/M/XI/M

+3V, Low-Power, 8-Channel, Serial 12-Bit DAS

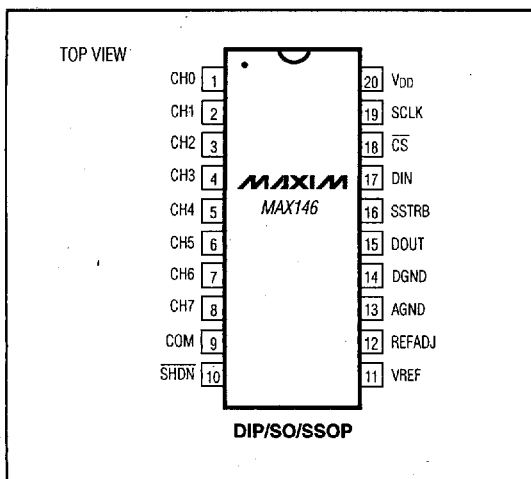**MAX146**

General Description

The MAX146 is a +3V-powered, 12-bit data-acquisition system (DAS) that includes an 8-channel multiplexer, 4MHz bandwidth track/hold, 133ksps throughput, and a serial interface. Its low power dissipation (less than 5mW) makes it ideal for battery-powered applications. Its analog inputs are software configurable for unipolar/bipolar and single-ended/differential operation.

The MAX146 has a 4-wire serial interface that operates at up to 2MHz and is compatible with SPI™, QSPI™, and Microwire™. A serial strobe output allows direct connection to TMS320 family digital signal processors. The MAX146 uses either its internal clock or an external serial-interface clock to perform successive-approximation conversions.

The MAX146 has an internal 2.50V reference and a reference-buffer amplifier that simplifies gain trim. It also provides a hard-wired shutdown (SHDN) pin and two software-select power-down modes. Accessing the serial interface automatically powers up the device. By using the technique of powering down between conversions, the supply current can be reduced to under 10µA at slower sampling rates.

The MAX146 is available in 20-pin DIP and SO packages, and in a 20-pin SSOP package that occupies 50% less area than the SO package. For +5V operation, see the MAX186/MAX188 data sheet. For anti-alias filters, consult the MAX274/MAX275 data sheet.

Features

♦ **8-Channel Single-Ended or 4-Channel Differential Inputs**

♦ **Single +2.7V to +3.6V Operation**

♦ **Low Power: 1.5mA (operating mode)**
      2µA (power-down mode)

♦ **Internal Track/Hold, 133kHz Sampling Rate**

♦ **Internal 2.50V Reference**

♦ **SPI™, QSPI™, Microwire™, TMS320-Compatible 4-Wire Serial Interface**

♦ **20-Pin DIP, SO, SSOP Packages**

Applications

Portable Data Logging

Data Acquisition

High-Accuracy Process Control

Battery-Powered Instruments

Medical Instruments

Pin Configuration

TOP VIEW

CH0	1		20	V$_{DD}$
CH1	2		19	SCLK
CH2	3		18	CS
CH3	4	**/M/XI/M** MAX146	17	DIN
CH4	5		16	SSTRB
CH5	6		15	DOUT
CH6	7		14	DGND
CH7	8		13	AGND
COM	9		12	REFADJ
SHDN	10		11	VREF

DIP/SO/SSOP

Ordering Information

PART	TEMP. RANGE	PIN-PACKAGE	INL (LSB)
MAX146ACPP	0°C to +70°C	20 Plastic DIP	±1/2
MAX146BCPP	0°C to +70°C	20 Plastic DIP	±1
MAX146ACWP	0°C to +70°C	20 SO	±1/2
MAX146BCWP	0°C to +70°C	20 SO	±1
MAX146ACAP	0°C to +70°C	20 SSOP	±1/2
MAX146BCAP	0°C to +70°C	20 SSOP	±1
MAX146BC/D	0°C to +70°C	Dice*	±1
MAX146AEPP	-40°C to +85°C	20 Plastic DIP	±1/2
MAX146BEPP	-40°C to +85°C	20 Plastic DIP	±1
MAX146AEWP	-40°C to +85°C	20 SO	±1/2
MAX146BEWP	-40°C to +85°C	20 SO	±1
MAX146AEAP	-40°C to +85°C	20 SSOP	±1/2
MAX146BEAP	-40°C to +85°C	20 SSOP	±1
MAX146AMJP	-55°C to +125°C	20 CERDIP	±1/2
MAX146BMJP	-55°C to +125°C	20 CERDIP	±1

Dice are specified at T$_A$ = +25°C, DC parameters only.

7

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