



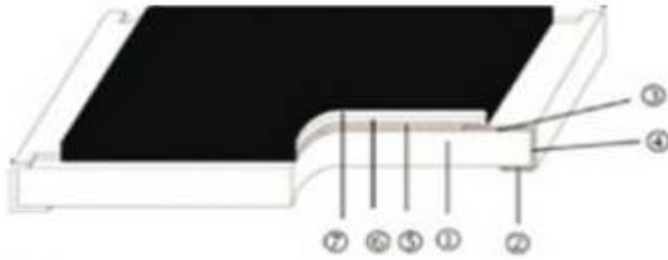
## ● Features

- I Agpd Terminations
- II Suitable for soldering
- III Non-magnetic

## ● Applications

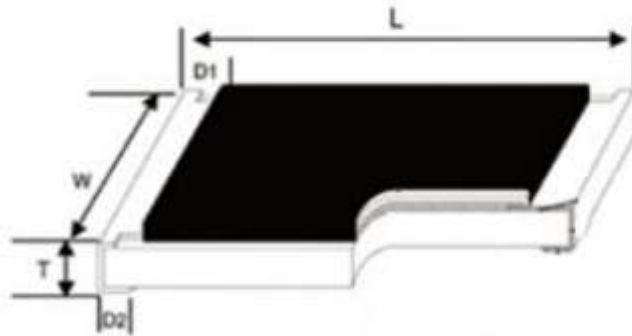
- I Medical and Military Equipment
- II MRI Coil Industries.
- III Computer Tomography(CT)

## ● Constructions



① Alumina Substrate	⑤ Resistor Layer(RUO/Ag)
② Bottom Electrode	⑥ Primary Overcoat(Glass)
③ Top Electrode(Ag-Pd)	⑦ Secondary Overcoat(Glass)
④ Edge Electrode(Ag-Ppd)	

## ● Dimensions



Type		L	W	T	D1	D2	Weight(g) 1000pcs
CHR02	0402	1.00 ± 0.05	0.50 ± 0.05	0.35 ± 0.05	0.20 ± 0.10	0.20 ± 0.10	0.620
CHR03	0603	1.60 ± 0.10	0.80 ± 0.10	0.45 ± 0.10	0.30 ± 0.20	0.30 ± 0.20	2.042
CHR05	0805	2.00 ± 0.10	1.25 ± 0.10	0.50 ± 0.10	0.35 ± 0.20	0.40 ± 0.20	4.368
CHR06	1206	3.10 ± 0.10	1.55 ± 0.10	0.55 ± 0.10	0.50 ± 0.25	0.50 ± 0.20	8.947
CHR10	1210	3.20 ± 0.20	2.60 ± 0.10	0.55 ± 0.10	0.50 ± 0.25	0.50 ± 0.20	15.959
CHR0A	2010	5.00 ± 0.20	2.50 ± 0.10	0.55 ± 0.10	0.60 ± 0.25	0.50 ± 0.20	24.241
CHR12	2512	6.35 ± 0.20	3.20 ± 0.10	0.55 ± 0.10	0.60 ± 0.25	0.50 ± 0.20	39.448

## Reference Standards

JISC 5201-1

## Ordering Information

Example:

CHR	02	J	L	7	10K
(1)	(2)	(3)	(4)	(5)	(6)
Series Name	Dimensions	Tolerance	Funcyion Code	Packaging Code	Resistance

(1)Type: CHR SERIES

(2)Dimensions:02=0402,03=0603,05=0805,06=1206,10=1210,0A=2010,12=2512

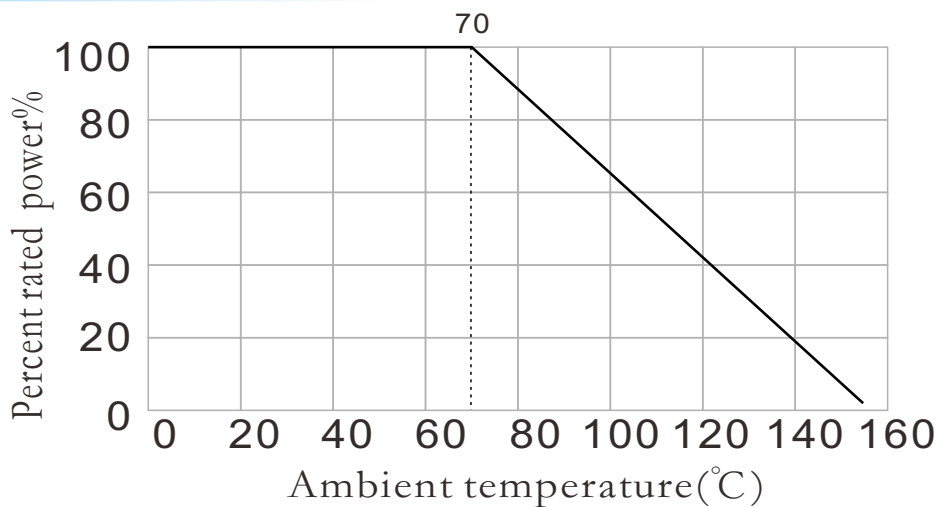
(3)Tolerance: F=±1%,J=±5%,

(4)Funcyion Code :L:Stadard

(5)Packaging Code: 4:7"Reel 4kpcs,6:7"Reel 4kpcs,7:7"Reel 4kpcs,9:10"Reel 4kpcs

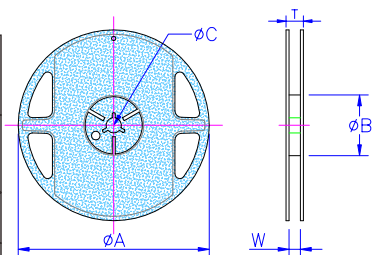
(6)Resistance:A:10"Reel 4kpcs,B:103.3KΩ、10K=10KΩ、100K=100KΩ

## Derating Curve

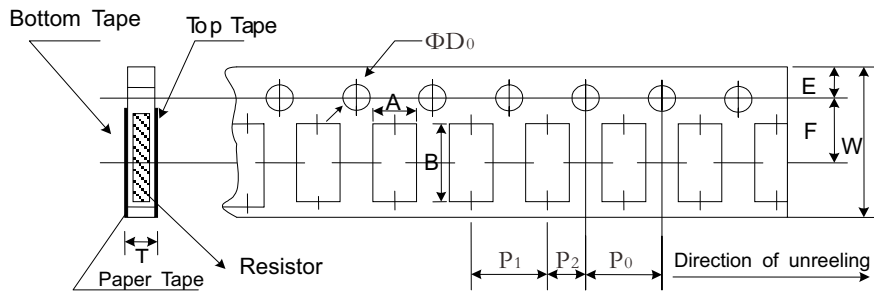


## Packaging

Type	Packaging Quantity	Tape Width	Reel Diameter	ΦA	ΦB	ΦC	W	T
CHR02	Paper	10K	7 inch	178.5±1.5	60 <sup>+1/0</sup>	130±0.2	9.0±0.5	12.5±0.5
CHR03		20K						
CHR05		40K	10 inch	254.0±1.0	100±0.5	130±0.2	9.5±0.5	13.5±0.5
CHR06		5K						
CHR10	10K	13inch	330.0±1.0	100±0.5	130±0.2	9.5±0.5	13.5±0.5	
	20K							
CHR0A	Embossed	4K	7inch	178.5±1.5	60 <sup>+1/0</sup>	130±0.5	13.0±0.5	15.5±0.5
CHR12		8K						
		12mm	10inch	250.0±1.0	62±0.5	130±0.5	12.5±0.5	16.5±0.5



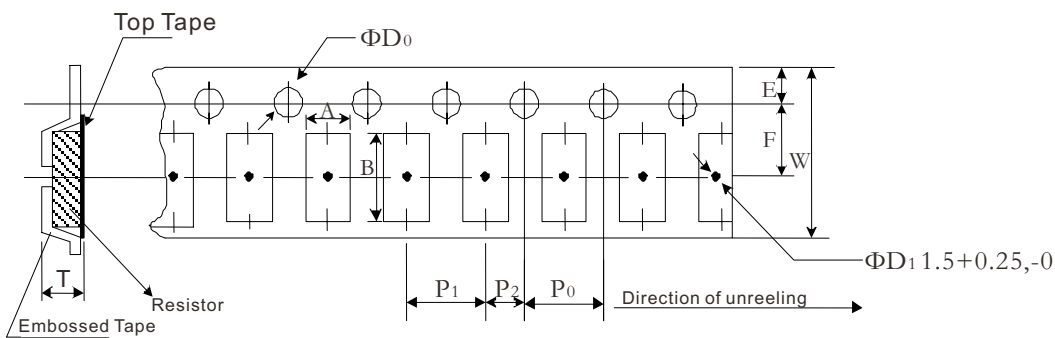
## Paper Tape Specifications



Unit: mm

Type	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	ΦD <sub>0</sub>	T
CHR02	0.65 ± 0.10	1.15 ± 0.10	8.0 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.50+0.1,-0	0.45 ± 0.10
CHR03	1.10 ± 0.10	1.90 ± 0.10	8.0 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.05	2.00 ± 0.05	1.50+0.1,-0	0.70 ± 0.10
CHR05	1.60 ± 0.10	2.40 ± 0.20	8.0 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.05	2.00 ± 0.05	1.50+0.1,-0	0.85 ± 0.10
CHR06	1.90 ± 0.10	3.50 ± 0.20	8.0 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.05	2.00 ± 0.05	1.50+0.1,-0	0.85 ± 0.10
CHR10	2.80 ± 0.10	3.50 ± 0.20	8.0 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.05	2.00 ± 0.05	1.50+0.1,-0	0.85 ± 0.10

## Embossed Plastic Tape Specifications

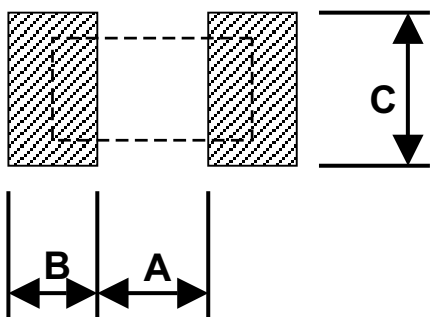


Unit: mm

Type	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	ΦD <sub>0</sub>	T
CHR0A	2.80 ± 0.20	5.30 ± 0.20	12.0 ± 0.20	1.75 ± 0.10	5.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	1.50+0.1/-0	1.2 <sup>+0</sup>
CHR12	3.50 ± 0.10	6.70 ± 0.10	12.0 ± 0.20	1.75 ± 0.10	5.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	1.50+0.1/-0	1.2 <sup>+0</sup>

## Recommend Land Pattern

Unit: mm



Type	A	B	C
CHR02	0.50	0.45	0.60
CHR03	0.90	0.60	0.90
CHR05	1.20	0.70	1.30
CHR06	2.00	0.90	1.60
CHR10	2.00	0.90	2.80
CHR0A	3.80	0.90	2.80
CHR12	3.80	1.60	3.50

## Electrical Characteristics

### Standard Electrical specifications

Type	Power Rating at 70°C	Max Operating Voltage(V)	Max Operating Voltage(V)	Resistance Range(Ω)		Operating Temperature	TCR(PPM/°C)
				± 1%	± 5%		
NMR02(0402)	1/16W	50	100	1Ω-9.76Ω 10Ω-1MΩ 1.02MΩ-10MΩ		-55~+155°C	± 200 ± 100 ± 200
Jumper	1A			0Ω(<50mΩ)			-
NMR03(0603)	1/10W	50	100	1Ω-9.76Ω 10Ω-1MΩ 1.02MΩ-10MΩ			± 200 ± 100 ± 200
Jumper	1A			0Ω(<50mΩ)			-
NMR05(0805)	1/8W	150	300	1Ω-9.76Ω 10Ω-1MΩ			± 200 ± 100 ± 200
NMR06(1206)	1/4W			200	400		1.02MΩ-10MΩ 0Ω(<50mΩ)
Jumper	2A						
NMR10(1210)	1/3W	200	400	1Ω-9.76Ω 10Ω-1MΩ 1.02MΩ-10MΩ			± 200 ± 100 ± 200
Jumper	2.5A			0Ω(<50mΩ)			-
NMR0A(2010)	3/4W	200	400	1Ω-9.76Ω 10Ω-1MΩ 1.02MΩ-10MΩ			± 200 ± 100 ± 200
Jumper	3.5A			0Ω(<50mΩ)		-	
NMR12(2512)	1W	250	500	1Ω-9.76Ω 10Ω-1MΩ 1.02MΩ-10MΩ		± 200 ± 100 ± 200	
Jumper	4A			0Ω(<50mΩ)		-	

Operating Voltage =  $\sqrt{P \cdot R}$  or Max. operating voltage listed above, whichever is lower.

Overload Voltage =  $2.5 \sqrt{P \cdot R}$  or Max. overload voltage listed above, whichever is lower.

## Performance Characteristics

Item	Requirement			Test Method
	± 1%	± 5%	Jumper	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.			~55°C ~ 150°C, 25°C is the reference temperature
Short Time Overload	±(1%+0.05Ω)	±(2%+0.05Ω)	<50mΩ	2.5 times RCWV/ Max. overload voltage for 5 seconds
Insulation Resistance	≥10G			Max. Overloaded voltage for 1 minute
Endurance	±(2%+0.10Ω)	±(3%+0.10Ω)	<50mΩ	70 ± 2°C. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	±(2%+0.10Ω)	±(3%+0.10Ω)	<50mΩ	40 ± 2°C, 90-95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Dry Heat	±(1%+0.05Ω)	±(1.5%+0.1Ω)	<50mΩ	at +155°C for 1000 hrs
Voltage proof	No breakdown or flashover			1.42 times RCWV (RMS). for 1 minute
Rapid Change of Temperature	±(0.5%+0.05Ω)	±(1%+0.05Ω)	<50mΩ	~55°C ~ 150°C, 5 cycles

■ Reference Standards: MIL-STD-202, JIS-C 5201-1

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