

Thin Film Anti-Sulfurated Chip Resistor

AS73 Series

MERITEK



Feature and Applications

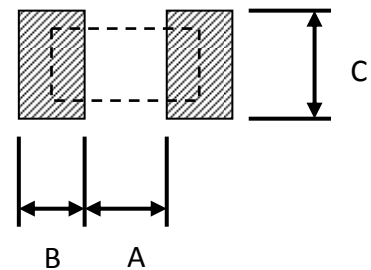
- Special passivation for moisture sensitive applications
- Special materials, design, and processing for high sulfur applications
- Tolerances as low as 0.05% and TCR's as low as 10 ppm.
- Test proven immunity to humidity, moisture, and sulfur
- RoHS Compliant / Lead Free
- Precision automotive and industrial motor controls, pump controls, dispensing systems
- Welding equipment
- Audio / video amplifiers
- Notebook and laptop motherboard
- Handheld instruments such as printers, scanners, and test instruments
- Base station and remote telecom applications
- Medical test and monitoring equipment.



PART NUMBERING SYSTEM

Thin Film Anti-sulfurated Precision Resistors				AS73	F	2A	T	1001	F
TCR (PPM/°C)									
C	D	F	G						
±10	±15	±25	±50						
Size									
Code	1J		2A						
Size	0603		0805						
Packaging Code									
Code	T		B						
Packaging	Tape and Reel		Bulk						
Resistance Value									
24R9		1001		5003					
24.9Ω		1KΩ		500KΩ					
Resistance Tolerance									
Code	A	B	C	D	F				
Value	±0.05%	±0.1%	±0.25%	±0.5%	±1%				

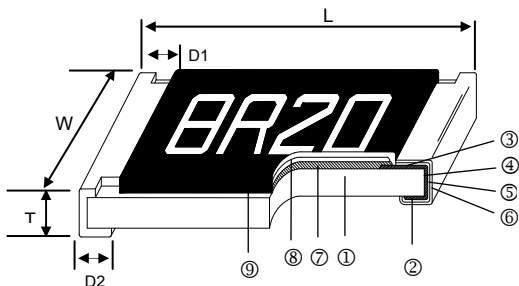
Recommend Land Pattern



Unit: mm

Type	A	B	C
1J (0603)	0.80	1.00	0.90±0.2
2A(0805)	1.00	1.00	1.35±0.2

Construction



① Alumina Substrate	④ Edge Electrode (NiCr)	⑦ Resistor Layer (NiCr)
② Bottom Electrode (NiCr)	⑤ Barrier Layer (Ni)	⑧ Overcoat (Epoxy)
③ Top Electrode (Cu)	⑥ External Electrode (Sn)	⑨ Marking

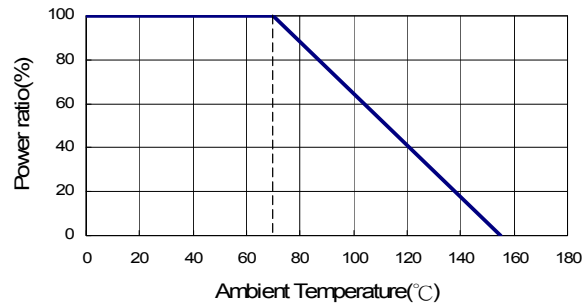
Dimensions

Unit: mm

Type	Size (Inch)	L	W	T	D1	D2	Weight (g) (1000pcs)
1J	0603	1.55±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	1.83
2A	0805	2.00±0.15	1.25±0.15	0.55±0.10	0.30±0.20	0.40±0.25	4.71



Derating Curve



Standard Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range				TCR (PPM/°C)
					±0.1%	±0.25%	±0.5%	±1%	
1J (0603)	1/16W	-55 ~ +155°C	50V	100V	24.9Ω – 332K				±25 ±50
2A (0805)	1/10W	-55 ~ +155°C	100V	200V	24.9Ω – 500KΩ				±25 ±50

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.

Special Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range		TCR (PPM/°C)
					±0.05%	±0.1%	
1J (0603)	1/16W	-55 ~ +155°C	50V	100V	24.9Ω – 12KΩ		±10
					–	12.1KΩ – 332KΩ	±15
2A (0805)	1/10W	-55 ~ +155°C	100V	200V	24.9Ω – 15KΩ		±10
					–	15.1KΩ – 500KΩ	±15

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.

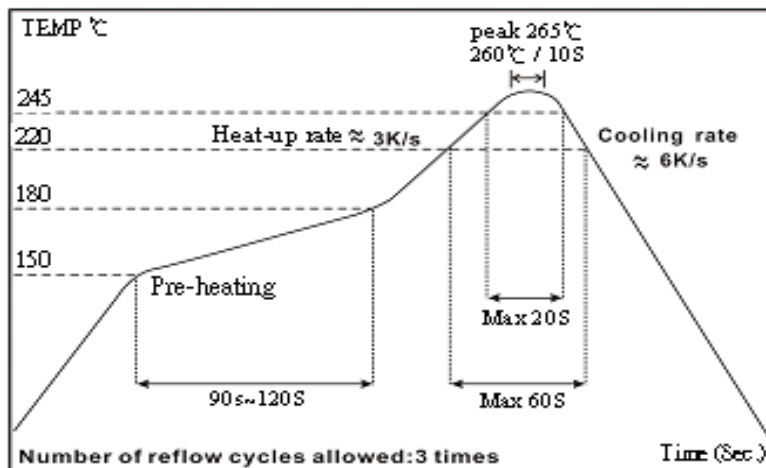


Environmental Characteristics

Item	Requirement		Test Method
	Tol. $\leq 0.05\%$	Tol. $> 0.05\%$	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.		MIL-STD-202F Method 304 +25/-55/+25/+125/+25°C
Short Time Overload	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$	JIS-C-5201-1 5.5 RCWV*2.5 or Max. overload voltage for 5 seconds
	$\Delta R \pm 0.2\%$ for high power rating		
Insulation Resistance	$> 1000 \text{ M}\Omega$		MIL-STD-202F Method 302 Apply 100V _{DC} for 1 minute
Endurance	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$	MIL-STD-202F Method 108A 70 $\pm 2^\circ\text{C}$, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
	$> 7\text{k}\Omega \Delta R \pm 0.5\%$		
	$\Delta R \pm 0.5\%$ for high power rating		
Damp Heat with Load	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.3\%$	MIL-STD-202F Method 103B 40 $\pm 2^\circ\text{C}$, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
	$\Delta R \pm 0.5\%$ for high power rating		
Bending Strength	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$	JIS-C-5201-1 6.1.4 Bending amplitude 3 mm for 10 seconds
Solderability	95% min. coverage		MIL-STD-202F Method 208H 245 $\pm 5^\circ\text{C}$ for 3 seconds
Resistance to Soldering Heat	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$	MIL-STD-202F Method 210E 260 $\pm 5^\circ\text{C}$ for 10 seconds
Dielectric Withstand Voltage	By Type		MIL-STD-202F Method 301 Max. overload voltage for 1 minute
Thermal Shock	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.25\%$	MIL-STD-202F Method 107G -55 $^\circ\text{C}$ ~ 150 $^\circ\text{C}$, 100 cycles
Low Temperature Operation	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$	JIS-C-5201-1 7.1 1 hour, -65 $^\circ\text{C}$, followed by 45 minutes of RCWV
	$\Delta R \pm 0.5\%$ for high power rating		
Sulfur Test	$\pm 0.5\%$		ASTM-B-809-95 3~5ppm H ₂ S, 50 $\pm 2^\circ\text{C}$, 91~93% R.H., no power rating for 1000 hrs

Storage Temperature: 25 $\pm 3^\circ\text{C}$; Humidity < 80%RH

Reflow



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Marking

0603 3digit marking

3digit marking for Example: 14C=13K7Ω 13C=13K3Ω
68B=4K99Ω 68X=49.9Ω



Marking Label

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

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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0805 4digit marking

Example

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

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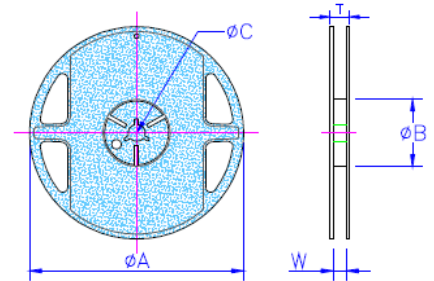
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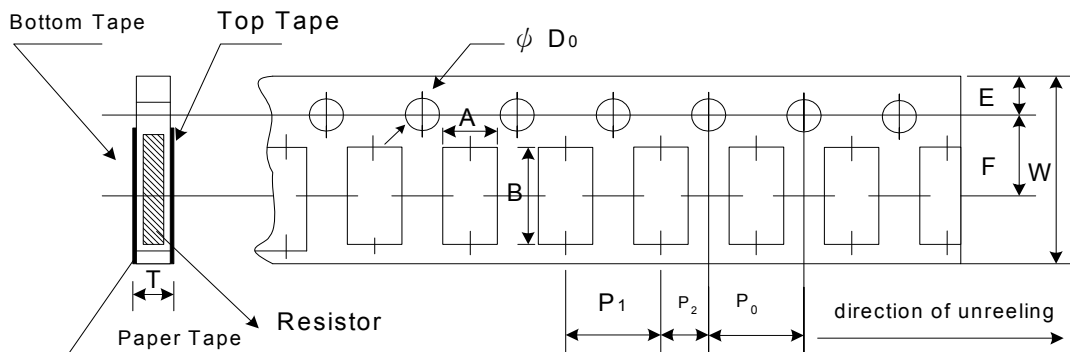
Packaging

Unit : mm

Type	ØA	ØB	ØC	W	T	Paper Tape (EA)	Emboss Plastic Tape (EA)
1J (0603)	178.0±1.0	60.0±1.0	13.5±0.7	9.5±1.0	11.5±1.0	5,000	-
2A(0805)	178.0±1.0	60.0±1.0	13.5±0.7	9.5±1.0	11.5±1.0	5,000	-



Paper Tape Specifications



Unit: mm

Type	A	B	W	E	F	P ₀	P ₁	P ₂	ΦD ₀	T
1J (0603)	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
2A(0805)	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

- 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 8g to 40g

