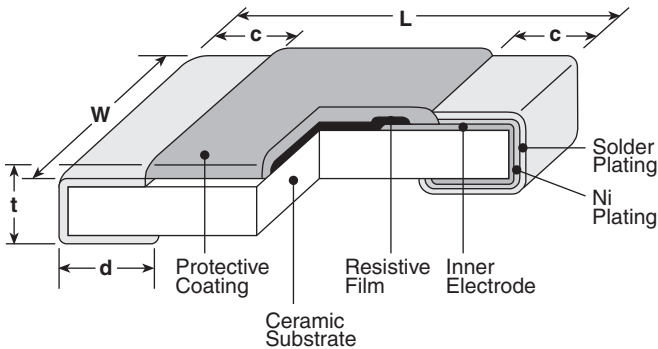


features

- Twelve standard resistance values
- Products with lead-free terminations meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.

dimensions and construction



| Type (Inch Size Code) | Dimensions inches (mm) | | | | |
|--------------------------|------------------------|-------------------------|------------------------|--|---|
| | L | W | c | d | t |
| 1J (0603) | .063±.008 (1.6±0.2) | .031±.004 (0.8±0.1) | .012±.004 (0.3±0.1) | .012±.004 (0.3±0.1) | .02±.004 (0.5±0.1) |
| 2A (0805) | .079±.008 (2.0±0.2) | .049±.004 (1.25±0.1) | .016±.008 (0.4±0.2) | .012 ^{+0.008} _{-0.004} (0.3 ^{+0.2} _{-0.1}) | .02 ^{+0.008} _{-0.004} (0.5 ^{+0.2} _{-0.1}) |
| 2B (1206) | .126±.008 (3.2±0.2) | .063±.008 (1.6±0.2) | .02±.008 (0.5±0.3) | .016 ^{+0.008} _{-0.004} (0.4 ^{+0.2} _{-0.1}) | .024±.004 (0.6±0.1) |

ordering information

| | | | | | | | |
|-------------|----------------------------------|--|---------------------------------------|--------------------------------------|------------------------------|--|-----------------------------|
| NT73 | 2A | T | TD | 103 | K | 3800 | J |
| Type | Size Code | Termination Material | Packaging | Nominal Resistance | Resistance Tolerance | B Constant Nominal | B Constant Tolerance |
| | 1J: 0603 2A: 0805 2B: 1206 | T: Sn (Other termination styles may be available, please contact factory for options) | TD: 7" paper tape (5,000 pieces/reel) | 2 significant figures + 1 multiplier | J: ±5% K: ±10% L: ±15% | 3200 3500 3700 3800 3950 4100 | H: ±3% J: ±5% K: ±10% |

applications and ratings

| Part Designation | Resistance @ 25°C | Resistance Tolerance | B Constant @ 25°C/75°C | B Constant Tolerance | Power Rating (mW) | Operating Temperature Range |
|------------------|-------------------|----------------------------|------------------------|----------------------|-------------------|-----------------------------|
| NT731J | 6.8kΩ | J: ±5% K: ±10% | 3500K | ±10% | 5 | -55°C to +125°C |
| | 10kΩ | | | ±5% | | |
| | 15kΩ | | | | | |
| | 10kΩ | | 3700K | ±3% | | |
| | 20kΩ | | | ±5% | | |
| | 22kΩ | | | | | |
| | 30kΩ | | 3800K | ±5% | | |
| | 33kΩ | | | | | |
| | 47kΩ | | | | | |
| | 68kΩ | | | | | |
| | 100kΩ | | | | | |
| | 47kΩ | | | | | |
| NT732A | 1kΩ | K: ±10% L: ±15% | 3200K | ±10% | 5 | |
| | 2kΩ | | | | | |
| | 2.2kΩ | | | | | |
| | 2.4kΩ | | | | | |
| | 3.3kΩ | J: ±5%; K: ±10% L: ±15% | 3500K | ±5% | | |
| | 4.7kΩ | | | | | |
| | 5kΩ | | | | | |
| | 5kΩ | | | | | |

For further information on packaging, please refer to Appendix A.

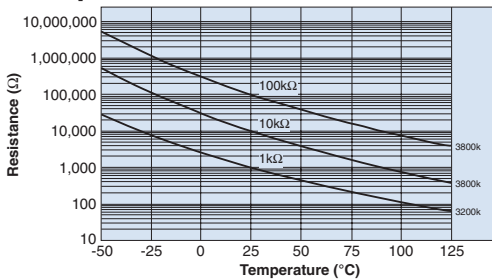
applications and ratings (continued)

| Part Designation | Resistance @ 25°C | Resistance Tolerance | B Constant @ 25°C/75°C | B Constant Tolerance | Power Rating (mW) | Operating Temperature Range | | |
|------------------|-------------------|----------------------|--------------------------|----------------------|-------------------|-----------------------------|-------|-----|
| NT732A | 6.8kΩ | K: ±10%; L: ±15% | 3800K | ±10% | 5 | -55°C to +125°C | | |
| | 10kΩ | | | | | | | |
| | 15kΩ | | | | | | | |
| | 20kΩ | | | | | | | |
| | 22kΩ | | | | | | | |
| | 30kΩ | | | | | | | |
| | 33kΩ | | | | | | | |
| | 47kΩ | | | | | | | |
| | 68kΩ | | | | | | | |
| | 100kΩ | | | | | | | |
| | 150kΩ | | | | | | | |
| | 50kΩ | | | | | | | |
| | 10kΩ | | | | | | | |
| | 15kΩ | | | | | | | |
| | 20kΩ | | | | | | | |
| | 22kΩ | | | | | | | |
| | 30kΩ | | | | | | | |
| 33kΩ | | | | | | | | |
| 47kΩ | | | | | | | | |
| 68kΩ | | | | | | | | |
| 100kΩ | | | | | | | | |
| 150kΩ | | | | | | | | |
| NT732B | 1kΩ | K: ±10%; L: ±15% | 3200K | ±10% | 5 | -55°C to +125°C | | |
| | 2.2kΩ | | | | | | | |
| | 3.3kΩ | | | | | | | |
| | 4.7kΩ | | | | | | | |
| | 6.8kΩ | | | | | | | |
| | 10kΩ | | | | | | | |
| | 22kΩ | | | | | | | |
| | 33kΩ | | | | | | | |
| | 47kΩ | | | | | | | |
| | 68kΩ | | | | | | | |
| | 100kΩ | | | | | | | |
| | 3800K | | J: ±5%; K: ±10%; L: ±15% | | | | 3500K | ±5% |
| | 3200K | | | | | | | |
| | 3500K | | | | | | | |
| | 3800K | | | | | | | |
| | 3200K | | | | | | | |
| | 3500K | | | | | | | |
| 3800K | | | | | | | | |
| 3200K | | | | | | | | |
| 3500K | | | | | | | | |
| 3800K | | | | | | | | |
| 3200K | | | | | | | | |
| 3500K | | | | | | | | |
| 3800K | | | | | | | | |
| 3200K | | | | | | | | |
| 3500K | | | | | | | | |
| 3800K | | | | | | | | |

Thermal dissipation constant - in the atmosphere - (reference) 1J: 2.0mW/°C, 2A: 2.8mW/°C, 2B: 3.0mW/°C

environmental applications

Temperature Characteristics



RT/R25 Ratio vs. B Constant

| Resistance | 1k | 5k | 10k | 100k | 10k | Resistance | 1k | 5k | 10k | 100k | 10k |
|------------|--------|--------|--------|--------|--------|------------|--------|---------|---------|--------|---------|
| B Constant | 3200K | 3500K | 3700K | 3800K | 4100K | B Constant | 3200K | 3500K | 3700K | 3800K | 4100K |
| Temp. (°C) | k | k | k | k | k | Temp. (°C) | k | k | k | k | k |
| -55 | 38770 | 273.24 | 638.23 | 7692.5 | 1203.1 | 40 | 604.07 | 2.8809 | 5.5500 | 54.959 | 5.1999 |
| -50 | 28840 | 197.67 | 465.81 | 5414.6 | 820.76 | 45 | 515.10 | 2.4202 | 4.6100 | 45.484 | 4.2349 |
| -45 | 21706 | 144.85 | 343.25 | 3864.5 | 568.09 | 50 | 441.00 | 2.0421 | 3.8500 | 37.823 | 3.4692 |
| -40 | 16517 | 107.43 | 255.22 | 2794.3 | 398.57 | 55 | 379.00 | 1.7302 | 3.2300 | 31.594 | 2.8585 |
| -35 | 12698 | 80.577 | 191.37 | 2045.2 | 283.20 | 60 | 326.90 | 1.4718 | 2.7200 | 26.506 | 2.3692 |
| -30 | 9857.0 | 61.077 | 144.64 | 1514.1 | 203.64 | 65 | 282.95 | 1.2568 | 2.3100 | 22.330 | 1.9721 |
| -25 | 7721.2 | 46.759 | 110.13 | 1133.0 | 148.07 | 70 | 245.72 | 1.0771 | 1.9700 | 18.886 | 1.6504 |
| -20 | 6100.5 | 36.137 | 83.710 | 856.49 | 108.37 | 75 | 214.08 | 0.92637 | 1.6800 | 16.035 | 1.3877 |
| -15 | 4858.7 | 28.173 | 64.190 | 653.63 | 80.182 | 80 | 187.08 | 0.79937 | 1.4500 | 13.663 | 1.1724 |
| -10 | 3899.0 | 22.147 | 49.640 | 503.31 | 59.943 | 85 | 163.96 | 0.69199 | 1.2500 | 11.682 | 0.99491 |
| -5 | 3151.3 | 17.546 | 38.680 | 390.86 | 45.252 | 90 | 144.11 | 0.60087 | 1.0800 | 10.022 | 0.84926 |
| 0 | 2564.2 | 14.004 | 30.370 | 305.97 | 34.478 | 95 | 127.00 | 0.52329 | 0.94000 | 8.6257 | 0.72802 |
| 5 | 2099.9 | 11.256 | 23.970 | 241.34 | 26.473 | 100 | 112.21 | 0.45701 | 0.82000 | 7.4466 | 0.62662 |
| 10 | 1730.0 | 9.1063 | 19.070 | 191.73 | 20.506 | 105 | 99.377 | 0.40016 | 0.72000 | 6.4466 | 0.54156 |
| 15 | 1433.5 | 7.4135 | 15.270 | 153.36 | 16.016 | 110 | 88.224 | 0.35129 | 0.63000 | 5.5368 | 0.46982 |
| 20 | 1194.2 | 6.0712 | 12.320 | 123.46 | 12.608 | 115 | 78.501 | 0.30915 | 0.56000 | 4.8721 | 0.40906 |
| 25 | 1000.0 | 5.0000 | 10.000 | 100.00 | 10.000 | 120 | 70.004 | 0.27272 | 0.49000 | 4.2523 | 0.35741 |
| 30 | 841.48 | 4.1398 | 8.1700 | 81.470 | 7.9880 | 125 | 62.558 | 0.24114 | 0.44000 | 3.7207 | 0.31332 |
| 35 | 711.39 | 3.4451 | 6.7100 | 66.739 | 6.4242 | | | | | | |

Performance Characteristics

| Parameter | Requirement Δ R ±(%+0.05%) | | Test Method |
|-----------------------------|----------------------------|-----------------------|--|
| | Limit | Typical | |
| Resistance | Within specified tolerance | — | 25°C |
| B Constant | Within specified tolerance | — | +25°C/+75°C |
| Resistance to Solder Heat | Other: ±1%, ±2%:1kΩ | Other: ±0.5%, ±1%:1kΩ | 260°C ± 5°C, 10 seconds ± 1 second |
| Rapid Change of Temperature | ±3.0% | ±1.3% | -55°C (30 minutes), +125°C (30 minutes), 50 cycles |
| Moisture Resistance | ±3.0% | ±1.1% | 40°C ± 2°C, 90 - 95% RH, 1000 hours |
| Load Life | ±3.0% | ±2.5% | 80°C ± 2°C, DC5mW, 1000 hours |
| High Temperature Exposure | ±3.0% | ±1.6% | 80°C, 1000 hours |

Confirming resistance drift is recommended since this product has a tendency to have bigger resistance change than general flat chip over 80°C. Please pay attention not to be applied ESD, it may cause of resistance change.

Actual Value (Out of Guarantee)

| Test Items | Reference | Test Method |
|---------------------------|-----------|----------------------------|
| High Temperature Exposure | ±7.0% | 125°C, 1000 hours |
| ESD | 500V | Human model, 100 pF 1.5 kΩ |