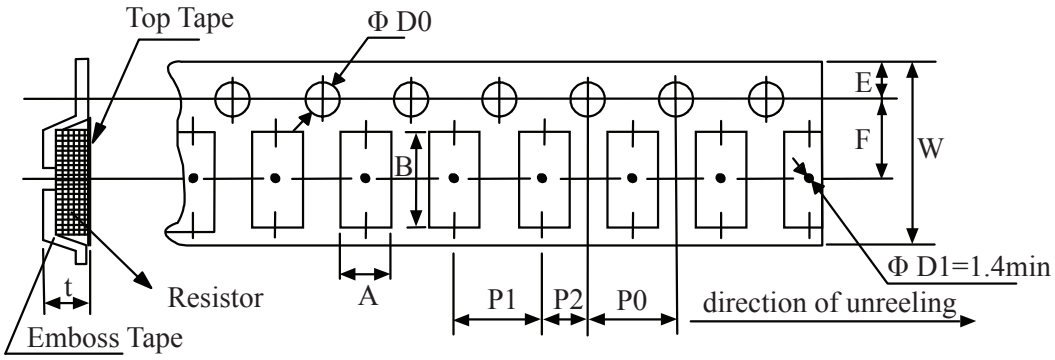
Codes	ΦA	ΦB	ΦC	W	T	Paper Tape (PCS)	Emboss Plastic Tape (PCS)
PR02	178±1	60.0+0.5	13.0±0.20	9.00±0.50	12.0±0.15	10,000	-
PR03	178±1	60.0+0.5	13.0±0.20	9.00±0.50	12.0±0.15	5,000	-
PR05	178±1	60.0+0.5	13.0±0.20	9.00±0.50	12.0±0.15	5,000	-
PR06	178±1	60.0+0.5	13.0±0.20	9.00±0.50	12.0±0.15	5,000	-
PR10	178±1	60.2±0.5	13.0±1.00	13.2±0.50	16.0±0.20	-	4,000
PR12	178±1	60.2±0.5	13.0±0.50	13.2±0.50	16.0±0.20	-	4,000

Paper Tape Specifications (Unit: mm) - Precision Chip Resistors



Codes	A	B	W ±0.10	E ±0.05	F ±0.05	P0 ±0.10	P1	P2 ±0.05	ΦD0	T
PR02	0.67±0.03	1.15±0.03	8.00	1.75	3.5	4.00	2.00±0.05	2.00	1.54±0.03	0.40±0.03
PR03	1.10±0.05	1.90±0.05	8.00	1.75	3.5	4.00	4.00±0.10	2.00	1.55±0.05	0.60±0.03
PR05	1.60±0.05	2.37±0.05	8.00	1.75	3.5	4.00	4.00±0.10	2.00	1.55±0.05	0.75±0.05
PR06	2.00±0.05	3.55±0.05	8.00	1.75	3.5	4.00	4.00±0.10	2.00	1.55±0.05	0.75±0.05

Precision Chip Resistor Emboss Plastic Tape Specifications (Unit: mm)



Codes	A	B	W	E	F	P0	P1	P2	ΦD0	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

Environmental Characteristics - Precision Chip Resistor

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 1000~1048hours
Resistance to Dry Heat	≤ ±0.05%	≤ ±0.5%	JIS-C-5202-7.2 1000 hours @ +125°C without load
Resistance to Soldering Heat	≤ ±0.02%	≤ ±0.1%	MIL-STD-202F Method 210E 260±°C, 10±1seconds

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

How to Order

PR	03	D	T	D	1000
❶	❷	❸	❹	❺	❻

❶ Product Type

❷ Dimensions(L×W)

Code	Dimensions(L×W)
02	1.00×0.50mm
03	1.60×0.80mm
05	2.00×1.25mm
06	3.00×1.50mm
10	4.90×2.40mm
12	6.30×3.10mm

❸ Resistance Tolerance

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

❹ Packaging

Code	Packaging
T	Taping Reel
B	Bulk

❺ TCR

Code	TCR
C	±25ppm
D	±50ppm

❻ Resistance

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