

SENSYLINK Microelectronics

(CAD2738)

85-V, 16-Bit Delta-Sigma ADC , High-Precision Power Monitor With I2C Interface

The CAD2738 is ultra-precise digital power monitor with a 16-bit delta-sigma ADC , 85 V common-mode input range, specially designed for current-sensing 、 power monitor applications, widely used in telecom equipment, enterprise servers, power over ethernet (POE), and industry battery packs etc.

85V, 16-Bit, High-Precision Power Monitor With I2C Interface

1. Description

The CAD2738 is an ultra-precise digital power monitor with a 16-bit delta-sigma ADC specifically designed for current-sensing applications. The device can measure a full-scale differential input of ± 163.84 mV or ± 40.96 mV across a resistive shunt sense element with common-mode voltage support from -0.3 V to $+85$ V. The CAD2738 reports current, bus voltage, temperature, and power. The integrated temperature sensor is $\pm 1^\circ\text{C}$ accurate for die temperature measurement and is useful in monitoring the system ambient temperature. The device allows for selectable ADC conversion times from $50\text{ }\mu\text{s}$ to 4.12ms as well as sample averaging from $1\times$ to $1024\times$, which further helps reduce the noise of the measured data.

Available Package: MSOP-10

2. Features

- High-resolution, 16-bit delta-sigma ADC
- Current monitoring accuracy:
 - Offset voltage: $\pm 5\text{ }\mu\text{V}$ (maximum)
 - Offset drift: $\pm 0.02\text{ }\mu\text{V}/^\circ\text{C}$ (maximum)
 - Gain error: $\pm 0.1\%$ (maximum)
 - Gain error drift: $\pm 25\text{ ppm}/^\circ\text{C}$ (maximum)
- Power monitoring accuracy:
 - 0.7% full scale, -40°C to $+125^\circ\text{C}$ (maximum)
- Wide common-mode range: -0.3 V to $+85$ V
- Shunt full-scale differential range:
 - ± 163.84 mV / ± 40.96 mV
- Input bias current: 2.5 nA (maximum)
- Fast alert response: $75\text{ }\mu\text{s}$
- Temperature sensor: $\pm 1^\circ\text{C}$ (maximum at 25°C)
- 2.94-MHz high-speed I2C interface with 16 pin selectable addresses
- Operates from a 2.7-V to 5.5-V

3. Application

- DC/DC converters and power inverters
- Industrial battery packs
- Power-over-ethernet (PoE)
- Telecom equipment
- Enterprise servers

4. PIN Configurations

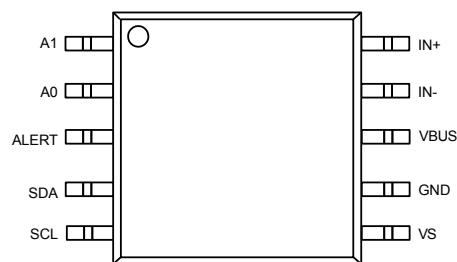


Figure 1 MSOP-10(Package code: MM)

85V, 16-Bit, High-Precision Power Monitor With I2C Interface

5. Typical Application

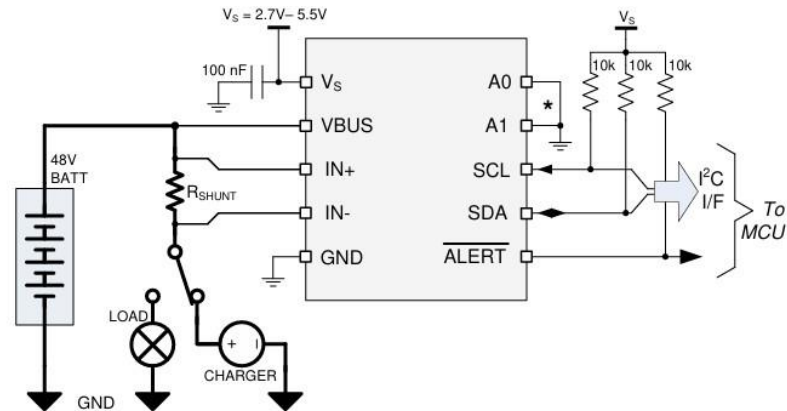


Figure 2 Typical Application of CAD2738

6. Pin Description

Pin		Type	Description
Num	Name		
1	A1	Digital input	I2C address pin. Connect to GND, SCL, SDA, or VS.
2	A0	Digital input	I2C address pin. Connect to GND, SCL, SDA, or VS.
3	ALERT	Digital output	Open-drain alert output, default state is active low.
4	SDA	Digital input/output	Open-drain bidirectional I2C data.
5	SCL	Digital input	I2C clock input.
6	VS	Power supply	Power supply, 2.7 V to 5.5 V.
7	GND	Ground	Ground.
8	VBUS	Analog input	Bus voltage input.
9	IN-	Analog input	Negative input to the device. For high-side applications, connect to load side of sense resistor. For low-side applications, connect to ground side of sense resistor.
10	IN+	Analog input	Positive input to the device. For high-side applications, connect to power supply side of sense resistor. For low-side applications, connect to load side of sense resistor.

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7. Function Block

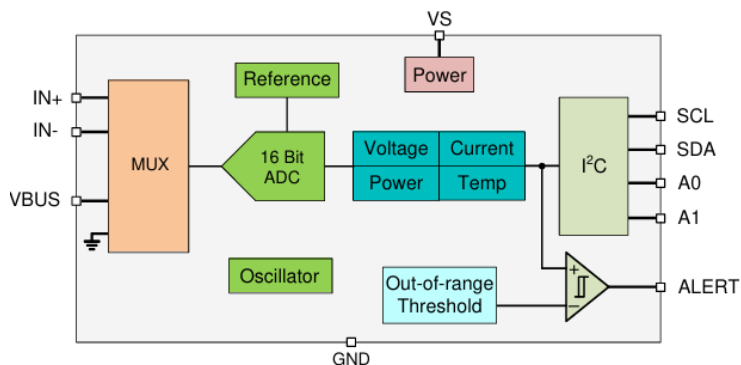
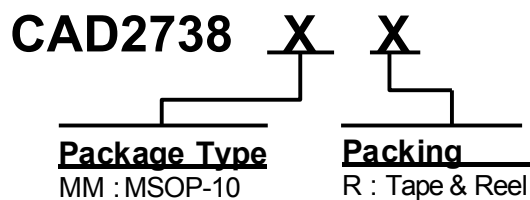


Figure 3 CAD2738 Function Block

8. Order Information



Order PN	Green ¹	Package	Marking ID	Packing	MPQ	Operation Temperature
CAD2738MMR	Halogen free	MSOP-10	2738 YWWAXX	Tape&Reel	3000	-40 ~ +125°C

- Sensylink can meet RoHS 2.0/REACH requirement. For most package types, offer only states halogen free, instead of lead free.
- Marking ID includes 2 rows of characters. In general, the 1st row characters are part number, and the 2nd row of characters are date code plus production information.

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