

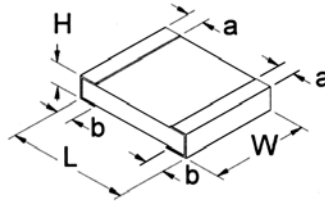
- Features:
- High power current sense resistor
  - TCR of  $\pm 50$  ppm/ $^{\circ}\text{C}$
  - Resistances down to 0.0005 (1/2 m $\Omega$ )
  - Current handling up to 63 amps
  - Non-standard resistance values available
  - RoHS compliant / lead-free



| Electrical Specifications |              |                              |                                 |                                    |                                        |
|---------------------------|--------------|------------------------------|---------------------------------|------------------------------------|----------------------------------------|
| Type / Code               | Old Pkg Code | Power Rating (Watts)         | Dielectric Withstanding Voltage | Resistance Temperature Coefficient | Ohmic Range ( $\Omega$ ) and Tolerance |
|                           |              |                              |                                 |                                    | 1%, 5%                                 |
| CSNL1206                  | 1/2          | 1W @ 80 $^{\circ}\text{C}$   | 200V                            | $\pm 50$ ppm/ $^{\circ}\text{C}$   | 0.001 - 0.05                           |
| CSNL2010                  | 1            | 1.5W @ 80 $^{\circ}\text{C}$ | 200V                            | $\pm 50$ ppm/ $^{\circ}\text{C}$   | 0.0005 - 0.1                           |
| CSNL2512                  | 2            | 2W @ 70 $^{\circ}\text{C}$   | 200V                            | $\pm 50$ ppm/ $^{\circ}\text{C}$   | 0.0005 - 0.01                          |

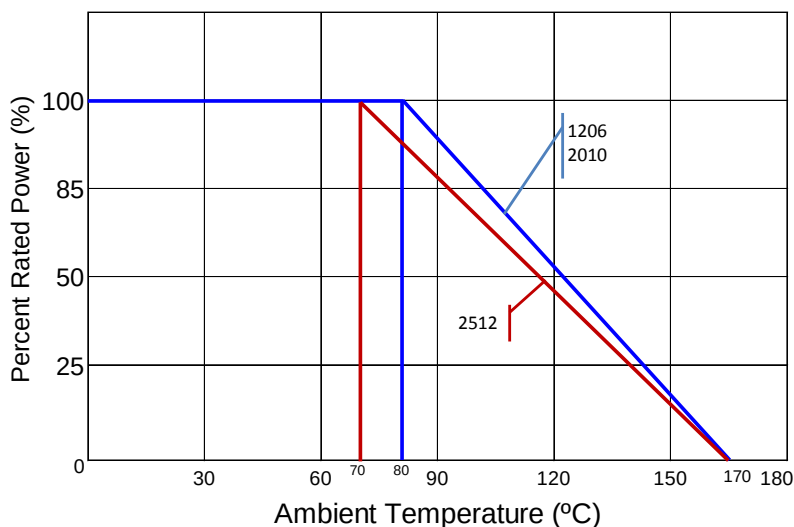
| Performance Characteristics  |                                                                                                                                                               |                      |                        |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------|
| Test                         | Test Method                                                                                                                                                   | Test Specification   | Typical                |
| Load Life                    | MIL-STD-502F-Method 108A<br>RCWV at 70 $^{\circ}\text{C}$ ; 1.5h ON; 0.5h OFF<br>Total 1024 $\pm$ 24h                                                         | $\pm 0.5\%$          | $\leq 1\%$             |
| Resistance to Soldering Heat | MIL-STD-202F-Method 210E<br>260 $\pm$ 5 $^{\circ}\text{C}$ for 10 $\pm$ 1s                                                                                    | $\pm 0.5\%$          | $\leq 0.25\%$          |
| Solderability                | MIL-STD-202F-Method 208H<br>245 $\pm$ 5 $^{\circ}\text{C}$ for 2 $\pm$ 0.5s                                                                                   | minimum 95% coverage | > 95%                  |
| Thermal Shock                | MIL-STD-202F-Method 107G<br>-55 $^{\circ}\text{C}$ to 150 $^{\circ}\text{C}$ , 100 cycles                                                                     | $\pm 0.5\%$          | $\leq 0.5\%$           |
| Short Time Overload          | JIS-C-5202-5.5<br>5x rated power for 5s                                                                                                                       | $\pm 0.5\%$          | $\leq 0.5\%$           |
| Temperature Cycling          | JIS-C-5202-7.4<br>-55 $^{\circ}\text{C}$ : 30 min. 25 $^{\circ}\text{C}$ : 2 to 3 min.<br>155 $^{\circ}\text{C}$ : 30min. 25 $^{\circ}\text{C}$ : 2 to 3 min. | $\pm 0.5\%$          | $\leq 0.5\%$           |
| Moisture Resistance          | MIL-STD-202F-Method 106G                                                                                                                                      | $\pm 0.5\%$          | $\leq 0.5\%$           |
| Insulation Resistance        | MIL-STD-202F-Method 302<br>Apply 100Vdc for 1 minute                                                                                                          | 1M $\Omega$ minimum  | $\geq 1\text{M}\Omega$ |
| Leach Resistance             | -                                                                                                                                                             | 90 seconds minimum   | $\geq 90$ seconds      |

Operating Temperature Range: -55 $^{\circ}\text{C}$  to +170 $^{\circ}\text{C}$



| Mechanical Specifications |                              |                              |                              |                              |                              |              |
|---------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| Type / Code               | L<br>Body Length             | W<br>Body Width              | H<br>Body Height             | a<br>Top Termination         | b<br>Bottom                  | Unit         |
| CSNL1206                  | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.025 ± 0.010<br>0.65 ± 0.25 | 0.020 ± 0.010<br>0.51 ± 0.25 | 0.020 ± 0.010<br>0.51 ± 0.25 | inches<br>mm |
| CSNL2010 (≤3mΩ)           | 0.200 ± 0.010<br>5.08 ± 0.25 | 0.100 ± 0.010<br>2.54 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.051 ± 0.010<br>1.30 ± 0.25 | 0.051 ± 0.010<br>1.30 ± 0.25 | inches<br>mm |
| CSNL2010 (≥3.1mΩ)         | 0.200 ± 0.010<br>5.08 ± 0.25 | 0.100 ± 0.010<br>2.54 ± 0.25 | 0.025 ± 0.010<br>0.65 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | inches<br>mm |
| CSNL2512 (0.5mΩ)          | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.049 ± 0.008<br>1.25 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (0.75mΩ)         | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.030 ± 0.008<br>0.75 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (1.0mΩ)          | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.026 ± 0.008<br>0.65 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (1.5mΩ)          | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.018 ± 0.008<br>0.45 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (2.0mΩ)          | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.014 ± 0.008<br>0.35 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (2.5mΩ)          | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.026 ± 0.008<br>0.65 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (3mΩ)            | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.022 ± 0.008<br>0.55 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (4mΩ)            | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.018 ± 0.008<br>0.45 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (5mΩ)            | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.014 ± 0.008<br>0.35 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (6mΩ)            | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.013 ± 0.008<br>0.32 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (6.5mΩ)          | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.012 ± 0.008<br>0.30 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (7mΩ)            | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.011 ± 0.008<br>0.27 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |
| CSNL2512 (10mΩ)           | 0.250 ± 0.010<br>6.35 ± 0.25 | 0.125 ± 0.010<br>3.18 ± 0.25 | 0.010 ± 0.008<br>0.25 ± 0.20 | 0.051 ± 0.015<br>1.30 ± 0.38 | 0.051 ± 0.015<br>1.30 ± 0.38 | inches<br>mm |

Power Derating Curve:



## How to Order

| 1              | 2          | 3    | 4     | 5         | 6   | 7         | 8                      | 9          | 10       | 11                                                                                                                                                                                                             | 12 | 13 | 14 |
|----------------|------------|------|-------|-----------|-----|-----------|------------------------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|
| C              | S          | N    | L     | 1         | 2   | 0         | 6                      | F          | T        | 1                                                                                                                                                                                                              | 0  | L  | 0  |
| Product Series |            | Size | Power | Tolerance |     | Packaging |                        |            |          | Resistance Value                                                                                                                                                                                               |    |    |    |
| CSNL           | Metal Foil | 1206 | 1W    | Code      | Tol | Code      | Description            | Size       | Quantity | Four characters with the multiplier used as the decimal holder. "L" used as multiplier of $10^{-3}$ for any value under 0.1 ohm.<br>0.0005 Ohm = L500<br>0.001 Ohm = 1L00<br>0.01 Ohm = 10L0<br>0.1 Ohm = R100 |    |    |    |
|                |            | 2010 | 1.5W  | F         | 1%  | T         | 7" Reel - Plastic Tape | 1206       | 4,000    |                                                                                                                                                                                                                |    |    |    |
|                |            | 2512 | 2W    | J         | 5%  |           |                        | 2010, 2512 | 2,000    |                                                                                                                                                                                                                |    |    |    |

Legacy Part Number (before January 3, 2011):

| SEI Type |             | Code |         | Nominal Resistance | Tolerance | Packaging  |         |                        |      |
|----------|-------------|------|---------|--------------------|-----------|------------|---------|------------------------|------|
| CSNL     |             | 1/2  |         | 0.01               | 1%        | R          |         |                        |      |
| Type     | Description | Code | Wattage | Size               | Tolerance | SEI Types  | Pkg Qty | Description            | Code |
| CSNL     | Metal Foil  | 1/2  | 1W      | 1206               | 1%        | 1206       | 4,000   | 7" reel - plastic tape | R    |
|          |             | 1    | 1.5W    | 2010               | 5%        | 2010, 2512 | 2,000   |                        |      |
|          |             | 2    | 2W      | 2512               |           |            |         |                        |      |