# DSP Based Data Acquisition System with ADC's, DAC's, Digital I/O in a 40-pin Metal DIP Package for Extreme Environments/Applications

## FEATURES

- Powerful 16-bit TI® TMS320F240 DSP core
- 16K words of FLASH and 32K words of SRAM
- Internal PGA supports custom applications
- 8 10-Bit ADC Channels
- 3 10-Bit DAC Channels
- Internal 2.500 volt reference
- 16 programmable digital I/O's
- High speed asynchronous serial port
- Internal temperature sensor
- Low power, single supply operation
- Operation to 200C°

## APPLICATIONS

- High temperature SCADA systems
- Petroleum reservoir monitoring
- Petroleum logging tools
- Petroleum LWD and MWD tools
- Aircraft flight control systems
- Smart sensor applications

## DEVELOPMENT TOOLS

- SX5350 board level TX5350 equivalent
- JTAG emulator

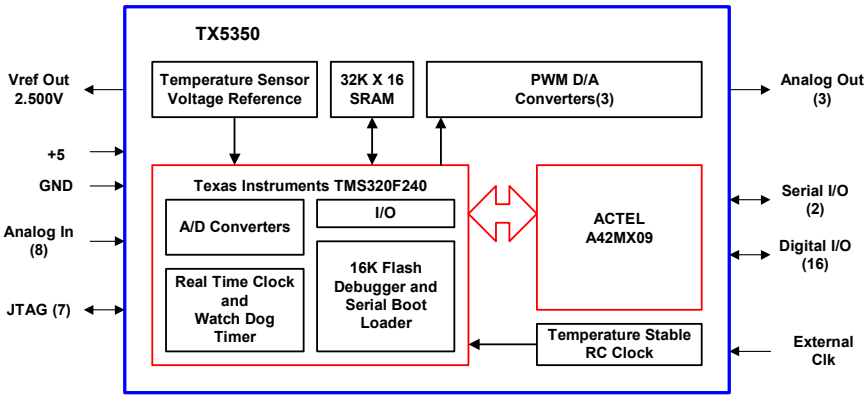
## DESCRIPTION

The TX5350 is a complete, low-power data acquisition system in a single package. Major internal components are a powerful 16-bit DSP with two 10-bit analog-to-digital converters each with an 8-channel single-ended multiplexer (only 8 channels are available in the 40 pin package), a stable, internal 2.500 volt reference, three 10-bit digital-to-analog converters, an internal temperature sensor and sixteen independent digital pins that can be user programmed to any I/O pin of the DSP.

The TX5350 also contains an antifuse PGA that is programmed at the die level to implement the personality of the device. All DSP I/O is routed through this PGA to provide maximum flexibility for any application. For custom configurations, PGA source code would be provided to Texas Components after debug on the SX5350 development system and devices using a new part number device would be manufactured.

Additionally, the T5350 contains a full duplex, high-speed asynchronous serial interface which can be used for host-to-device communication. The resident DSP/PGA combination can be used to implement almost any communication protocol and provide local control independent of the host.

Resident software includes a serial boot loader and debugger to facilitate loading of new executables into flash memory, allowing the entire personality of the TX5350 to be reconfigured without removing it from the circuit.



# TX5350 Specifications @ 5V and 25C°

**Operating Temperature Range**
-50C to +200C

**Analog Inputs**
8 Available user inputs
2 For used Internal State of Health
( VCC, Substrate Temperature )
Resolution : 10 Bit
Accuracy : ± 1 Lsb
Conversion Time : 10 us
Conversion Voltage Range : 2.500 Volts
Lsb = 2.44 mV ( 2.500 / 1024 )

**Reference**
Voltage : 2.500 V ± 0.05%
Drift (-50C to +150C) : 5 ppm
Drift (+150C to +200C) : 10 ppm
Buffer Output Current : ± 5 mA

**Analog Outputs(3)**
10 Bit PWM filtered outputs
Output Range : 0.0 V to 2.500 V
Output Ripple : 1.5 mV
Output Impedence : 40 K ohms
Settling Time to 0.1% : 13 ms

**Standard Package**
40 pin Ceramic / Kovar dip
Pins on 0.6" centers
L = 2.1", W = 0.85"

**Primary Components**
TI ®TMS320F240 DSP
ACTEL ® A42MX09 PGA
32K x 16 SRAM


**Power Supply Input**
4.75 to 5.25 Volts

**Power Consumption**
40 ma typ --- ( Clock and Load dependent )

**Internal RC Oscillator**
Frequency : 2.304 MHz ± 1%
Stability : 100 ppm

**TMS320F240 CPU Clock**
PLL scaleable (X4) 2.304 MHz to 9.216 MHz

**External Clock Input**
1 CMOS load
Frequency Range : 1 to 20 MHz
( Internal clock is disabled upon detect )

**Digital I/O**
16 user configurable I/O ports
7 JTAG I/O

**Voltage Input - Any Input**
Max input range : -0.3 V to + 5.3 V
Input capacitance : 10 pf

**Digital Outputs**
Output voltage : 0.2 to 4.8 V @ 10 mA load

**Floating point capacity**
> 30,000 operations / sec @ 9.216 MHz DSP Clock

**Serial Communication**
Up to 115200 baud

**TX5350 Pin out – Top View**