

Four- to Seven-Input Industrial Power System Monitor Family

MAX42500

General Description

The MAX42500 is a system-on-a-chip (SoC) power system monitor with up to seven voltage monitor inputs. Each input has programmable overvoltage (OV)/undervoltage (UV) thresholds of between 2.5% and 10% with $\pm 1.3\%$ accuracy over the full temperature range. Two of the inputs have a separate remote ground-sense input and support dynamic voltage scaling (DVS) through the integrated I²C interface.

The MAX42500 contains a programmable flexible power sequence recorder (FPSR). This recorder stores power-up and power-down timestamps separately, and supports on/off and sleep/standby power sequences. The MAX42500 also contains a programmable challenge/response watchdog, which is accessible through the I²C interface along with a configurable RESET output.

The MAX42500 improves reliability while significantly reducing system size and component count as compared to separate ICs or discrete components. The MAX42500 is suitable for use in safety functions up to SIL 3. The device is designed to operate over the ambient temperature range of -40°C to +125°C.

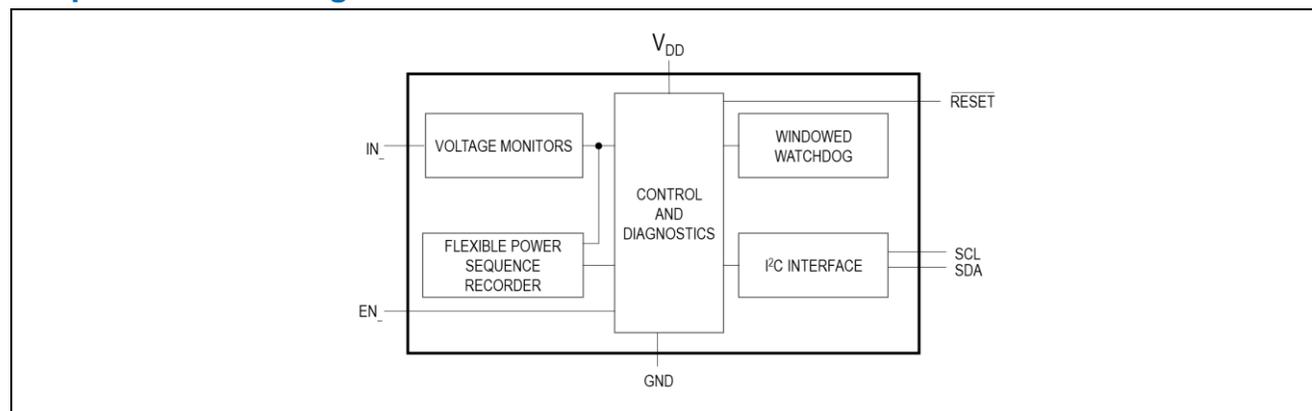
Key Applications

- Industrial Process Control
- Robotics
- Remote Sensor Modules
- Power System Supervision
- Microcontroller Unit (MCU)/SoC Monitoring

Benefits and Features

- Small Solution
 - 2.35V to 5.50V Operating Supply Voltage
 - Only One External Component Required
 - 150 μ A Operating Current
 - 8 μ A Power-Down Mode
- High Precision
 - Selectable 102.5% to 110% OV Monitors
 - Selectable 97.5% to 90% UV Monitors
 - Programmable UV and OV Thresholds
 - $\pm 1.0\%$ Accuracy (-40°C to +85°C)
 - $\pm 1.3\%$ Accuracy (-40°C to +125°C)
 - 0.5% Step Size
- Highly Integrated
 - Five Fixed-Voltage Monitoring Inputs
 - Two Differential DVS Tracking-Voltage Monitoring Inputs with Remote Ground Sense
 - Power-Sequencing Recording
 - Simple or Challenge/Response Windowed Watchdog
 - Fault Recording
 - Cyclic Redundancy Check (CRC) on I²C Interface
 - Programmable I²C Address
 - OTP Configuration with Error-Correcting Code and Reload Functionality
 - Programmable Active Low RESET Pin
- 16 Pin TQFN with Exposed Pad (3mm x 3mm)
- Ongoing Certification Process to IEC 61508 SIL 3
- -40°C to +125°C Operating Temperature

Simplified Block Diagram



[Ordering Information](#) appears at the end of datasheet.

ABRIDGED DATA SHEET

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