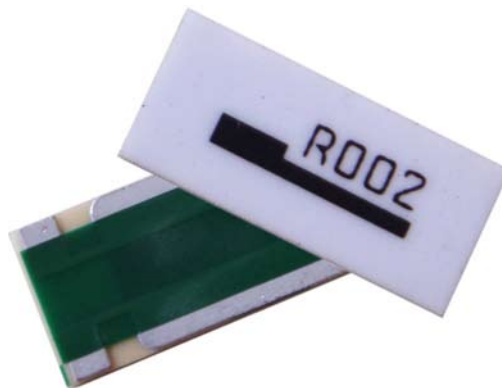


FC4L Series

FC4L Four Terminal Current Sense Metal Foil Construction



CURRENT
SENSE

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)

Ohmite extends its FC4L Series with this 4-terminal Kelvin type FC4L derivative in 2 watt and 5 watt package sizes. Employing the same Ni-Cu-Mn resistive element this product affords the user an added advantage of a built in 4-terminal design with 2 larger electrodes for current management and 2 smaller electrodes for current measurement.

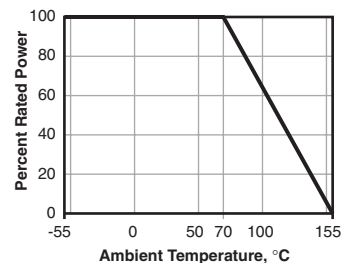
SERIES SPECIFICATIONS

Series	Power Rating	Resistance Range	Tol.	TCR (ppm/°C)	Weight (g)
FC4L32	1W	1mΩ	±5%	±100	
		2mΩ	±2%	±100	
		3mΩ	±1%	±100	
		4mΩ ~ 500mΩ	±1%	±50	
FC4L64	2W	1mΩ	±5%	±100	0.0378
		2mΩ	±2%	±100	
		3mΩ	±1%	±100	
		4mΩ ~ 100mΩ	±1%	±50	
FC4L110	5W	1mΩ	±5%	±100	0.1096
		2mΩ	±2%	±50	
		3mΩ ~ 50mΩ	±1%	±50	

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. ±(1.0% +0.0005Ω)																				
	<table border="1"> <thead> <tr> <th>Series</th> <th>Power Rating</th> <th>Resistance Range</th> <th>In-rush Power</th> <th>Max. Current</th> </tr> </thead> <tbody> <tr> <td>FC4L32</td> <td>1 watt</td> <td>1mΩ~9mΩ 10mΩ~500mΩ</td> <td>25W 12.5W</td> <td>45A 24A</td> </tr> <tr> <td>FC4L64</td> <td>2 watt</td> <td>1mΩ~9mΩ 10mΩ~100mΩ</td> <td>100W 50W</td> <td>85A 35A</td> </tr> <tr> <td>FC4L110</td> <td>5 watt</td> <td>1mΩ~50mΩ</td> <td>100W</td> <td>100A</td> </tr> </tbody> </table> <p>In-rush current = $\sqrt{(\text{in-rush power}/\text{resistance value})}$, or max. current, whichever is smaller</p>	Series	Power Rating	Resistance Range	In-rush Power	Max. Current	FC4L32	1 watt	1mΩ~9mΩ 10mΩ~500mΩ	25W 12.5W	45A 24A	FC4L64	2 watt	1mΩ~9mΩ 10mΩ~100mΩ	100W 50W	85A 35A	FC4L110	5 watt	1mΩ~50mΩ	100W	100A
Series	Power Rating	Resistance Range	In-rush Power	Max. Current																	
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FC4L110	5 watt	1mΩ~50mΩ	100W	100A																	
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. ±(1.0% +0.0005Ω)																				
Moisture resistance	60°C ±2°C, 90~95% RH, Rated voltage 1.5h ON, 0.5h OFF, 1000h ±(2.0% +0.0005Ω)																				

Derating

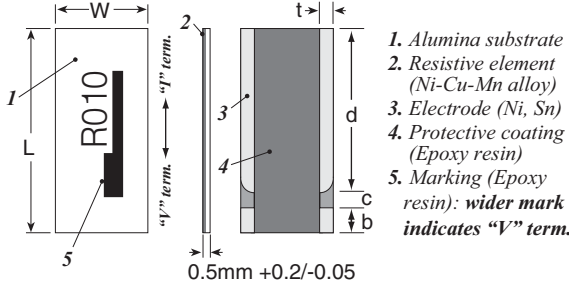


FC4L Series

FC4L Four Terminal Current Sense Metal Foil Construction

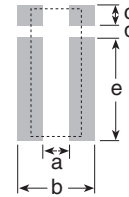
CURRENT
SENSE

DIMENSIONS



1. Alumina substrate
2. Resistive element (Ni-Cu-Mn alloy)
3. Electrode (Ni, Sn)
4. Protective coating (Epoxy resin)
5. Marking (Epoxy resin): wider mark indicates "V" term.

Land Pattern



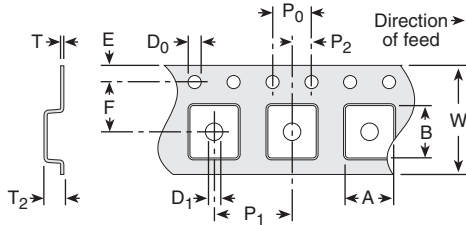
Rating	L (in. ± .008/mm ± 0.20)	W (in. ± .008/mm ± 0.20)	t mm ± 0.15	b mm ± 0.1	c mm ± 0.1	d mm ± 0.15	
FC4L32	1 watt	0.126 / 3.20	0.063 / 1.6	0.014 / 0.35	0.35	0.2	2.6
FC4L64	2 watt	0.251 / 6.40	0.126 / 3.2	0.020 / 0.5	0.7	0.5	5.2
FC4L110	5 watt	0.433 / 11.0	0.197 / 5.0	0.028 / 0.7	1.4	1.1	8.5

(mm)	a	b	c	d	e
FC4L32	0.4	2.7	0.35	0.3	2.7
FC4L64	2.0	4.4	0.7	0.5	5.4
FC4L110	3.2	5.6	1.6	1.1	8.7

PACKAGING SPECIFICATIONS

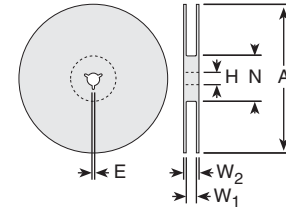
inches (mm)

Tape



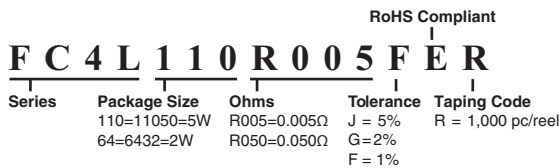
	FC4L32	FC4L64	FC4L110
A	0.075 (1.90 ± 0.1)	0.135 (3.43 ± 0.2)	0.213 (5.40 ± 0.10)
B	0.138 (3.50 ± 0.1)	0.261 (6.63 ± 0.2)	0.453 (11.50 ± 0.10)
W	0.315 (8.00 ± 0.2)	0.472 (12.0 ± 0.3)	0.945 (24.00 ± 0.30)
E	0.138 (3.50 ± 0.05)	0.069 (1.75 ± 0.1)	0.069 (1.75 ± 0.10)
F	0.069 (1.75 ± 0.1)	0.217 (5.5 ± 0.05)	0.453 (11.50 ± 0.10)
P ₀	0.157 (4.0 ± 0.1)	0.157 (4.0 ± 0.1)	0.157 (4.00 ± 0.10)
P ₁	0.157 (4.0 ± 0.1)	0.157 (4.0 ± 0.1)	0.315 (8.00 ± 0.10)
P ₂	0.079 (2.0 ± 0.05)	0.079 (2.0 ± 0.05)	0.079 (2.00 ± 0.10)
D ₀	0.059 (1.50 ± 0.1/-0)	0.059 (1.5 ± 0.1/-0)	0.059 (1.50 ± 0.10)
D ₁	0.039 (1.00 ± 0.2/-0)	0.059 (1.5 ± 0.2/-0)	0.059 (1.50 ± 0.10)
T	0.008 (0.20 ± 0.05)	0.008 (0.20 ± 0.05)	0.012 (0.30 ± 0.05)
T ₂	0.039 (1.00 ± 0.2)	0.059 (1.5) max.	0.047 (1.2 ± 0.15)

Reel



	FC4L32 & 64	FC4L110
A	7.087 (180 +0/-3)	12.992 (330 ± 2.0)
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	2.362 (60 +1/-0)	3.937 (100 ± 1.0)
W ₁	0.512 (13.0 ± 0.3)	1.000 (25.4 ± 1.0)
W ₂	0.669 (17.0 ± 1.4)	1.157 (29.4 ± 1.0)

ORDERING INFORMATION



Standard Part Numbers for FC4L series

1 watt	2 watt	5 watt	Resistance Value	Tolerance
FC4L32R001JER	FC4L64R001JER	FC4L110R001JER	0.001	5%
FC4L32R002GER	FC4L64R002GER	FC4L110R002GER	0.002	2%
FC4L32R003FER	FC4L64R003FER	FC4L110R003FER	0.003	1%
FC4L32R005FER	FC4L64R005FER	FC4L110R005FER	0.005	1%
FC4L32R010FER	FC4L64R010FER	FC4L110R010FER	0.01	1%
FC4L32R025FER	FC4L64R025FER	FC4L110R025FER	0.025	1%
FC4L32R050FER	FC4L64R050FER	FC4L110R050FER	0.05	1%