

Analog Peripherals

10-Bit ADC

- ± 1 LSB INL; no missing codes
- Programmable throughput up to 100 ksp/s
- 8 external inputs; programmable as single-ended or differential
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (± 3 °C)

Two Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

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

High-Speed 8051 μ 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

- 1280 bytes data RAM
- 16 kB Flash; in system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 16 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

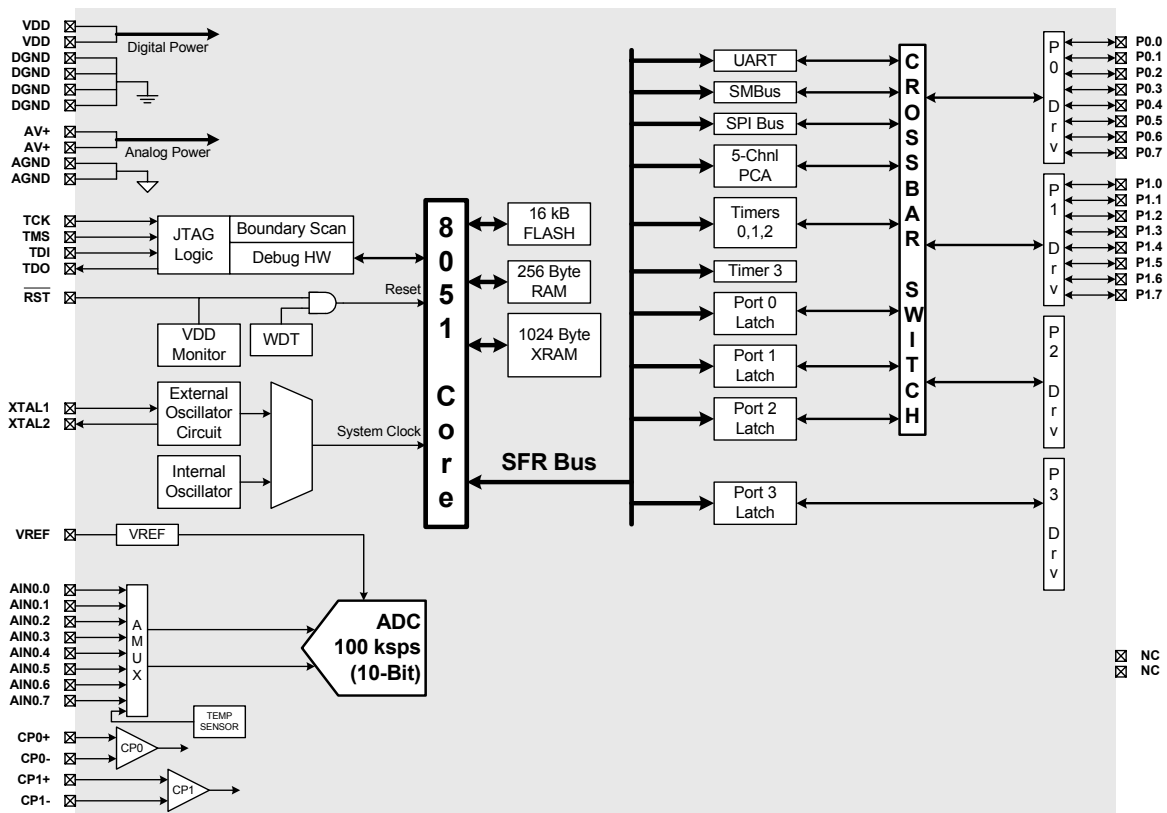
- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.8 to 3.6 V

- Typical operating current: 12.5 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

48-Pin TQFP

Temperature Range: -40 to $+85$ °C

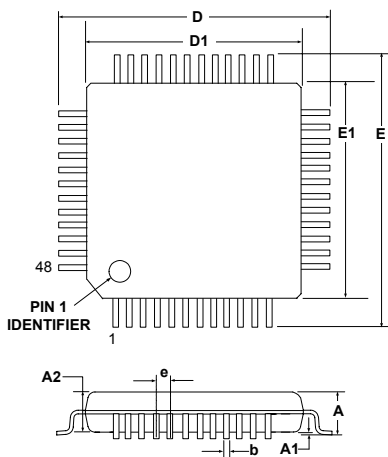


Selected Electrical Specifications

($T_A = -40$ to $+85$ °C, $V_{DD} = 2.8$ V unless otherwise specified)

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|---------------------------------|---|-----|-------------------|-----------|----------------|
| GLOBAL CHARACTERISTICS | | | | | |
| Supply Voltage | | 2.8 | | 3.6 | V |
| Supply Current (CPU active) | Clock = 25 MHz Clock = 1 MHz Clock = 32 kHz | | 12.5 0.5 20 | | mA mA μA |
| Supply Current (shutdown) | Oscillator not running | | 10 | | μA |
| Clock Frequency Range | | DC | | 25 | MHz |
| A/D CONVERTER | | | | | |
| Resolution | | | 10 | | bits |
| Integral Nonlinearity | | | ±½ | ±1 | LSB |
| Differential Nonlinearity | Guaranteed Monotonic | | ±½ | ±1 | LSB |
| Signal-to-Noise Plus Distortion | | 59 | 61 | | dB |
| Throughput Rate | | | | 100 | ksps |
| Input Voltage Range | | 0 | | V_{REF} | V |
| COMPARATORS | | | | | |
| Supply Current | (each comparator) | | 1.5 | | μA |
| Response Time | (CP+) – (CP-) = 100 mV | | 4 | | μs |

Package Information



| | MIN (mm) | NOM (mm) | MAX (mm) |
|----|----------|----------|----------|
| A | - | - | 1.20 |
| A1 | 0.05 | - | 0.15 |
| A2 | 0.95 | 1.00 | 1.05 |
| b | 0.17 | 0.22 | 0.27 |
| D | - | 9.00 | - |
| D1 | - | 7.00 | - |
| e | - | 0.50 | - |
| E | - | 9.00 | - |
| E1 | - | 7.00 | - |

C8051F005DK Development Kit

