



High-Precision and Bidirectional Current Monitor for Accurate High-/Low-Side Current Measurement

The DIODES™ ZXCT199 current monitor is a single-stage instrumentation amplifier designed to accurately measure very small sense voltages across a wide range of common-mode voltages. Its applications include current sensing of load currents in power supplies, motor controlling, and monitoring of charge and discharge currents in battery-powered equipment.

The ZXCT199's low offset voltage with zero-drift architecture enables it to achieve current sensing with maximum drops across the shunt resistor, to as low as 10mV full-scale, and thereby allowing the use of small-value sense resistors to monitor large currents.

The device is available in three fixed-voltage gain options: 50V/V, 100V/V, and 200V/V. Each option has a wide -0.1V to +26V common-mode sense input voltage range, independent of supply voltage.

All ZXCT199 variants operate from a 2.7V to 26V power supply, with a maximum of 100µA of supply current. The device operates across a -40°C to 125°C temperature range, and is packaged in the industry-standard SOT363 package.



The DIODES™ Advantage

High-precision current monitor supports large current measurement with small V_{SENSE} resistors and voltages.

- **Offset Voltage as Low as 80µV**
Minimizes errors when using low-value sense resistors
- **Gain Error as Low as 0.8%**
Maintains accurate gain control across temperature and common-mode voltage
- **Common Mode Range: -0.1 to 26V**
Accurately measures high-side and low-side currents, including short-circuited loads
- **Wide Operating Voltage Range: 2.7 to 26V**
Provides options for powering separately or from a monitored supply
- **Robust ESD Capability (HBM: 5kV, CDM: 1.5kV)**
Improves system reliability

Applications

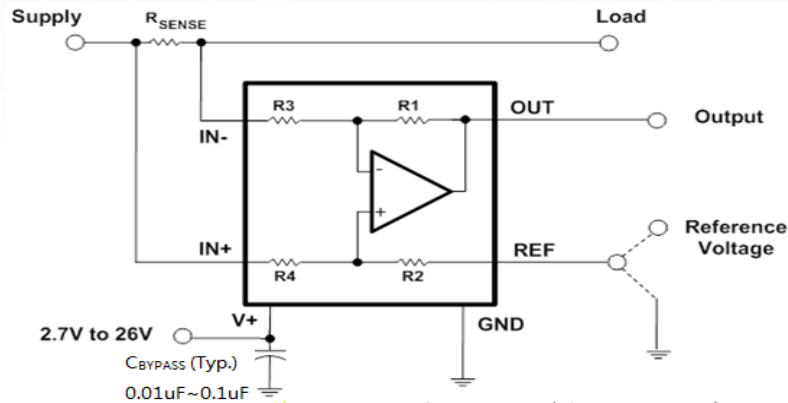
- High-/low-side current sensing, including short-circuits
- Laptop PCs
- Battery chargers
- Power-management devices
- Servers
- 12V motor controls

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Typical Application



Product Portfolio

Part Number	Common-Mode Sense Input Voltage Range (V)	Supply Voltage (V)	Gain	Gain Error (%)	Maximum Vos (μ V)	CMRR (dB)	Operating Temperature Range $^{\circ}$ C	Package
ZXCT199A1	-0.1 to 26	2.7 to 26	50	± 1	± 150	90	-40 to 125	SOT363
ZXCT199A2			100		± 150	100		
ZXCT199A3			200		± 150	105		
ZXCT199B1			50	± 100	90			
ZXCT199B2			100	± 100	100			
ZXCT199B3			200	± 100	105			
ZXCT199C1			50	± 80	90			
ZXCT199C2			100	± 80	100			
ZXCT199C3			200	± 80	105			

* Independent of supply voltage.

Ordering Information

Orderable Part Number	Offset (μ V)	Gain (V/V)	Package	Moisture Sensitivity	Packing	
					Qty.	Carrier
ZXCT199A1DW-7	150	50	SOT363	MSL-1	3000	7" Tape & Reel
ZXCT199A2DW-7	150	100	SOT363	MSL-1	3000	7" Tape & Reel
ZXCT199A3DW-7	150	200	SOT363	MSL-1	3000	7" Tape & Reel
ZXCT199B1DW-7	100	50	SOT363	MSL-1	3000	7" Tape & Reel
ZXCT199B2DW-7	100	100	SOT363	MSL-1	3000	7" Tape & Reel
ZXCT199B3DW-7	100	200	SOT363	MSL-1	3000	7" Tape & Reel
ZXCT199C1DW-7	80	50	SOT363	MSL-1	3000	7" Tape & Reel
ZXCT199C2DW-7	80	100	SOT363	MSL-1	3000	7" Tape & Reel
ZXCT199C3DW-7	80	200	SOT363	MSL-1	3000	7" Tape & Reel