Product Overview

TLV3511 and TLV3231: Next Generation High-Speed, Rail-to-Rail Upgrades to LMV7219 Comparator

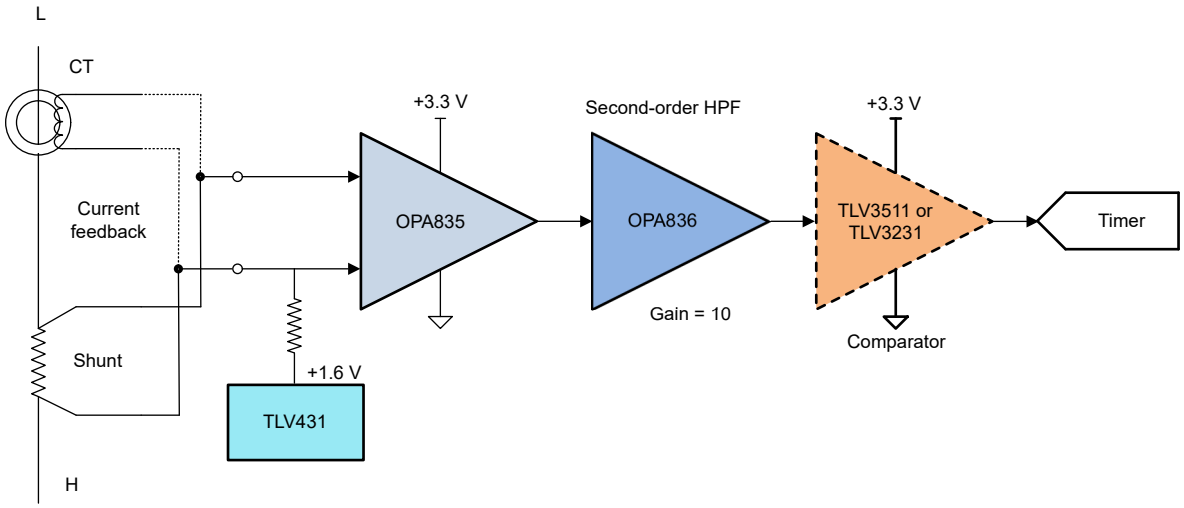

Figure 1. Typical Application: Arc Fault Detection

Due to the high frequency content of an arc fault detection circuit, a high-speed comparator is utilized to translate the signal signature into digital pulses. Circuit designers now have alternative comparators to the LMV7219 to select from depending on the need for more precision (TLV3511) or lower power consumption (TLV3231).

Design Challenges

- Fast response time
- Symmetrical timing on low-to-high and high-to-low signal edges
- Low input offset to maintain minimal timing error from amplifier output to comparator input
- Minimal power consumption

How High-Speed Comparators Benefit the Systems

- A comparator's fast response time enables the capturing of waveforms with spectrum up to 10MHz and beyond without loss of signal integrity
- Symmetrical prop delay and rise-fall times of a push-pull output stage enables the arc fault signal to be digitized without distortion and with minimal timing error
- Low power consumption is necessary due to the *always-on* nature of arc fault detectors and minimizes power drain on building power system
- Low input offset voltage maintains the integrity of an arc fault signature by triggering the comparator output at the precise threshold voltage, rendering an accurate digital waveform for post-processing

Part Number	Propagation Delay	Toggle Frequency	Quiescent Current	Input Offset Voltage	Channel Count
TLV351x	6ns	180MHz	1.1mA	5mV	1/2
TLV323x	15ns	55MHz	200µA	4mV	1/2
LMV7219	7ns	N/A	600ps	6mV	1

If you have more questions please ask them on TI's E2E forum.

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