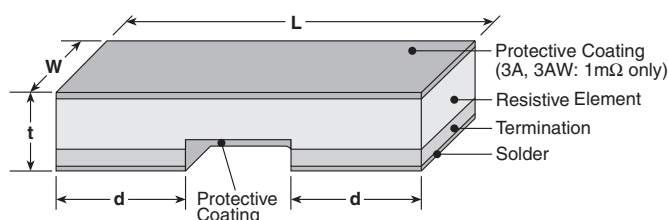


## features

- Ultra-low TCR (+75ppm/°C) available
- Metal alloy: superior corrosion and heat resistance
- Applications include current sensing, voltage division and pulse applications
- Ultra low resistance (1mΩ - 20mΩ)
- Products with lead-free terminations meet EU RoHS and China RoHS requirements
- AEC-Q200 Qualified

## dimensions and construction



| Size Code | Resistance                                                             | Dimensions inches (mm)   |                          |                          |                          |
|-----------|------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|           |                                                                        | L                        | W                        | d                        | t                        |
| TLR2B     | 2m, 3m, 4m, 5m, 6m, 7m, 8m, 9m, 10m, 11m, 12m, 13m, 15m, 16m, 18m, 20m | .126±.008<br>(3.20±0.20) | .063±.008<br>(1.60±0.20) | .020±.008<br>(0.50±0.20) | .024±.008<br>(0.60±0.20) |
|           | 1mΩ                                                                    |                          |                          | .071±.008<br>(1.80±0.20) | .026±.008<br>(0.65±0.20) |
| TLR2H     | 2mΩ - 6mΩ                                                              | .200±.008<br>(5.00±0.20) | .100±.008<br>(2.50±0.20) | .060±.008<br>(1.50±0.20) | .024±.008<br>(0.60±0.20) |
|           | 7mΩ - 10mΩ                                                             |                          |                          | .020±.008<br>(0.50±0.20) |                          |
| TLR3A     | 1mΩ                                                                    |                          |                          | .087±.01<br>(2.20±0.25)  |                          |
|           | 2mΩ                                                                    |                          |                          | .047±.01<br>(1.20±0.25)  |                          |
|           | 3mΩ                                                                    | .25±.01<br>(6.35±0.25)   | .125±.01<br>(3.18±0.25)  | .073±.01<br>(1.85±0.25)  | .024±.01<br>(0.62±0.25)  |
|           | 4mΩ                                                                    |                          |                          | .047±.01<br>(1.20±0.25)  |                          |
| TLR3AW    | 1mΩ - 4mΩ                                                              |                          |                          | .087±.01<br>(2.20±0.25)  |                          |
|           | 5mΩ - 8mΩ                                                              | .25±.01<br>(6.35±0.25)   | .125±.01<br>(3.18±0.25)  | .047±.01<br>(1.20±0.25)  | .024±.01<br>(0.60±0.25)  |
|           | 9mΩ, 10mΩ                                                              |                          |                          | .030±.01<br>(0.77±0.25)  |                          |

## ordering information

| New Part # | TLR | 3A                                      | D                    | TE                                                                                                                                  | 2L00                         | F         | 75                                                             |
|------------|-----|-----------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|----------------------------------------------------------------|
| Type       |     | Power Rating                            | Termination Material | Packaging                                                                                                                           | Nominal Resistance           | Tolerance | T.C.R.                                                         |
|            |     | 2B: 0.5W<br>2H: 1W<br>3A: 1W<br>3AW: 2W | D: SnAgCu            | TE: 7" 8mm pitch embossed plastic (3A, 3AW)<br>TE: 7" 4mm pitch embossed plastic (2H only)<br>TD: 4mm pitch punched paper (2B only) | F: 4 digits<br>Ex: 2L00: 2mΩ | F: ±1%    | 75ppm/°C<br>Nil: 100ppm/°C<br>Nil: 150ppm/°C<br>Nil: 200ppm/°C |

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

## applications and ratings

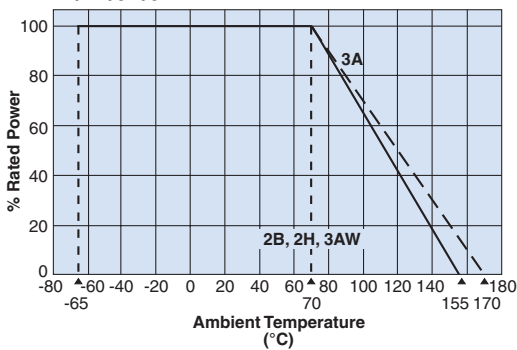
| Part Designation | Power Rating @ 70°C | T.C.R. (ppm/°C) Max.** | Standard Resistance (Ω)                                   | Resistance Tolerance | Rated Ambient Temperature | Terminal Temperature | Operating Temperature Range |
|------------------|---------------------|------------------------|-----------------------------------------------------------|----------------------|---------------------------|----------------------|-----------------------------|
| TLR2B            | 1/2W (.5W)          | ±75                    | 2m,3m,4m,5m,6m,7m, 8m,9m,10m,11m,12m, 13m,15m,16m,18m,20m | F: ±1%               | +70°C                     | —                    | -65°C to +155°C             |
| TLR2H            | 1W                  | ±75                    | 1m,2m,3m,4m,5m, 6m,7m,8m,9m,10m                           | F: ±1%               | +70°C                     | —                    | -65°C to +155°C             |
| TLR3A            | 1W                  | ±150                   | 1m, 2m                                                    | F: ±1%               | +70°C                     | —                    | -65°C to +170°C             |
|                  |                     | ±200                   | 3m, 4m                                                    |                      |                           |                      |                             |
| TLR3AW           | 2W                  | ±75                    | *3m,4m,5m 6m,7m,8m,9m,10m                                 | F: ±1%               | +70°C                     | —                    | -65°C to +155°C             |
|                  |                     | ±150                   | 1m, 2m***                                                 |                      |                           |                      |                             |

\* 1mΩ, 2mΩ: Please contact factory for availability \*\* Please contact factory for T.C.R.: ±50ppm/°C \*\*\* Contact factory for values less than 1mΩ

## environmental applications

### Derating Curve

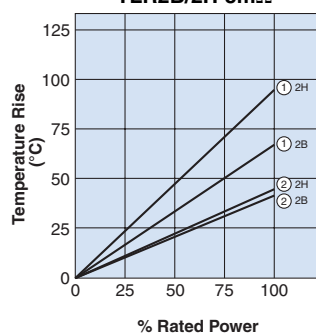
TLR2B/2H/3A/3AW



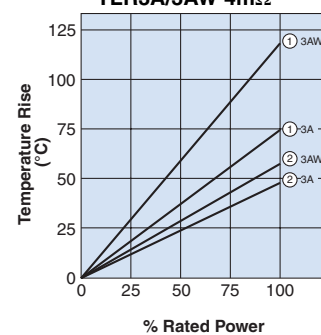
For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the above derating curve.

### Temperature Rise

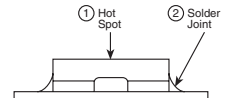
TLR2B/2H 8mΩ



TLR3A/3AW 4mΩ



Regarding the temperature rise, the value of the temperature varies per conditions and board for use since the temperature is measured under our measuring conditions.



## Performance Characteristics

| Parameter                   | Requirement Δ R ±%         |         | Test Method                                               |
|-----------------------------|----------------------------|---------|-----------------------------------------------------------|
|                             | Limit                      | Typical |                                                           |
| Resistance                  | Within regulated tolerance | —       | 25°C                                                      |
| T.C.R.                      | Within specified T.C.R.    | —       | +25°C/+100°C                                              |
| Resistance to Solder Heat   | ±0.5%                      | ±0.3%   | 260°C ± 5°C, 10 ~ 12 seconds                              |
| Rapid Change of Temperature | ±0.5%                      | ±0.4%   | -55°C (15 minutes), +150°C (15 minutes), 1000 cycles      |
| Moisture Resistance         | ±0.5%                      | ±0.1%   | MIL-STD-202, Method 106, 0% power, 7a and 7b not required |
| Biased Humidity             | ±0.5%                      | ±0.1%   | 85°C ± 2°C, 85% RH, 1000 hours, 10% bias                  |
| Endurance at 70°C           | ±1.0%                      | ±0.3%   | 70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle       |
| High Temperature Exposure   | ±1.0%                      | ±0.6%   | ±155°C (2B, 2H, 3AW), ±170°C (3A), 1000 hours             |

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