



### features

- Surface mount type
- Flameproof UL94V0 molded polymer case
- Excellent dimension accuracy, mountability and shock resistance
- Low profile type available (TSL)
- Marking: Black body color with white marking or laser marking
- 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



| Size Code | Dimensions inches (mm)  |                        |                        |                        |                        |                         |
|-----------|-------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|
|           | L                       | W                      | t                      | a                      | b                      | c                       |
| SL07      | .197±.012<br>(5.0±0.3)  | .098±.008<br>(2.5±0.2) | .067±.008<br>(1.7±0.2) | .079±.008<br>(2.0±0.2) | .047±.008<br>(0.9±0.2) | .035±.012<br>(1.2±0.3)  |
| SL1/SLZ1  | .248±.012<br>(6.3±0.3)  | .122±.008<br>(3.1±0.2) | .075±.008<br>(1.9±0.2) | .094±.008<br>(2.4±0.2) | .047±.008<br>(1.2±0.2) | .047±.012<br>(1.2±0.3)  |
| SL2       | .453±.012<br>(11.5±0.3) | .276±.008<br>(7.0±0.2) | .098±.008<br>(2.5±0.2) | .197±.008<br>(5.0±0.2) | .067±.008<br>(1.7±0.2) | .102±.02<br>(2.6±0.5)   |
| SLN2      | .453±.012<br>(11.5±0.3) | .276±.008<br>(7.0±0.2) | .094±.008<br>(2.4±0.2) | .217±.008<br>(5.5±0.2) | .063±.008<br>(1.6±0.2) | .100±.016<br>(2.55±0.4) |
| SL3       | .453±.012<br>(11.5±0.3) | .276±.008<br>(7.0±0.2) | .098±.008<br>(2.5±0.2) | .197±.008<br>(5.0±0.2) | .067±.008<br>(1.7±0.2) | .102±.02<br>(2.6±0.5)   |
| TSL1      | .248±.012<br>(6.3±0.3)  | .122±.008<br>(3.1±0.2) | .039±.008<br>(1.0±0.2) | .094±.008<br>(2.4±0.2) | .028±.008<br>(0.7±0.2) | .047±.012<br>(1.2±0.3)  |

### ordering information

| New Part # | SL                      | 1                                    | T                                                                                        | TE                                                                                                                                                                    | 20L0                                                                                                                                                                                                                                                                                 | F                                      |
|------------|-------------------------|--------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
|            | Type                    | Size                                 | Termination Material                                                                     | Packaging                                                                                                                                                             | Nominal Resistance                                                                                                                                                                                                                                                                   | Tolerance                              |
|            | SL<br>SLN<br>SLZ<br>TSL | 07: 0.75W<br>1: 1W<br>2: 2W<br>3: 3W | T: Sn<br>(Other termination styles may be available, please contact factory for options) | SL07, SL1, SLZ1, TSL-<br>(TE: 7" embossed plastic)<br>SL2, SLN2, SL3-<br>TED: 10" embossed plastic<br>For further information on packaging please refer to Appendix A | ±2%, ±5%: 2 significant figures + 1 multiplier "R" indicates decimal on value <10Ω<br>±0.5%, ±1%: 3 significant figures + 1 multiplier "R" indicates decimal on value <100Ω<br>All values less than 0.1Ω (100mΩ) are expressed in mΩ with "L" as decimal<br>Example: 20mΩ, 1% = 20L0 | D: ±0.5%<br>F: ±1%<br>G: ±2%<br>J: ±5% |

### applications and ratings

| Part Designation | Power Rating | T.C.R.<br>(ppm/°C)<br>Max.       | Resistance Range | Resistance Tolerance<br>E-24* | Absolute Maximum Working Voltage | Absolute Maximum Overload Voltage | Operating Temperature Range |
|------------------|--------------|----------------------------------|------------------|-------------------------------|----------------------------------|-----------------------------------|-----------------------------|
| SL07             | 0.75W        | 0~200: R=<10mΩ<br>0~150: R=>11mΩ | 5mΩ - 100mΩ      | (F: ±1%)<br>(J: ±5%)          | —                                | —                                 | -55°C to +180°C             |
| SL1              | 1W           | ±180: R=<13mΩ<br>±100: R=>15mΩ   | 10mΩ - 1MΩ       | (D: ±0.5%)                    | 200V                             | 400V                              |                             |
|                  |              |                                  | 5mΩ - 1MΩ        | (F: ±1%)                      |                                  |                                   |                             |
|                  |              |                                  | 3mΩ, 4mΩ         | (G: ±2%)                      |                                  |                                   |                             |
|                  |              |                                  | 3mΩ ~ 22MΩ       | (J: ±5%)                      |                                  |                                   |                             |

### applications and ratings (cont.)

| Part Designation | Power Rating | T.C.R. (ppm/°C) Max.           | Resistance Range | Resistance Tolerance E-24*         | Absolute Maximum Working Voltage | Absolute Maximum Overload Voltage | Operating Temperature Range |
|------------------|--------------|--------------------------------|------------------|------------------------------------|----------------------------------|-----------------------------------|-----------------------------|
| SL2              | 2W           | ±180: R=<10mΩ<br>±100: R=>11mΩ | 10mΩ - 1MΩ       | (D: ±0.5%)                         | 500V                             | 1000V                             | -55°C to +180°C             |
|                  |              |                                | 5mΩ ~ 1MΩ        | (F: ±1%)                           |                                  |                                   |                             |
|                  |              |                                | 3mΩ, 4mΩ         | (G: ±2%)                           |                                  |                                   |                             |
|                  |              |                                | 3mΩ - 22MΩ       | (J: ±5%)                           |                                  |                                   |                             |
| SLN2             | 2W           | ±110: R<10mΩ<br>±75: R=>10mΩ   | 5mΩ - 200mΩ      | (D: ±0.5%)<br>(F: ±1%)<br>(J: ±5%) | —                                | —                                 |                             |
| SL3              | 3W           | ±180: R=<10mΩ<br>±100: R=>11mΩ | 10mΩ - 100mΩ     | (D: ±0.5%)                         | —                                | —                                 |                             |
|                  |              |                                | 5mΩ - 100mΩ      | (F: ±1%)<br>(J: ±5%)               |                                  |                                   |                             |
| SLZ1**           | —            | 4000 Max.                      | 0.5mΩ Max.       | —                                  | —                                | —                                 |                             |
| TSL1             | 1W           | ±180: R=<13mΩ<br>±100: R=>15mΩ | 10mΩ - 100mΩ     | (D: ±0.5%)                         | —                                | —                                 |                             |
|                  |              |                                | 5mΩ - 100mΩ      | (F: ±1%)<br>(J: ±5%)               |                                  |                                   |                             |

\* 3m, 4m, 5m, 6m, 7m, 8m, 9m resistance values also available

\*\* SLZ1: Current rating: 44A

### environmental applications

#### Derating Curve



#### Surface Temperature Rise



\* TSL1: 20mΩ  
SLN2: 110mΩ  
10mm pattern

### Performance Characteristics

| Parameter                   | Requirement Δ R ±%                      | Limit                                    | Typical | Test Method                                                                                                                |
|-----------------------------|-----------------------------------------|------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------|
| Resistance                  | Within specified tolerance              | —                                        | —       | 25°C                                                                                                                       |
| T.C.R.                      | Within specified T.C.R.                 | —                                        | —       | +25°C/+125°C                                                                                                               |
| Overload (Short time)       | SL07, TSL1,SL1, SL2: ±1%<br>SLN2: ±0.5% | SL07, TSL1,SL1, SL2: ±1%<br>SLN2: ±0.25% | —       | SL07: Rated power x 4 for 5 seconds, TSL1: Rated power x 2.5 for 5 seconds, SL1, SL2, SLN2: Rated power x 5 for 5 seconds, |
| Resistance to Solder Heat   | SL07, TSL1,SL1, SL2: ±1%                | SL07, TSL1,SL1, SL2: ±1%                 | —       | 260°C ± 5°C, 10 ± 1 second                                                                                                 |
|                             | SLN2: ±0.5%                             | SLN2: ±0.5%                              | —       | 260°C ± 5°C, 10~12 seconds                                                                                                 |
| Rapid Change of Temperature | SL07, TSL1,SL1, SL2: ±1%                | SL07, TSL1,SL1, SL2: ±0.5%               | —       | -55°C (30 minutes), +150°C (30 minutes), 100 cycles                                                                        |
|                             | SLN2: ±0.5%                             | SLN2: ±0.25%                             | —       | -55°C (15 minutes), +150°C (15 minutes), 1000 cycles                                                                       |
| Moisture Resistance         | SL07, TSL1,SL1, SL2: ±2%                | SL07, TSL1,SL1, SL2: ±0.5%               | —       | 40°C ± 2°C, 90%~95%RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle                                                             |
|                             | SLN2: ±0.5%                             | SLN2: ±0.25%                             | —       | 85°C ± 2°C, 85% ±3%RH, 1000 hours, Rated power x 0.1                                                                       |
| Endurance at 70°C           | SL07, TSL1,SL1, SL2: ±2%<br>SLN2: ±1%   | —                                        | ±0.5%   | 70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle                                                                        |
| Low Temperature Exposure    | ±0.5%                                   | —                                        | ±0.25%  | SL07, TSL1, SL1, SL2: -55°C, 1 hour; SLN2: -65°C, 24 hours                                                                 |