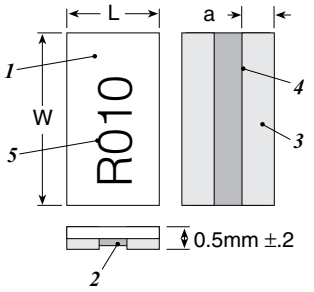
# FCSL Series

## Metal Foil Current Sense

RoHS Compliant




1. *Alumina substrate*
2. *Resistive element (Ni-Cu Alloy)*
3. *Electrode (Ni, Sn)*
4. *Protective coating (Epoxy resin)*
5. *Marking (Epoxy resin)*

| Series | Power Rating | Resistance Range | Tol. | TCR (ppm/°C) | Dim. (in.±.008/*mm ±0.20*) L | W | a |
|---|---|---|---|---|---|---|---|
| FCSL64 | 2.0W | 1mΩ | ±5% | ±150 | 0.122/*3.1* | 0.248/*6.3* | 0.047/*1.2* |
| | | 2mΩ | ±2% | ±100 | | | 0.020/*0.5* |
| | | 3mΩ ~ 50mΩ | ±1% | ±50 | | | 0.020/*0.5* |
| FCSL76 | 3.0W | 1mΩ | ±5% | ±150 | 0.15/*3.8* | 0.3/*7.6* | 0.053/*1.35* |
| | | 2mΩ | ±2% | ±100 | | | 0.024/*0.6* |
| | | 3mΩ ~ 50mΩ | ±1% | ±50 | | | 0.024/*0.6* |
| FCSL90 | 4.0W | 1mΩ | ±5% | ±150 | 0.177/*4.5* | 0.35/*8.9* | 0.063/*1.6* |
| | | 2mΩ | ±2% | ±100 | | | 0.028/*0.7* |
| | | 3mΩ ~ 50mΩ | ±1% | ±50 | | | 0.028/*0.7* |

## PERFORMANCE CHARACTERISTICS

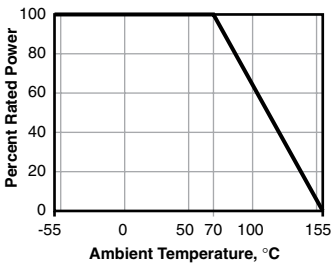
| Test | Condition | Maximum ΔR |
|---|---|---|
| Max. temperature for rated power | 70°C | |
| Operating temperature range | -55°C ~ +155°C | |
| Rated voltage | √(Rated power x Resistance value) V | |
| Rush current | Rated current 10 msec ON, 60 sec OFF, 10 cycles* | ±(1.0% +0.0005Ω) |
| Rapid change of temperature | -55°C (30min.)/+155°C (30min.), 100 cycles | ±(1.0% +0.0005Ω) |
| Solderability | 245°C ±5°C for 3 ±0.5 sec. | Min. 90% coverage |
| Endurance at 70°C | 70°C ±3°C, Rated voltage 1.5h ON, 0.5h OFF, 1000h | ±(1.0% +0.0005Ω) |
| Resistance to soldering heat | 260°C ±5°C for 10 ±1 sec. | ±(0.5% +0.0005Ω) |
| Moisture resistance | 60°C ±2°C, 90~95% RH, Rated voltage 1.5h ON, 0.5h OFF, 1000h | ±(2.0% +0.0005Ω) |

Ohmite continues to add to its complement of Current Sense offerings with the FCSL Series. FCSL incorporates proven metal foil technology to produce the ultimate in a current sense resistor. FCSL features the effective combination of very low and stable TCRs (Temperature Coefficient of Resistance) available in a wide selection of very low ohmic values. Power ratings up to 4 Watts makes FCSL the ideal choice for your current sensing applications.

## FEATURES

- Foil Construction ensures a very stable TCR (Temperature Coefficient of Resistance)
- Designed for automatic insertion
- Industry standard sizes
- High heat resistant use
- Low heat electromotive use
- Color: white (top) and green (bottom)

## DERATING




## ORDERING INFORMATION

RoHS Compliant

**F C S L 6 4 R 0 0 5 J E R**

| Series | Package Size | Ohms | Tolerance | Taping Code |
|---|---|---|---|---|
| | 64=6432=2W | R005 =0.005Ω | J = 5% | R = 1,000 pc/reel |
| | 76=7638=3W | R050 =0.050Ω | G = 2% | |
| | 90=9045=4W | | F = 1% | |

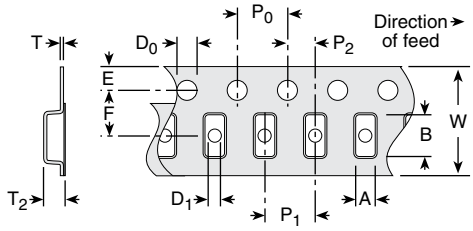
Check product availability at **www.ohmite.com**

## STANDARD VALUES

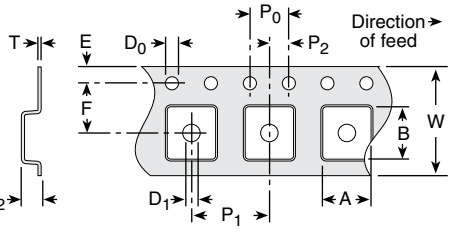
| Ohms | 2 Watts | 3 Watts | 4 Watts | Tolerance | TCR |
|---|---|---|---|---|---|
| 0.0010 | FCSL64R001JE | FCSL76R001JE | FCSL90R001JE | ±5% | ±150ppm/°C |
| 0.0020 | FCSL64R002GE | FCSL76R002GE | FCSL90R002GE | ±2% | ±100ppm/°C |
| 0.0050 | FCSL64R005FE | FCSL76R005FE | FCSL90R005FE | ±1% | ±50ppm/°C |
| 0.0100 | FCSL64R010FE | FCSL76R010FE | FCSL90R010FE | ±1% | ±50ppm/°C |
| 0.0250 | FCSL64R025FE | FCSL76R025FE | FCSL90R025FE | ±1% | ±50ppm/°C |
| 0.0500 | FCSL64R050FE | FCSL76R050FE | FCSL90R050FE | ±1% | ±50ppm/°C |

## PACKAGING SPECIFICATIONS

### TAPE inches *(mm)*

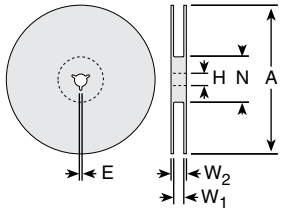



| | FCSL64 |
|---|---|
| A | 0.135 *(3.43 ±0.2)* |
| B | 0.261 *(6.63 ±0.2)* |
| W | 0.472 *(12.0 ±0.3)* |
| E | 0.069 *(1.75 ±0.1)* |
| F | 0.217 *(5.5 ±0.05)* |
| $P_0$ | 0.157 *(4.0 ±0.1)* |
| $P_1$ | 0.157 *(4.0 ±0.1)* |
| $P_2$ | 0.079 *(2.0 ±0.05)* |
| $D_0$ | 0.059 *(1.5 +0.1/-0)* |
| $D_1$ | 0.059 *(1.5 +0.2/-0)* |
| T | 0.008 *(0.2 ±0.05)* |
| $T_2$ | 0.059 *(1.5 max.)* |




| | FCSL76 | FCSL90 |
|---|---|---|
| A | 0.196 *(4.98 ±0.1)* | 0.187 *(4.75 ±0.1)* |
| B | 0.310 *(7.88 ±0.1)* | 0.372 *(9.45 ±0.1)* |
| W | 0.630 *(16.0 +0.3/-0.1)* | 0.630 *(16.0 +0.3/-0.1)* |
| E | 0.069 *(1.75 ±0.1)* | 0.069 *(1.75 ±0.1)* |
| F | 0.295 *(7.5 ±0.1)* | 0.295 *(7.5 ±0.1)* |
| $P_0$ | 0.157 *(4.0 ±0.1)* | 0.157 *(4.0 ±0.1)* |
| $P_1$ | 0.315 *(8.0 ±0.1)* | 0.315 *(8.0 ±0.1)* |
| $P_2$ | 0.185 *(2.0 ±0.1)* | 0.185 *(2.0 ±0.1)* |
| $D_0$ | 0.059 *(1.5 +0.1/-0)* | 0.059 *(1.5 +0.1/-0)* |
| $D_1$ | 0.059 *(1.5 +0.25/-0)* | 0.059 *(1.5 +0.1/-0)* |
| T | 0.012 *(0.305 ±0.2)* | 0.008 *(0.2 ±0.05)* |
| $T_2$ | 0.037 *(0.93 ±0.1)* | 0.074 *(1.89 ±0.1)* |

### REEL inches *(mm)*




| | FCSL64 | FCSL76/90 |
|---|---|---|
| A | 7.087 *(180 +0/-3)* | 7.087 *(180 +0/-3)* |
| H | 0.512 *(13 ±0.2)* | 0.512 *(13 ±0.2)* |
| E | 0.079 *(2.0 ±0.5)* | 0.079 *(2.0 ±0.5)* |
| N | 0.236 *(60 +1/-0)* | 0.236 *(60 +1/-0)* |
| $W_1$ | 0.518 *(13.0 ±0.3)* | 0.518 *(17.0 ±0.3)* |
| $W_2$ | 0.669 *(17.0 ±1.4)* | 0.669 *(19.4 ±1.0)* |