

# LVK Series

## Four Terminal High Precision Current Sense

CURRENT  
SENSE

Current sense resistors enable the measurement of current flow in a circuit by monitoring a voltage drop across a precisely calibrated resistance. The LVK chip features four terminals, also known as a “Kelvin” configuration. This configuration enables current to be applied through two opposite terminals and a sensing voltage to be measured across the other two terminals, eliminating the resistance and temperature coefficient of the terminals for a more accurate current measurement.

Isolating the voltage and current terminals (see schematic) facilitates a very accurate current measurement. Ohmite’s proprietary technology offers an excellent Temperature Coefficient of Resistance (TCR) even for very low resistance values. The resistive element consists of a durable, anti-corrosive metal alloy that combines reliable performance with the ability to withstand harsh environments.



### FEATURES

- Designed for automatic insertion
- Industry standard sizes
- High-precision kelvin connect capability in a small package

### SERIES SPECIFICATIONS

Series	Pkg. Size	Power Rating (W @70°C)	Resistance Range (Ω)	TCR (ppm/°C)	Tolerance	Available Values
LVK12	1206	0.5W	0.01-0.05	50ppm	0.5%, 1%	E12
LVK20	2010	0.75W	0.01-0.05	50ppm	0.5%, 1%	E12
LVK24	2412	1.0W	0.01-0.05	50ppm	0.5%, 1%	E12
LVK25	1224	2.0W	0.001 0.002-0.004 0.005-0.01	300ppm 200ppm 100ppm	1%	1, 2, 3, 4, 5, 6, 7, 8, 9, 10mΩ

### CHARACTERISTICS

<b>Resistance Range</b>	0.001Ω - 0.05Ω
<b>Operating Temperature Range</b>	-40°C to +125°C
<b>Rated Ambient Temperature</b>	+70°C
<b>Resistance Tolerance</b>	0.5% and 1% standard
<b>Temperature Coefficient</b>	LVK12, LVK20, LVK24: 50ppm standard LVK25: 100ppm, 200ppm, or 300ppm based on resistance value
<b>Coating Material</b>	epoxy resin
<b>Terminals</b>	100% matte tin

### Schematic



V = sensing terminal (voltage)  
I = current terminal

### PERFORMANCE CHARACTERISTICS

Test Items	Performance Requirements	Test Methods
<b>Overload</b>	±(0.5%+0.0005Ω)	Rated voltage x 1.5 for 5s
<b>Endurance at 70°C</b>	±(0.5%+0.0005Ω)	70°C±3°C, Rated voltage 1.5h ON, 0.5h OFF, 1000h
<b>Moisture resistance</b>	±(0.5%+0.0005Ω)	60°C±2°C, 90%~95% RH, Rated voltage 1.5h ON, 0.5h OFF, 1000h
<b>Rapid change of temperature</b>	±(0.5%+0.0005Ω)	-40°C (30min.)/+125°C (30min.), 5 cycles
<b>Resistance to soldering heat</b>	±(0.5%+0.0005Ω)	260°C±5°C for 10s±1s
<b>Substrate bending</b>	±(0.5%+0.0005Ω)	Bending width: 2mm for 10s±1s, Glass epoxy substrate with thickness of 1.6mm
<b>Solderability</b>	95% or more of the electrode surface shall be covered with new solder	245°C±5°C for 3s±0.5s

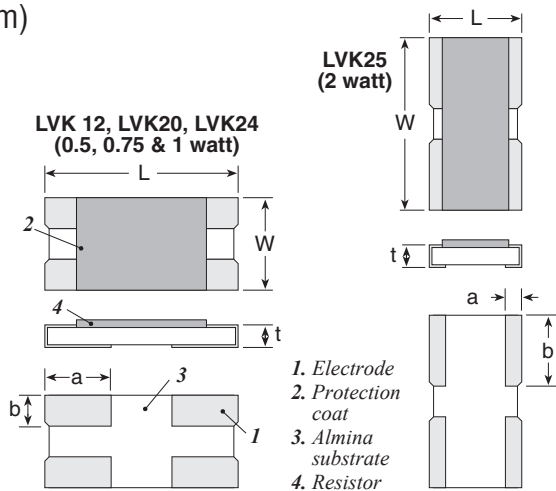
# LVK Series

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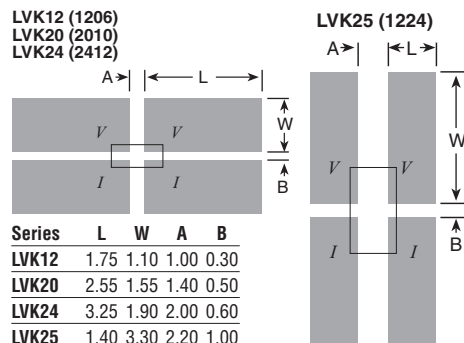
### DIMENSIONS

(mm)



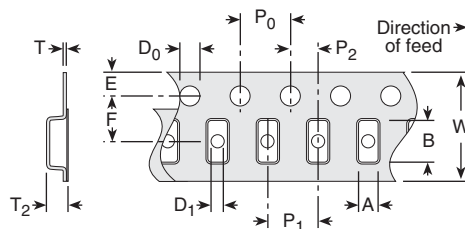
Size	L	W	t	a	b
LVK12 (1206)	3.2 ±0.2	1.6 ±0.2	0.5 ±0.15	1.0 ±0.2	0.55 ±0.2
LVK20 (2010)	5.0 ±0.2	2.5 ±0.2	0.5 ±0.15	1.7 ±0.2	0.9 ±0.2
LVK24 (2412)	6.4 ±0.2	3.2 ±0.2	0.5 ±0.15	2.1 ±0.2	1.2 ±0.2
LVK25 (1224)	3.2 ±0.2	6.4 ±0.2	0.5 ±0.2	0.4 ±0.2	2.7 ±0.2

### Land Pattern



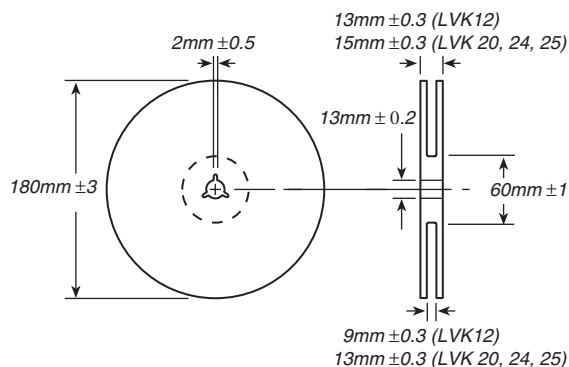
Series	L	W	A	B
LVK12	1.75	1.10	1.00	0.30
LVK20	2.55	1.55	1.40	0.50
LVK24	3.25	1.90	2.00	0.60
LVK25	1.40	3.30	2.20	1.00

### Tape

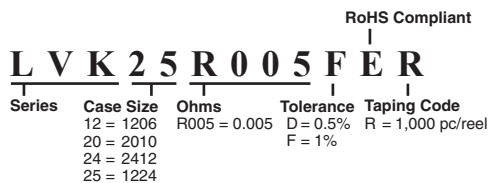


	LVK12	LVK20	LVK24	LVK25
A	1.90 ±0.10	2.90 ±0.1	3.43 ±0.2	3.43 ±0.2
B	3.50 ±0.10	5.35 ±0.1	6.63 ±0.2	6.63 ±0.2
W	8.0 ±0.2	12.0 ±0.2	12.0 ±0.3	12.0 ±0.3
F	3.5 ±0.05	5.5 ±0.05	5.5 ±0.05	5.5 ±0.05
E	1.75 ±0.1	1.75 ±0.1	1.75 ±0.1	1.75 ±0.1
P0	4.0 ±0.1	4.0 ±0.1	4.0 ±0.1	4.0 ±0.1
P1	4.0 ±0.1	4.0 ±0.1	4.0 ±0.1	4.0 ±0.1
P2	2.0 ±0.05	2.0 ±0.05	2.0 ±0.05	2.0 ±0.05
D0	1.5 +0.1/-0	1.5 +0.1/-0	1.5 +0.1/-0	1.5 +0.1/-0
D1	1.0 +0.20/-0	1.5 +0.2/-0	1.5 +0.2/-0	1.5 +0.2/-0
T	0.2 ±0.05	0.2 ±0.05	0.2 ±0.05	0.2 ±0.05
T2	1.0 ±0.2	1.0 ±0.2	1.0 ±0.2	1.0 ±0.2

### Reel



### ORDERING INFORMATION



### Standard values

LVK12	LVK20	LVK24	LVK25	LVK12	LVK20	LVK24
				<b>1% Tolerance</b>		
0.01	0.01	0.01	0.001	0.01	0.01	0.01
0.012		0.012	0.002	0.02	0.02	0.02
		0.015	0.003	0.03	0.03	0.03
			0.005	0.05	0.05	0.05
0.02	0.02	0.02				
0.024	0.027					
0.03	0.03	0.03	0.01			
		0.039				
		0.039				
0.047		0.047				
0.05	0.05	0.05				