

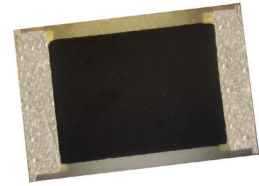
N-Series

0402 0505 0603 0805 1005 1206 2010 2512 2525 3725

Thick Film High Power Chip Resistors and Terminations on Aluminum Nitride

Features

- High stability thick film resistive element
- Very high power dissipation
- AlN substrate material
- Tight TCRs
- Standard resistance range is 10Ω to 2KΩ†, other values available*
- Standard tolerance is 2% or 5%, other tolerances available*
- Operating temperature: -55°C to +155°C
- Maximum working voltage: $E=\sqrt{PR}$
- Available in bulk or tape and reel*



Thick Film

Dimensions

Part Number	Length	Width	Height Option 'C'	Height Option 'D'	Height Option 'G'	Height Option 'T'
0402	0.040	0.020"	0.015" Max	N/A	N/A	N/A
0505	0.050"	0.050"	0.015" Max	0.020" Max	0.035" Max	N/A
0603	0.060"	0.030"	0.015" Max	N/A	N/A	N/A
0805	0.080"	0.050"	0.015" Max	0.020" Max	0.035" Max	N/A
1005	0.100"	0.050"	N/A	0.020" Max	0.035" Max	N/A
1206	0.126"	0.063"	N/A	0.020" Max	0.035" Max	N/A
2010	0.197"	0.098"	N/A	0.020" Max	0.035" Max	0.050" Max
2512	0.250"	0.120"	N/A	0.020" Max	0.035" Max	0.050" Max
2525	0.250"	0.250"	N/A	N/A	0.035" Max	0.050" Max
3725	0.375"	0.250"	N/A	N/A	0.035" Max	0.050" Max

Termination Style Availability

	WA	SS	SB	SG	CS	EW	DE	ZG	PW
0402	•	•	•	•	N/A	N/A	N/A	N/A	•
0505	•	•	•	•	N/A	N/A	N/A	N/A	•
0603	•	•	•	•	N/A	N/A	N/A	N/A	•
0805	•	•	•	•	•	•	N/A	N/A	•
1005	•	•	•	•	•	•	•	N/A	N/A
1206	•	•	•	•	•	•	•	N/A	N/A
2010	•	•	•	•	•	•	•	•	N/A
2512	•	•	•	•	•	•	•	•	N/A
2525	•	•	•	•	•	•	•	•	N/A
3725	•	•	•	•	•	•	•	•	N/A

• Indicates Availability

Ordering Information

Example: 33Ω, 2%, 2010 Center Strip style resistor on 0.015" substrate with PtAg terminations

N D 3 - 2010 CS 33R0 G

Substrate Thickness

- C - 0.010"¹
- D - 0.015"²
- G - 0.025"
- T - 0.040"³

Termination Material

- ✓ 3 - PtAg
- ✓ 8 - ULR PtAg
- ✓ 7 - Au over PtAu⁴
 - C - PtAg w/ Sn62 Solder
 - H - ULR PtAg w/ Sn62 Solder
- ✓ P - PtAg w/ Sn96 Solder
- ✓ R - ULR PtAg w/ Sn96 Solder

Case Size

0402	0505	0603	2010	0805
2512	1005	2525	1206	3725

Tolerance

- G - 2%
- J - 5%

Resistance value†

The first three digits are significant values. The fourth is the number of zeroes following. The R indicates a decimal point for resistance values less than 100Ω.

Style

WA	SB	CS	DE	PW
SS	EW	ZG ⁵	SG ⁶	

✓ Indicates RoHS compliance

1. 0.010" Substrate available in sizes 0805 and smaller
2. 0.015" Substrate available in sizes 2512 and smaller
3. 0.040" Substrate available in sizes 2010 and larger
4. Au over PtAu terminal metalization available on Single Sided, Single Sided with Backplane and Single Wrap to Ground only. A NX7 - Single Wrap to Ground style features bondable terminal on input pad only, ground pad in PtAu.
5. 'ZG' denotes a Single Wrap to Ground terminal style with a trapezoidal resistor body available in sizes 2010 and larger
6. 'SG' denotes a Single Wrap to Ground terminal style with a rectangular resistor body

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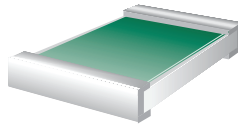
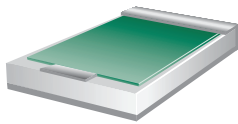
*Consult factory • † Max value for 0505 and 2525 sizes is 1KΩ • N Series ver. A 4/2016 • ISO9001:2008

Additional options available. Please contact factory.

For detailed dimensional information, outline drawing is available from factory.

Thickness	0.010"			0.015"			0.025"			0.040"			
	Baseplate Temp	50°C	70°C	100°C	50°C	70°C	100°C	50°C	70°C	100°C	50°C	70°C	100°C
Size	0402	13W	11W	7.1W	8.8W	7.3W	4.7W	N/A	N/A	N/A	N/A	N/A	N/A
	0505	45W	37W	24W	30W	25W	16W	20W	16W	10W	N/A	N/A	N/A
	0603	24W	20W	13W	16W	13W	8.7W	9.5W	7.7W	5.2W	N/A	N/A	N/A
	0805	75W	55W	37W	50W	37W	25W	30W	25W	16W	N/A	N/A	N/A
	1005	N/A	N/A	N/A	60W	48W	30W	40W	30W	20W	N/A	N/A	N/A
	1206	N/A	N/A	N/A	105W	85W	55W	70W	55W	35W	N/A	N/A	N/A
	2010	N/A	N/A	N/A	150W	120W	75W	90W	75W	48W	60W	48W	30W
	2512	N/A	N/A	N/A	200W	150W	100W	120W	100W	60W	70W	60W	38W
	2525	N/A	N/A	N/A	N/A	N/A	N/A	240W	190W	120W	150W	120W	75W
	3725	N/A	N/A	N/A	N/A	N/A	N/A	380W	310W	200W	250W	200W	125W

Terminal Styles

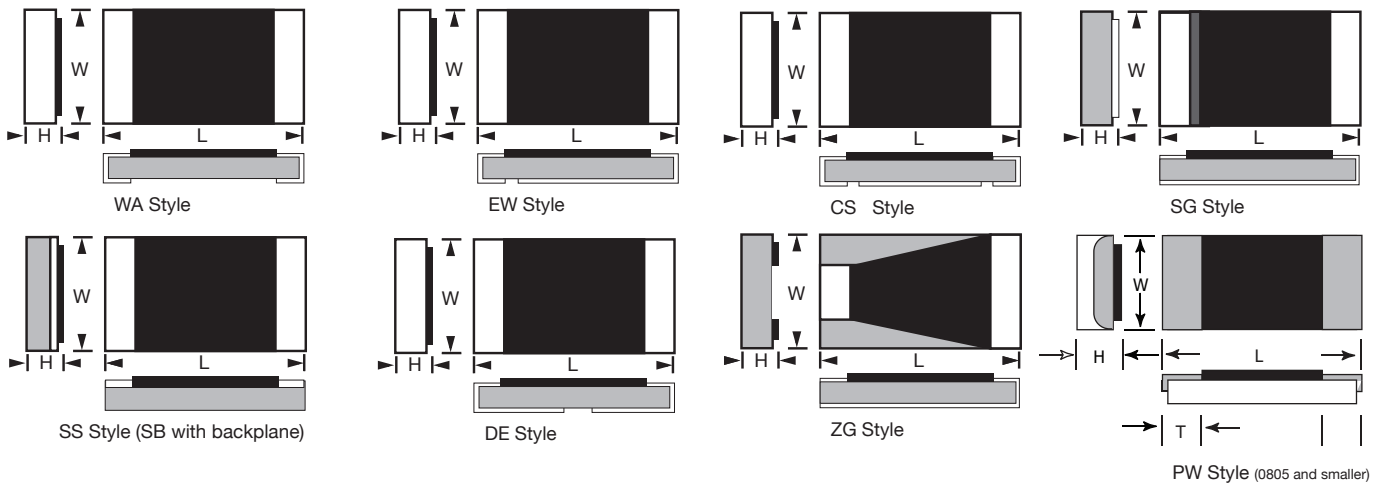


SG - Single wrap with groundplane WA- Full wraparound
 Various additional styles are available. Please see reverse.

Terminal Materials

- 3 ✓ PtAg (platinum silver) for epoxy or solder attachment
- 8 ✓ ULR PtAg (platinum silver) for epoxy or solder attachment
- 7 ✓ Gold over PtAu (platinum gold) for bonding
- C Sn62 Solder coated PtAg for solder attachment
- H ULR PtAg Solder coated Sn96 for solder attachment
- P ✓ Sn96 Solder coated PtAg for solder attachment
- R ✓ ULR PtAg Solder coated Sn96 for solder attachment

Dimensional Outline



A Word About Thermal Management

Tests of aluminum nitride “SG” 50Ω terminations demonstrate the above power capacities, assuming a thermally conductive application where the steady-state baseplate temperature of the chip is maintained at or below the values identified in the above table and the maximum film temperature did not exceed 150°C. The data also shows that the ratio of temperature rise versus power applied increases with increasing chip size (for a given thickness) so the above criteria should be carefully considered when operating larger chips. As with any application, actual performance of these chips will depend on a host of circuit dependent parameters.