



16-Bit Data-Acquisition System with ADC, DAC, UPIOs, RTC, Voltage Monitors, and Temp Sensor

MAX11358B

General Description

The MAX11358B smart data-acquisition systems (DAS) is based on a 16-bit, sigma-delta analog-to-digital converter (ADC) and system-support functionality for a micro-processor (μ P)-based system. These devices integrate an ADC, DACs, operational amplifiers, internal selectable-voltage reference, temperature sensors, analog switches, a 32kHz oscillator, a real-time clock (RTC) with alarm, a high-frequency-locked loop (FLL) clock, four user-programmable I/Os, an interrupt generator, and 1.8V and 2.7V voltage monitors in a single chip.

The MAX11358B has dual 10:1 differential input multiplexers (muxes) that accept signal levels from 0 to V_{DD} . An on-chip 1x to 8x programmable-gain amplifier (PGA) allows measuring low-level signals and reduces external circuitry required.

The MAX11358B operates from a single +1.8V to +3.6V supply and consumes only 1.15mA in normal mode and only 3 μ A in sleep mode. The MAX11358B has two DACs with one uncommitted op amp.

The serial interface is compatible with either SPI™/QSPI™ or MICROWIRE™, and is used to power up, configure, and check the status of all functional blocks.

The MAX11358B is available in a space-saving, 40-pin TQFN package and is specified over the commercial (0°C to +70°C) and the extended (-40°C to +85°C) temperature ranges.

Applications

- Battery-Powered and Portable Devices
- Electrochemical and Optical Sensors
- Medical Instruments
- Industrial Control
- Data-Acquisition Systems

Selector Guide

PART	DACs	OP AMPS	SPDT/SPST SWITCHES
MAX11358B	2	1	2/2

SPI/QSPI are trademarks of Motorola, Inc.
MICROWIRE is a trademark of National Semiconductor Corp.

Features

- ◆ +1.8V to +3.6V Single-Supply Operation
- ◆ Multichannel 16-Bit Sigma-Delta ADC
 - 10sps to 477sps Programmable Conversion Rate
 - Self and System Offset and Gain Calibration
 - PGA with Gains of 1, 2, 4, or 8
 - Unipolar and Bipolar Modes
 - 10-Input Differential Multiplexer
- ◆ 10-Bit Force-Sense DACs
- ◆ Uncommitted Op Amps
- ◆ Dual SPDT and SPST Analog Switches
- ◆ Selectable References
 - 1.25V, 2.048V and 2.5V
- ◆ Internal Charge Pump
- ◆ System Support
 - Real-Time Clock and Alarm Register
 - Internal/External Temperature Sensor
 - Internal Oscillator with Clock Output
 - User-Programmable I/O and Interrupt Generator
 - V_{DD} Monitors
- ◆ SPI/QSPI/MICROWIRE, 4-Wire Serial Interface
- ◆ Space-Saving (6mm x 6mm x 0.8mm), 40-Pin TQFN Package

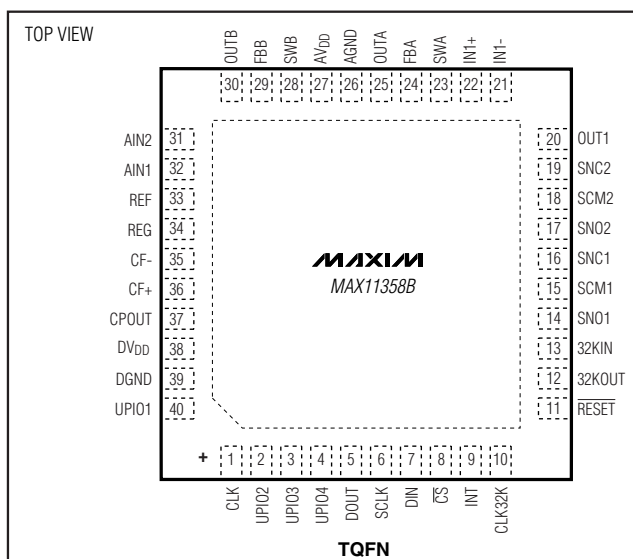
Ordering Information

PART	TEMP RANGE	PIN-PACKAGE
MAX11358BETL+	-40°C to +85°C	40 TQFN-EP*
MAX11358BCTL+	0°C to +70°C	40 TQFN-EP*

+ Denotes a lead (Pb)-free/RoHS-compliant package.

*EP = Exposed pad.

Pin Configuration



For pricing delivery, and ordering information please contact Maxim Direct at 1-888-629-4642, or visit Maxim's website at www.maxim-ic.com.