



# New Product Announcement

## ZXCT199Q

### High-Precision, Bi-Directional Current Monitor for Accurate Automotive High-Side and Low-Side Current Measurement

The automotive-compliant ZXCT199Q current monitor family is comprised of single-stage instrumentation amplifiers designed to accurately measure very small sense voltages across a wide range of common-mode voltages. Its applications include current sensing of load/rail currents in automotive motor control, charging, and battery charging equipment (BCE) applications.

The ZXCT199Q family'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, thereby allowing the use of small-value sense resistors to monitor large currents.

The ZXCT199Q devices have three fixed voltage gain options in 50V/V, 100V/V, and 200V/V, measuring a voltage across a sense resistor at common-mode voltages from -0.1V to 26V, independent of supply voltage.

The ZXCT199Q series operates from a 2.7V to 26V power supply, with a maximum supply current of 100 $\mu$ A with common-mode voltages independent of its supply voltage.

All versions have been AEC-Q100 grade 1 qualified, support a -40°C to +125°C temperature range, and are available in the very small industry-standard SOT363 package.

*Automotive-compliant - AEC qualified, manufactured in IATF 16949 certified sites supporting PPAP documents.*

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#### The DIODES Advantage

**These high-precision current monitors support large current measurement with small-sense resistors and voltages.**

- **Offset Voltage as Low as 80 $\mu$ v**  
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
- **Wide -0.1 to 26V Common-Mode Voltage Range**  
Accurately measures high-side and low-side currents, including short-circuited loads
- **Wide 2.7 to 26V Supply Voltage Range**  
Provides options for powering separately or from monitored supply
- **Robust ESD Capability (HBM: 5kV, CDM: 1.5kV)**  
Improves system reliability

#### Applications

Automotive Load and Rail Current Measurement in:

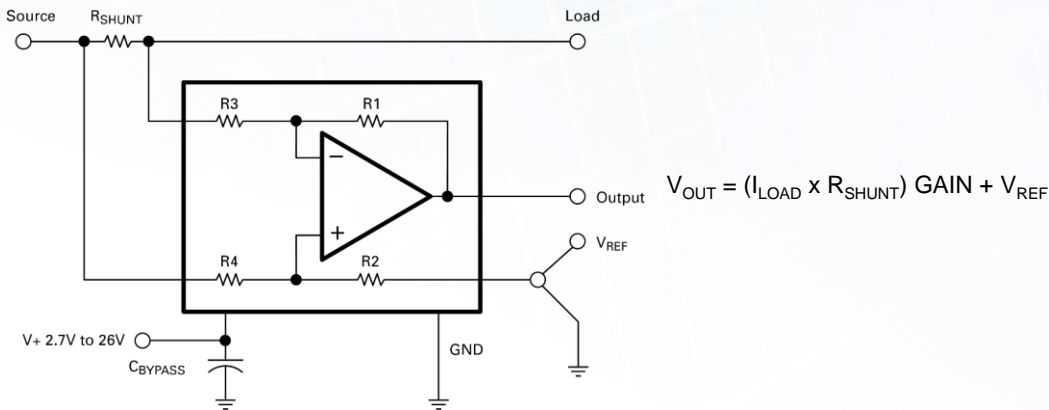
- Vehicle motor controls
- Vehicle e-compressors
- Vehicle ADAS
- EV OBC, BMS, ESP, high voltage DC-DC
- Vehicle valve controls
- Vehicle body controls
- Wireless charging
- Battery charging and discharging



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### Typical Application



### Automotive-Compliant Precision Current-Monitor Portfolio

Part Number	Common-Mode Input Voltage*	Supply Voltage	Gain	Gain Error	Maximum V <sub>OS</sub>	CMRR	Operating Temperature Range	Package
	V	V		%	µV	dB	°C	
<a href="#">ZXCT199QA1</a>	-0.1 to 26	2.7 to 26	50	±1	±150	90	-40 to +125	SOT363
<a href="#">ZXCT199QA2</a>			100		±150	100		
<a href="#">ZXCT199QA3</a>			200		±150	105		
<a href="#">ZXCT199QB1</a>			50	±1	±100	90		
<a href="#">ZXCT199QB2</a>			100	±100	100			
<a href="#">ZXCT199QB3</a>			200	±100	105			
<a href="#">ZXCT199QC1</a>			50	±0.8	±80	90		
<a href="#">ZXCT199QC2</a>			100		±80	100		
<a href="#">ZXCT199QC3</a>			200		±80	105		

Note\*: Independent of supply voltage

### Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Offset	Gain	Package	Moisture Sensitivity	Packing	
		µV	V/V			Quantity	Carrier
<a href="#">ZXCT199QA1DW-7</a>	<a href="#">Automotive</a>	150	50	SOT363	MSL-1	3,000	7" Tape & Reel
<a href="#">ZXCT199QA2DW-7</a>	<a href="#">Automotive</a>	150	100	SOT363	MSL-1	3,000	7" Tape & Reel
<a href="#">ZXCT199QA3DW-7</a>	<a href="#">Automotive</a>	150	200	SOT363	MSL-1	3,000	7" Tape & Reel
<a href="#">ZXCT199QB1DW-7</a>	<a href="#">Automotive</a>	100	50	SOT363	MSL-1	3,000	7" Tape & Reel
<a href="#">ZXCT199QB2DW-7</a>	<a href="#">Automotive</a>	100	100	SOT363	MSL-1	3,000	7" Tape & Reel
<a href="#">ZXCT199QB3DW-7</a>	<a href="#">Automotive</a>	100	200	SOT363	MSL-1	3,000	7" Tape & Reel
<a href="#">ZXCT199QC1DW-7</a>	<a href="#">Automotive</a>	80	50	SOT363	MSL-1	3,000	7" Tape & Reel
<a href="#">ZXCT199QC2DW-7</a>	<a href="#">Automotive</a>	80	100	SOT363	MSL-1	3,000	7" Tape & Reel
<a href="#">ZXCT199QC3DW-7</a>	<a href="#">Automotive</a>	80	200	SOT363	MSL-1	3,000	7" Tape & Reel