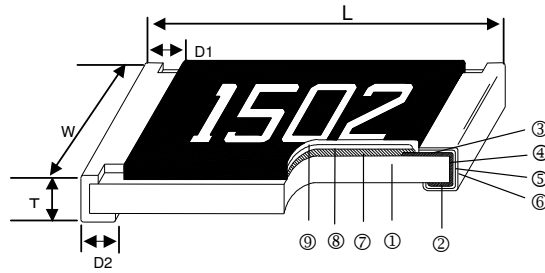


Anti-Sulfurated Thick Film Chip Resistor – AS Series

Construction



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

Features

- Special construction to prevent sulfuration in a sulfur containing environment

Applications

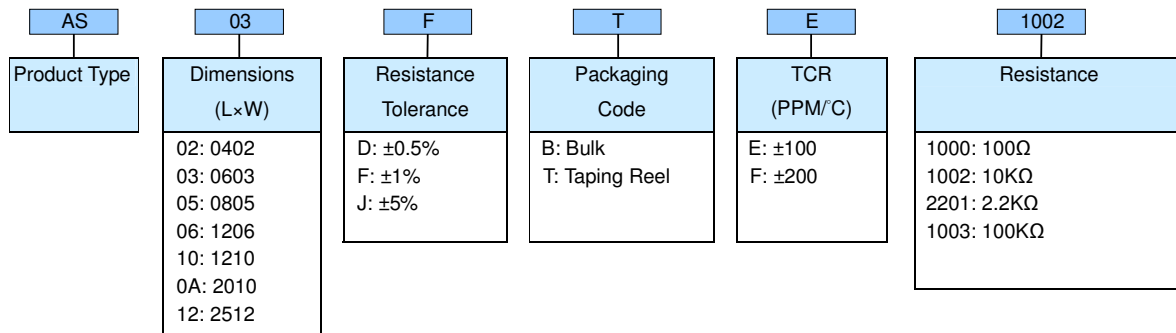
- Automotive
- High-end Computer
- Industrial Equipment
- Automatic Equipment Controller
- Medical Equipment
- High-end Multimedia Electronics
- Outdoor Electronic Applications

Dimensions

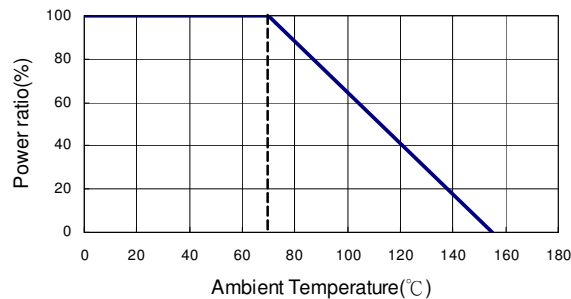
Unit: mm

Type	Size (Inch)	L	W	T	D1	D2	Weight (g) (1000pcs)
AS02	0402	1.00±0.05	0.50±0.05	0.35±0.05	0.20±0.10	0.20±0.10	0.620
AS03	0603	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	2.042
AS05	0805	2.00±0.10	1.25±0.10	0.50±0.10	0.35±0.20	0.40±0.20	4.368
AS06	1206	3.10±0.10	1.55±0.10	0.55±0.10	0.50±0.25	0.50±0.20	8.947
AS10	1210	3.20±0.20	2.60±0.15	0.55±0.10	0.50±0.25	0.50±0.20	15.959
AS0A	2010	5.00±0.20	2.50±0.15	0.55±0.10	0.60±0.25	0.50±0.20	24.241
AS12	2512	6.35±0.20	3.20±0.15	0.55±0.10	0.60±0.25	0.50±0.20	39.448

Part Numbering



Derating Curve



Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range			TCR (PPM/°C)
					±0.5%	±1%	±5%	
AS02 (0402)	1/16W	-55 ~ +155°C	50V	100V	1Ω - 9.76Ω 10Ω - 1MΩ 1.02MΩ - 10MΩ	±200 ±100 ±200		
AS03 (0603)	1/10W		50V	100V				
AS05 (0805)	1/8W		150V	300V				
AS06 (1206)	1/4W		200V	400V				
AS10 (1210)	1/3W		200V	400V				
AS0A (2010)	3/4W		200V	400V				
AS12 (2512)	1W		250V	500V				

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

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

Environmental Characteristics

Item	Requirement		Test Method
	±1% and Below	±5%	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.		-55°C~+155°C, 25°C is the reference temperature
Short Time Overload	±(1.0%+0.05Ω)	±(2.0%+0.05Ω)	RCWV*2.5 or Max. overload voltage for 5 seconds
Insulation Resistance	≥10G		Max. overload voltage for 1 minute
Endurance	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)	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%+0.10Ω)	±(3.0%+0.10Ω)	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%+0.05Ω)	±(1.5%+0.10Ω)	at +155°C for 1000 hrs
Bending Strength	±(1.0%+0.05Ω)	±(1.0%+0.05Ω)	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	±(0.5%+0.05Ω)	±(1.0%+0.05Ω)	260±5°C for 10 seconds
Voltage Proof	No breakdown or flashover		1.42 times RCWV (RMS) for 1 minute
Leaching	Individual leaching area ≤5% Total leaching area ≤ 10%		260±5°C for 30 seconds
Rapid Change of Temperature	±(0.5%+0.05Ω)	±(1.0%+0.05Ω)	-55°C to +155°C, 5 cycles
Sulfur Test	△R±0.5%		3~5ppm H ₂ S, 50±2°C, 91~93% R.H., no power rating for 1000 hrs

■ Reference Standards: IEC60115-1, 60068-2-58; JIS-C 5201-1; ASTM-B-809

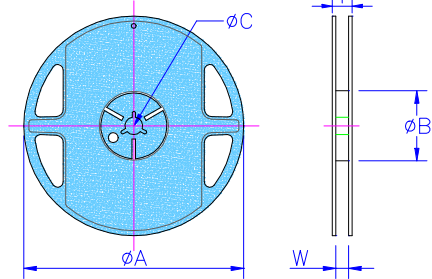
■ Storage Temperature: 25±3°C; Humidity < 80%RH

■ Packaging

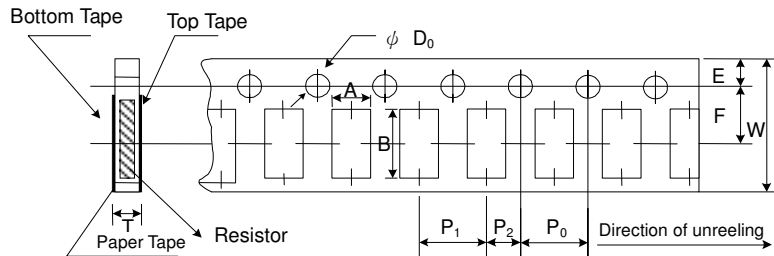
Reel Specifications & Packaging Quantity

Unit: mm

Type	Packaging Quantity	Tape width	Reel Diameter	ΦA	ΦB	ΦC	W	T	
AS02	Paper	10K	7 inch	178.5±1.5	60 ^{+1/-0}	13.0±0.2	9.0±0.5	12.5±0.5	
		20K							
AS03		40K	8mm	10 inch	254±1	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5
AS05		5K		13 inch	330±1	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5
AS06		10K							
AS10	20K								
AS0A	Embossed	4K	12mm	7 inch	178.5±1.5	60 ^{+1/-0}	13.0±0.5	13.0±0.5	15.5±0.5
		AS12		8K	10 inch	250±1	62±0.5	13.0±0.5	12.5±0.5



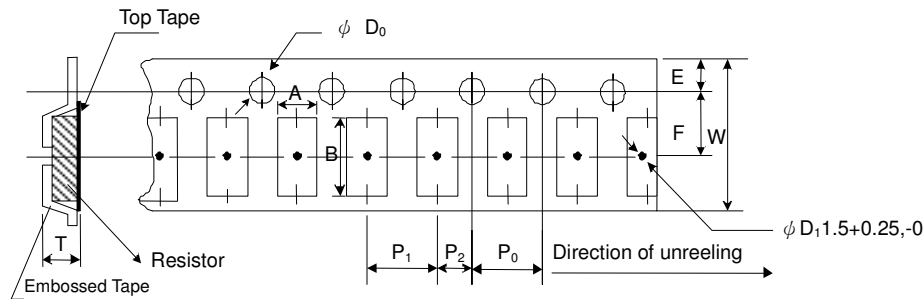
Paper Tape Specifications



Unit: mm

Type	A	B	W	E	F	P ₀	P ₁	P ₂	ΦD ₀	T
AS02	0.65±0.1	1.15±0.1	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.1	2.00±0.05	2.00±0.05	1.50+0.1,-0	0.45±0.1
AS03	1.10±0.1	1.90±0.1	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.1	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.70±0.1
AS05	1.60±0.1	2.40±0.2	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.1	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.1
AS06	1.90±0.1	3.50±0.2	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.1	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.1
AS10	2.80±0.1	3.50±0.2	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.1	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.1

Embossed Plastic Tape Specifications

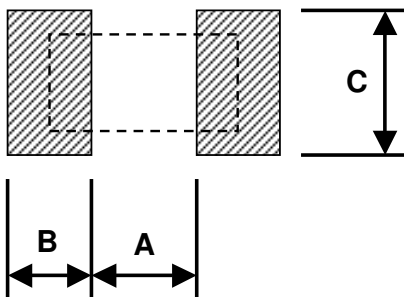


Unit: mm

Type	A	B	W	E	F	P ₀	P ₁	P ₂	ΦD ₀	T
AS0A	2.8±0.2	5.5±0.2	12.0±0.3	1.75±0.1	5.5±0.05	4.00±0.1	4.00±0.1	2.00±0.05	1.50+0.1,-0	1.2 ⁺⁰
AS12	3.5±0.2	6.7±0.2	12.0±0.3	1.75±0.1	5.5±0.05	4.00±0.1	4.00±0.1	2.00±0.05	1.50+0.1,-0	1.2 ⁺⁰

■ Recommend Land Pattern

Unit: mm



Type	A	B	C
AS02	0.50	0.45	0.60
AS03	0.90	0.60	0.90
AS05	1.20	0.70	1.30
AS06	2.00	0.90	1.60
AS10	2.00	0.90	2.80
AS0A	3.80	0.90	2.80
AS12	3.80	1.60	3.50