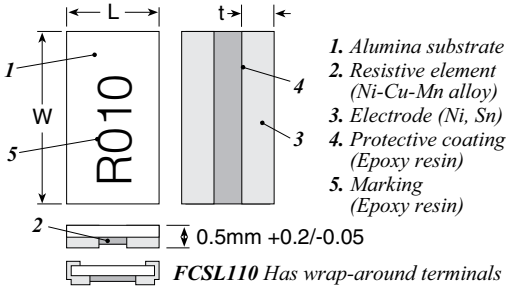


# FCSL Series

## Metal Foil Current Sense

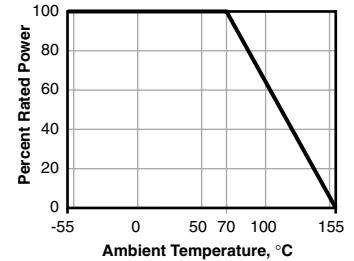


Ohmite continues to add to its complement of Current Sense offerings with the FCSL Series. FCSL incorporates proven metal foil technology to produce the ultimate in a current sense resistor. FCSL features the effective combination of very low and stable TCRs (Temperature Coefficient of Resistance) available in a wide selection of very low ohmic values. Power ratings up to 5 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



Series	Power Rating	Resistance Range	Tol.	TCR (ppm/°C)	Dim. (in.±.008/mm ±0.20)		
					L	W	t
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 ~ 100mΩ	±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 ~ 100mΩ	±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 ~ 100mΩ	±1%	±50			0.028/0.7
FCSL110	5.0W	1mΩ	±5%	±150	0.197/5.0	0.43/11.0	0.071/1.8
		2mΩ	±2%	±100			0.031/0.8
		3mΩ ~ 100mΩ	±1%	±50			0.031/0.8

### LAND PATTERN

(mm)	Value range	a	b	c
FCSL64	1mΩ	0.9	4.2	6.6
	2mΩ~100mΩ	2.2	4.2	6.6
FCSL76	1mΩ	1.1	4.6	7.8
	2mΩ~100mΩ	2.6	4.6	7.8
FCSL90	1mΩ	1.3	5.1	9.2
	2mΩ~100mΩ	3.1	5.1	9.2
FCSL110	1mΩ	1.5	5.6	11.2
	2mΩ~100mΩ	3.6	5.6	11.2

### 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%	
	110=11050=5W			

### PERFORMANCE CHARACTERISTICS

Test	Condition	Maximum ΔR
Max. temperature for rated power	70°C	
Operating temperature range	-55°C ~ +155°C	
Rated voltage	$\sqrt{(\text{Rated power} \times \text{Resistance value})}$ V	
In-rush current	Rated current 10 msec ON, 60 sec OFF, 10 cycles (see table below)	±(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)

### In-rush Current

Series	Rated Wattage	1mΩ-10mΩ		12mΩ-100mΩ	
		In-rush Power	Max. Current	In-rush Power	Max. Current
FCSL64	2W	225W	125A	150W	70A
FCSL76	3W	325W	150A	210W	80A
FCSL90	4W	440W	180A	300W	100A
FCSL110	5W	600W	240A	440W	120A

In-rush current =  $\sqrt{(\text{in-rush power}/\text{resistance value})}$ , or max. current, whichever is smaller

### STANDARD VALUES

Ohms	2 Watts	3 Watts	4 Watts	5 Watts	Tolerance	TCR
0.0010	FCSL64R001JE	FCSL76R001JE	FCSL90R001JE	FCSL110R001JER	±5%	±150ppm/°C
0.0020	FCSL64R002GE	FCSL76R002GE	FCSL90R002GE	FCSL110R002GER	±2%	±100ppm/°C
0.0050	FCSL64R005FE	FCSL76R005FE	FCSL90R005FE	FCSL110R005FER	±1%	±50ppm/°C
0.0100	FCSL64R010FE	FCSL76R010FE	FCSL90R010FE	FCSL110R010FER	±1%	±50ppm/°C
0.0250	FCSL64R025FE	FCSL76R025FE	FCSL90R025FE	FCSL110R025FER	±1%	±50ppm/°C
0.0500	FCSL64R050FE	FCSL76R050FE	FCSL90R050FE	FCSL110R050FER	±1%	±50ppm/°C

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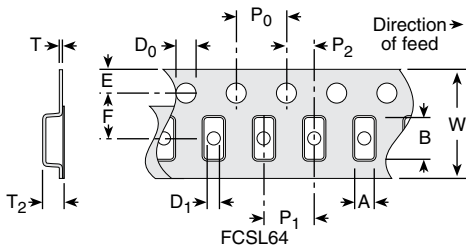
# FCSL Series

## Metal Foil Current Sense

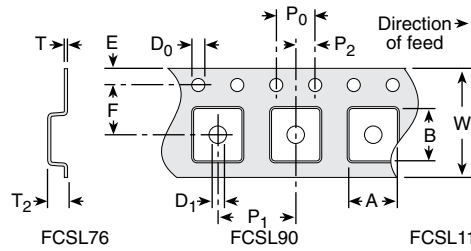
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### PACKAGING SPECIFICATIONS

#### TAPE inches (mm)

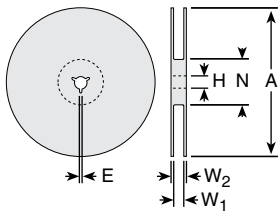


	FCSL64
A	0.135 (3.43 ±0.2)
B	0.261 (6.63 ±0.2)
W	0.472 (12.0 ±0.3)
E	0.069 (1.75 ±0.1)
F	0.217 (5.5 ±0.05)
P <sub>0</sub>	0.157 (4.0 ±0.1)
P <sub>1</sub>	0.157 (4.0 ±0.1)
P <sub>2</sub>	0.079 (2.0 ±0.05)
D <sub>0</sub>	0.059 (1.5 +0.1/-0)
D <sub>1</sub>	0.059 (1.5 +0.2/-0)
T	0.008 (0.2 ±0.05)
T <sub>2</sub>	0.059 (1.5 max.)



	FCSL76	FCSL90	FCSL110
A	0.196 (4.98 ±0.1)	0.187 (4.75 ±0.1)	0.211 (5.36 ±0.1)
B	0.310 (7.88 ±0.1)	0.372 (9.45 ±0.1)	0.463 (11.74 ±0.1)
W	0.630 (16.0 +0.3/-0.1)	0.630 (16.0 +0.3/-0.1)	0.945 (24.0 +0.3/-0.1)
E	0.069 (1.75 ±0.1)	0.069 (1.75 ±0.1)	0.069 (1.75 ±0.1)
F	0.295 (7.5 ±0.05)	0.295 (7.5 ±0.1)	0.453 (11.50 ±0.1)
P <sub>0</sub>	0.157 (4.0 ±0.1)	0.157 (4.0 ±0.1)	0.157 (4.0 ±0.1)
P <sub>1</sub>	0.315 (8.0 ±0.1)	0.315 (8.0 ±0.1)	0.315 (8.0 ±0.1)
P <sub>2</sub>	0.185 (2.0 ±0.1)	0.185 (2.0 ±0.1)	0.185 (2.0 ±0.1)
D <sub>0</sub>	0.059 (1.5 +0.1/-0)	0.059 (1.5 +0.1/-0)	0.059 (1.5 +0.1/-0)
D <sub>1</sub>	0.059 (1.5 +0.25/-0)	0.059 (1.5 +0.1/-0)	0.059 (1.5 +0.25/-0)
T	0.012 (0.305 ±0.2)	0.008 (0.32 ±0.05)	0.013 (0.33 ±0.02)
T <sub>2</sub>	0.037 (0.93 ±0.1)	0.074 (1.89 ±0.1)	0.077 (1.96 ±0.1)

#### REEL inches (mm)



	FCSL64	FCSL76/90	FCSL110
A	7.087 (180 +0/-3)	7.087 (180 +0/-3)	12.992 (330 ±2.0)
H	0.512 (13 ±0.2)	0.512 (13 ±0.2)	0.512 (13 ±0.2)
E	0.079 (2.0 ±0.5)	0.079 (2.0 ±0.5)	0.079 (2.0 ±0.5)
N	0.236 (60 +1/-0)	0.236 (60 +1/-0)	3.937 (100 ±1.0)
W <sub>1</sub>	0.518 (13.0 ±0.3)	0.669 (17.0 ±0.3)	1.000 (25.4 ±1.0)
W <sub>2</sub>	0.669 (17.0 ±1.4)	0.764 (19.4 ±1.0)	1.157 (29.4 ±1.0)