

### Analog Peripherals

#### Two 16-Bit ADCs

- $\pm 1.5$  LSB INL; guaranteed no missing codes
- Programmable throughput up to 1 Msps (each ADC)
- Configurable as two single-ended or one differential ADC
- DMA to XRAM or external memory interface
- Data-dependent windowed interrupt generator

#### 10-Bit ADC

- Programmable throughput up to 200 ksps
- 8 external inputs
- Built-in temperature sensor ( $\pm 3$  °C)

#### Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

#### Three Comparators

#### Internal Voltage Reference

#### Precision $V_{DD}$ Monitor/Brown-out Detector

#### On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

#### Supply Voltage: 2.7 to 3.6 V

- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

### High-Speed 8051 $\mu$ C Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

### Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

### CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

### Digital Peripherals

- 24 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timers or PCA

### Clock Sources

- Internal programmable 2% oscillator: up to 24.5 MHz
- External oscillator: Crystal, RC, C, or Clock

### 100-Pin TQFP

Temperature Range:  $-40$  to  $+85$  °C

