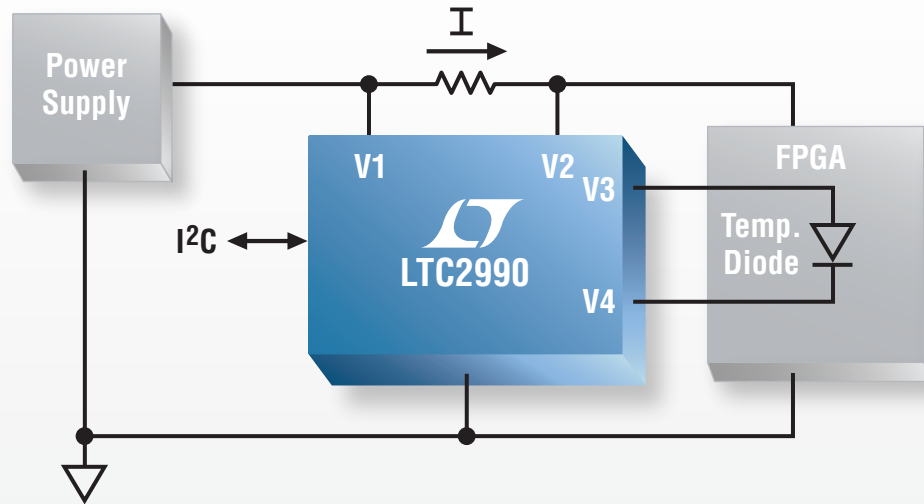


I²C System Monitor



Measures:

- External Temperature
 - Internal Temperature
 - Single-Ended Voltage
- Differential Voltage
 - Rail-to-Rail Current
 - Internal V_{CC}

Accurately Measure Temperature, Voltage and Current

The LTC[®]2990 is a temperature, voltage and current monitor for 3V to 5.5V systems which integrates a 14-bit ADC, 10ppm/°C reference and I²C interface to provide submillivolt voltage resolution, as well as accuracy of ±1°C internally and ±0.5°C remotely when making temperature measurements. Unlike traditional temperature monitors that rely on single-ended inputs for measurements, the LTC2990 uses four differential inputs to measure multiple parameters simultaneously.

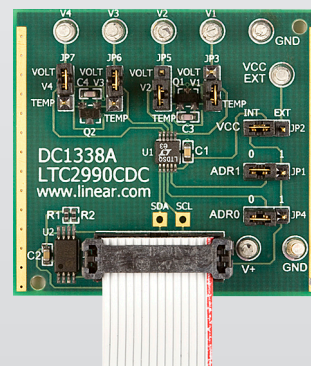
Features

- Measures Voltage, Current and Temperature
- Measures Two Remote Diode Temperatures
- ±1°C Accuracy, 0.06°C Resolution
- ±2°C Internal Temperature Sensor
- 14-Bit ADC Measures Voltage/Current
- 3V to 5.5V Supply Operating Voltage
- Four Selectable Addresses
- Internal 10ppm/°C Voltage Reference
- 10-Lead MSOP Package

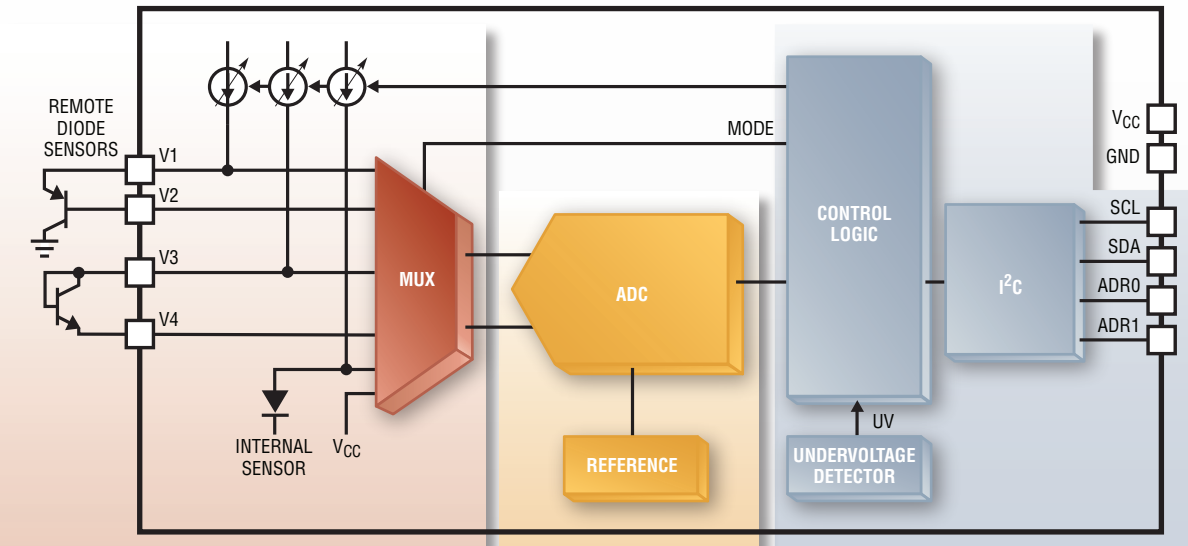
Applications

- Temperature Measurement
- Supply Voltage Monitoring
- Inductor DCR Compensation
- Current Measurement
- Remote Data Acquisition
- Environmental Monitoring

Demo Board



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Built-In Configurability

Four multifunction differential voltage pins to measure combinations of external temperature, single-ended voltage, differential voltage and rail-to-rail current, while also measuring the LTC2990's own internal V_{CC} and temperature. Take Celsius or Kelvin temperature measurements. No inflexible dedicated temperature or voltage pins.

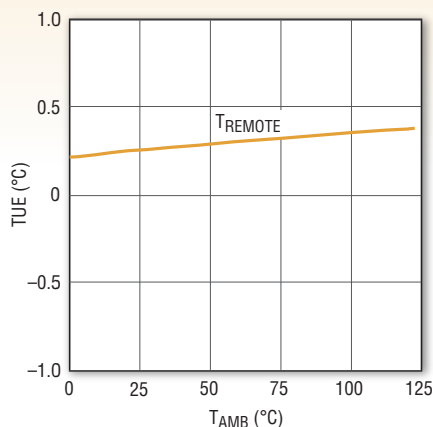
10 Possible Sensing Configurations

Configuration	Internal V_{CC}	Internal Temperature	External Temperature	Single-Ended Voltage	Differential Voltage	Rail-to-Rail Current
1	x1	x1	x2			
2	x1	x1	x1	x2		
3	x1	x1	x1		x1	
4	x1	x1	x1			x1
5	x1	x1		x4		
6	x1	x1		x2	x1	
7	x1	x1		x2		x1
8	x1	x1			x2	
9	x1	x1			x1	x1
10	x1	x1				x2

Uncompromised Accuracy

The 14-bit $\Delta\Sigma$ ADC and 10ppm/ $^{\circ}C$ voltage reference minimize component count and board space, while enabling the LTC2990 to achieve exceptional accuracy and resolution: $\pm 1^{\circ}C$ ACC (0.06 $^{\circ}C$ RES) for external temperature, $\pm 2^{\circ}C$ ACC (0.06 $^{\circ}C$ RES) for internal temperature, $\pm 0.1\%$ ACC (305 μV RES) for internal V_{CC} , $\pm 0.1\%$ ACC (305 μV RES) for external single-ended voltage, and $\pm 0.5\%$ ACC (19 μV RES) for differential voltage or current.

Temperature Total Unadjusted Error



Accessibility in Mind

The LTC2990's I²C serial interface supports data rates up to 100kbps in standard mode and 400kbps in fast mode. An undervoltage detector inhibits communication if the supply voltage drops below 2.0V, and shutting down the LTC2990 results in only 1 μA of input supply current. Access various registers to select the configuration of the LTC2990, trigger start or repeated conversions, query results and even determine if existing data is new or old.

