# LVK Series

# **Four Terminal High Precision 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 $(\Omega)$	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
			0.001	300ppm		1, 2, 3, 4,
LVK25	1224	2.0W	0.002-0.004 0.005-0.01	200ppm 100ppm	1%	5, 6, 7, 8, 9, 10m $\Omega$

#### CHARACTERISTICS

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

### **Schematic**



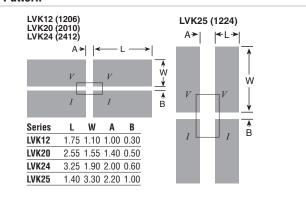
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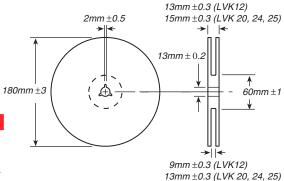
## DIMENSIONS (mm) LVK25 (2 watt) LVK 12, LVK20, LVK24 Ŵ (0.5, 0.75 & 1 watt) Ŵ a → b 1. Electrode 2. Protection b‡ coat 3. Almina substrate 4. Resistor

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**



Reel



#### PERFORMANCE CHARACTERISTICS

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

#### ORDERING INFORMATION

# RoHS Compliant <u>K 2 5 R 0 0 5</u> F E R

Case Size Ohms 
 Ohms
 Tolerance
 Taping Code

 R005 = 0.005
 D = 0.5%
 R = 1,000 pc/reel

 F = 1%
12 = 1206 20 = 2010 25 = 1224

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

#### Standard values

LVK12	LVK20	LVK24	LVK25		LVK12	LVK20	LVK24
1% Tolerance				0.5% Tolerance			
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	0.015	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					

