



# TECHNICAL DATA SHEET

## Electronic Components - assortment Book Kit (SMD Resistor series)

- Item No.: 1717352 - Book 1 - 0603, 1/10W(0.1W), ±1%
- Item No.: 1717351 - Book 2 - 0603, 1/10W(0.1W), ±5%
- Item No.: 1717357 - Book 3 - 0805, 1/8W(0.125W), ±1%
- Item No.: 1717356 - Book 4 - 0805, 1/8W(0.125W), ±5%
- Item No.: 1717354 - Book 5 - 1206, 1/4W(0.25W), ±1%
- Item No.: 1717353 - Book 6 - 1206, 1/4W(0.25W), ±5%
- Item No.: 1717350 - Book 7 - 0402, 1/16W(0.0625W), ±1%
- Item No.: 1717355 - Book 8 - 0402, 1/16W(0.0625W), ±5%



1000pcs resistor per Book  
 100 type resistance value -

0.1Ω / 0.15Ω / 0.2Ω / 0.22Ω / 0.27Ω / 0.3Ω / 0.33Ω / 0.47Ω / 0.5Ω / 0.68Ω / 0.75Ω / 1Ω / 1.5Ω / 2Ω / 2.2Ω / 2.7Ω / 3Ω / 3.3Ω / 4.7Ω / 5.6Ω / 6.2Ω / 6.8Ω / 7.5Ω / 8.2Ω / 10Ω / 15Ω / 20Ω / 22Ω / 24Ω / 27Ω / 33Ω / 47Ω / 56Ω / 68Ω / 75Ω / 100Ω / 150Ω / 180Ω / 200Ω / 220Ω / 270Ω / 300Ω / 330Ω / 470Ω / 560Ω / 620Ω / 680Ω / 820Ω / 1KΩ / 1.5KΩ / 1.8KΩ / 2KΩ / 2.2KΩ / 2.7KΩ / 3KΩ / 3.3KΩ / 3.9KΩ / 4.7KΩ / 5KΩ / 5.6KΩ / 6.2KΩ / 8.2KΩ / 10KΩ / 15KΩ / 18KΩ / 20KΩ / 22KΩ / 24KΩ / 27KΩ / 33KΩ / 47KΩ / 56KΩ / 62KΩ / 68KΩ / 75KΩ / 100KΩ / 150KΩ / 200KΩ / 220KΩ / 270KΩ / 330KΩ / 390KΩ / 470KΩ / 560KΩ / 620KΩ / 680KΩ / 820KΩ / 1MΩ / 1.5MΩ / 1.8MΩ / 2MΩ / 2.2MΩ / 2.7MΩ / 3MΩ / 3.3MΩ / 4.7MΩ / 5.6MΩ / 6.2MΩ / 7.5MΩ / 10MΩ




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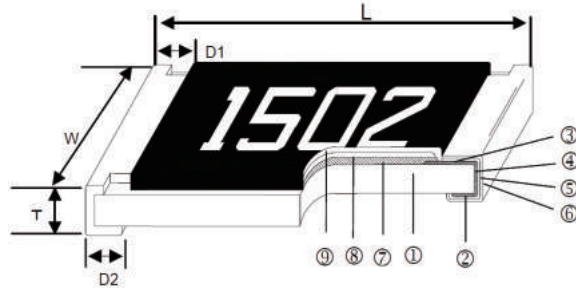
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## Thick Film Chip Resistor

### Construction

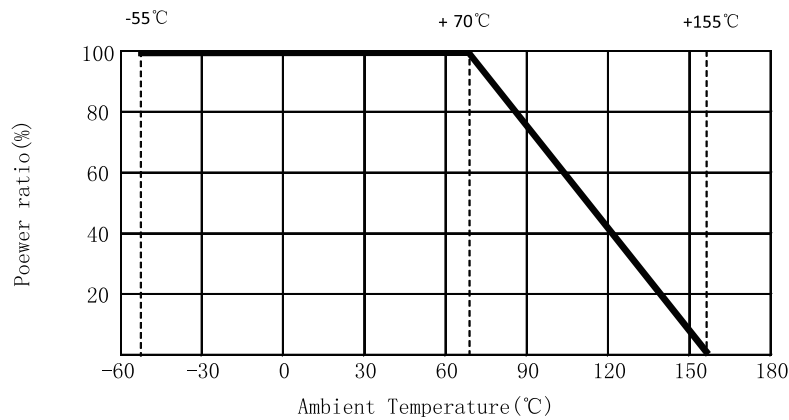


- ① Alumina Substrate
- ② Bottom Electrode(Ag)
- ③ Top Electrode(Ag-Pd)
- ④ Edge Electrode(NiCr)
- ⑤ Barrier Layer(Ni)
- ⑥ External Electrode(Sn)
- ⑦ Resistor Layer(RuO<sub>2</sub>/Ag)
- ⑧ Primary Overcoat(Glass)
- ⑨ Secondary Overcoat(Epoxy)

### Dimensions

Size	L	W	T	D <sub>1</sub>	D <sub>2</sub>
01005	0.40 ± 0.03	0.20 ± 0.03	0.13 ± 0.05	0.10 ± 0.05	0.10 ± 0.05
0201	0.60 ± 0.03	0.30 ± 0.03	0.23 ± 0.03	0.10 ± 0.05	0.15 ± 0.05
0402	1.00 ± 0.10	0.50 ± 0.05	0.35 ± 0.05	0.20 ± 0.10	0.25 ± 0.10
0603	1.60 ± 0.10	0.80 ± 0.15	0.45 ± 0.10	0.30 ± 0.20	0.30 ± 0.20
0805	2.00 ± 0.15	1.25 ± 0.15	0.55 ± 0.10	0.35 ± 0.20	0.40 ± 0.20
1206	3.10 ± 0.15	1.55 ± 0.15	0.55 ± 0.10	0.45 ± 0.20	0.45 ± 0.20
1210	3.10 ± 0.10	2.60 ± 0.15	0.55 ± 0.10	0.50 ± 0.25	0.60 ± 0.20
1812	4.50 ± 0.20	3.20 ± 0.20	0.55 ± 0.20	0.50 ± 0.20	0.60 ± 0.30
2010	5.00 ± 0.10	2.50 ± 0.15	0.55 ± 0.10	0.60 ± 0.25	0.60 ± 0.30
2512	6.35 ± 0.10	3.20 ± 0.15	0.55 ± 0.10	0.60 ± 0.25	0.60 ± 0.30
*2512	6.35 ± 0.10	3.20 ± 0.15	1.10 ± 0.10	0.60 ± 0.25	1.80 ± 0.20

### Derating Curve



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## ■ Resume

Small size and light weight/Highly reliable multilayer electrode construction/Compatible with all soldering process.

## ■ Standard Electrical Specifications

Item Type	Power Rating	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range			TCR (PPM/°C)	Rated Current of Jumper	Max.O verload Current of Jumper
					±0.5%	±1%	±5%			
01005	1/32W	-55~155°C	15V	30V	0 Ω, 10 Ω ~ 10M Ω			± 400	0.5A	1A
0201	1/20W	-55~155°C	25V	50V	0 Ω, 1 Ω ~ 10M Ω			± 200	0.5A	1A
0402	1/16W *1/10W *1/8W	-55~155°C	50V	100V	0 Ω, 1 Ω ~ 10 Ω			± 400	1A	2A
					11 Ω ~ 100 Ω			± 200		
					102 Ω ~ 100M Ω			± 100		
0603	1/10W *1/5W *1/4W	-55~155°C	50V	100V	0 Ω, 1 Ω ~ 10 Ω			± 400	1A	2A
					11 Ω ~ 100 Ω			± 200		
					102 Ω ~ 100M Ω			± 100		
0805	1/8W *1/3W	-55~155°C	150V	300V	0 Ω, 1 Ω ~ 10 Ω			± 400	2A	5A
					11 Ω ~ 100 Ω			± 200		
					102 Ω ~ 100M Ω			± 100		
1206	1/4W *1/3W *1/2W	-55~155°C	200V	400V	0 Ω, 1 Ω ~ 10 Ω			± 400	2A	10A
					11 Ω ~ 100 Ω			± 200		
					102 Ω ~ 100M Ω			± 100		
1210	1/2W *3/4W	-55~155°C	200V	400V	0 Ω, 1 Ω ~ 10 Ω			± 400	2A	10A
					11 Ω ~ 100 Ω			± 200		
					102 Ω ~ 100M Ω			± 100		
1812	1/2W *3/4W	-55~155°C	200V	400V	0 Ω, 1 Ω ~ 10 Ω			± 400	2A	10A
					11 Ω ~ 100 Ω			± 200		
					102 Ω ~ 10M Ω			± 100		
2010	3/4W *1W	-55~155°C	200V	400V	0 Ω, 1 Ω ~ 10 Ω			± 400	2A	10A
					11 Ω ~ 100 Ω			± 200		
					102 Ω ~ 100M Ω			± 100		
2512	1W *2W	-55~155°C	200V	400V	0 Ω, 1 Ω ~ 10 Ω			± 400	2A	10A
					11 Ω ~ 100 Ω			± 200		
					102 Ω ~ 100M Ω			± 100		
2512	*3W	-55~155°C	250V	500V	1 Ω ~ 10M Ω			± 200	/	/

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## ■ Electrical Specifications ± 50PPM/°C

Type \ Item	Power Rating	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range				TCR (PPM/°C)
					±0.1%	±0.25%	±0.5%	±1%	
0402	1/16W	-55~155°C	50V	100V	/		100Ω~1MΩ		± 50
0603	1/10W	-55~155°C	75V	150V	10Ω~1MΩ	10Ω~10MΩ			± 50
0805	1/8W	-55~155°C	150V	300V					± 50
1206	1/4W	-55~155°C	200V	400V					± 50
1210	1/3W	-55~155°C	200V	400V					± 50
2010	3/4W	-55~155°C	200V	400V					± 50
2512	1W	-55~155°C	250V	500V					± 50

## ■ Environmental Characteristics

Item	Requirement			Test Method
	±1%	±5%	Jumper	
Temperature Coefficient of Resistance(T.C.R.)	As Spec.			-55°C~+125°C, 25°C is the reference temperature
Short Time Overload	± (1.0%+0.1 Ω)	± (2.0%+0.1 Ω)	<50m Ω	RCWV*2.5 or Max.Overload voltage whichever is lower for 5 seconds,2 seconds for high power series
Insulation Resistance	≥10G			Max.Overload voltage for 1 minute
Endurance	± (3.0%+0.10 Ω)		<50m Ω	70 ± 2°C,RCWV for 1000 hrs with 1.5 hrs"ON" and 0.5 hrs "OFF"
Damp Heat with Load	± (2.0%+0.10 Ω)	± (3.0%+0.10 Ω)	<50m Ω	40 ± 2°C,90~95%R.H.,RCWV for 1000 hrs with 1.5 hrs"ON" and 0.5 hrs "OFF"
Dry Heat	± (1.0%+0.05 Ω)		<50m Ω	at +125/+155°C for 1000hrs
Bending Strength	± (1.0%+0.05 Ω)		<50m Ω	Bending once for 5 seconds 2010,2512 sizes:2mm Other sizes:3mm
Solderability	95% min. coverage			245 ± 5°C for 3 seconds
Resistance to Soldering Heat	± (1.0%+0.05 Ω)		<50m Ω	260 ± 5°C for 10 seconds
Voltage Proof	No breakdown or flashover			1.42 times Max.Operating Voltage for 1 minute
Leaching	Individual leaching area ≤5% Total leaching area ≤10%			260 ± 5°C for 30 seconds
Rapid Change of Temperature	± (1.0%+0.05 Ω)		<50m Ω	-55°C to+155°C 5 cycles