

CSRL Series

Power Metal Element Current Sense Chip Resistor



- Resistances from 0.5 mOhm to 200 mOhm
- Power Rating up to 3 Watts
- Resistance Tolerances to $\pm 0.5\%$
- TCR's to ± 50 ppm/ $^{\circ}\text{C}$
- Sizes: 1206 & 2512
- Non-Inductive Metal Element ($< 5\text{nH}$)

Electrical Specifications

| Type | Power Rating (W) at 70°C | Resistances (m Ω) * | TCR (ppm/ $^{\circ}\text{C}$) | Available Tolerances | Operating Temperature Range | MAX Operating Voltage |
|--------------|----------------------------|--|---------------------------------|----------------------|-----------------------------|-----------------------|
| CSRL1 (1206) | 1 | 8, 10, 12, 15, 20 | ± 100 | 0.5%, 1%, 5% | -55°C to +170°C | $\sqrt{(P \cdot R)}$ |
| CSRL3 (2512) | 3 | 0.5, 0.75, 1, 1.5, 2 | ± 50 | 1%, 5% | | |
| | | 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20, 22, 25, 30, 33, 35, 39, 40, 47, 50, 60, 68, 70, 75, 80, 82, 90, 91, 100, 120, 150, 180, 200 | ± 75 | 0.5%, 1%, 5% | | |
| | | 15, 18, 20, 22, 25, 30, 33, 35, 39, 40, 47, 50, 60, 68, 70, 75, 80, 82, 90, 91, 100, 120, 150, 180, 200 | ± 50 | | | |

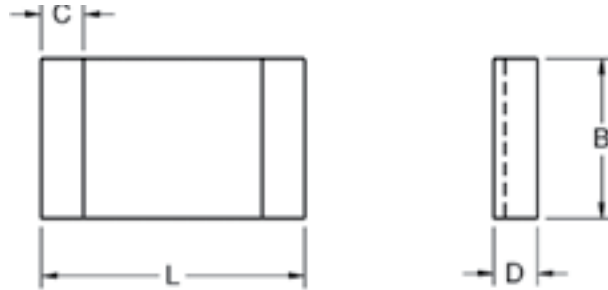
* Other resistance values may be available, please consult factory

Environmental Specifications

| Test | | Test Method |
|---|-------------------|--|
| Temperature Coefficient of Resistance | As Specified | +25/-55/+25/+125/+25°C |
| Short Time Overload | $\pm 1.0\%$ | 5x rated power for 5 seconds |
| Load Life | $\pm 1.0\%$ | 70 $\pm 2^{\circ}\text{C}$, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" |
| Dry Heat | $\pm 1.0\%$ | at +170°C for 1000 hrs |
| Solderability Terminal Finish = Nickel Tin | 95% min. coverage | 245 $\pm 5^{\circ}\text{C}$ for 3 seconds |
| Resistance to Soldering Heat | $\pm 0.5\%$ | 260 $\pm 5^{\circ}\text{C}$ for 10 seconds |
| Thermal Shock | $\pm 1.0\%$ | -55°C ~ 155°C, 5 cycles |

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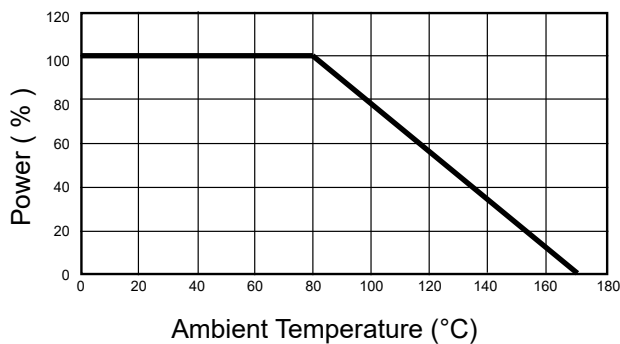


Dimensions

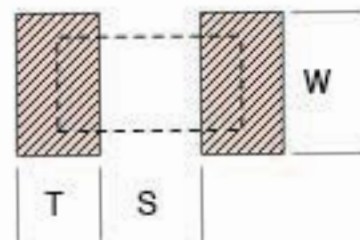
| Type | Resistance Value (mΩ) | Resistor Body | | | | Recommended Land Pattern FR4 copper board, 100μm of copper pad thickness | | | Mass * (g/1000) |
|-------|-----------------------|---------------|------------|-----------|-----------|---|--------|--------|-----------------|
| | | L (mm) | B (mm) | C (mm) | D (mm) | S (mm) | T (mm) | W (mm) | |
| CSRL1 | 8 - 20 | 3.10±0.10 | 1.60±0.10 | 0.45±0.15 | 0.60±0.10 | 1.50 | 1.40 | 1.70 | 9.06 |
| CSRL3 | 0.5 | 6.35±0.254 | 3.18±0.254 | 1.30±0.38 | 1.25±0.20 | 2.95 | 2.70 | 3.60 | 184.11 |
| | 0.75 | 6.35±0.254 | 3.18±0.254 | 1.30±0.38 | 0.75±0.20 | 2.95 | 2.70 | 3.60 | 131.11 |
| | 1 | 6.35±0.254 | 3.18±0.254 | 1.30±0.38 | 0.65±0.20 | 2.95 | 2.70 | 3.60 | 110.85 |
| | 1.5 | 6.35±0.254 | 3.18±0.254 | 1.30±0.38 | 0.45±0.20 | 2.95 | 2.70 | 3.60 | 67.16 |
| | 2 | 6.35±0.254 | 3.18±0.254 | 1.30±0.38 | 0.35±0.20 | 2.95 | 2.70 | 3.60 | 49.30 |
| | 3 - 200 | 6.40±0.25 | 3.20±0.25 | 0.90±0.30 | 0.70±0.20 | 4.00 | 2.00 | 3.50 | 40.20 |

*CSRL1, 5000 per reel | CSRL3 ≤ 0.003Ω, 2000 per reel, all other values, 4000 per reel

Power Derating Curve



Landing Pattern



Ordering Information

Part Description: Part Type - Resistance - Tolerance - TCR

Example: CSRL3 0.001 OHM 1% 50ppm