

### Analog Peripherals

#### 10-Bit ADC

- $\pm 1$  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 ( $\pm 3$  °C)

#### Two Comparators

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

#### Internal Voltage Reference

#### V<sub>DD</sub> 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: 2.8 to 3.6 V

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

#### Temperature Range: -40 to +85 °C

### 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

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

### Digital Peripherals

- 32 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

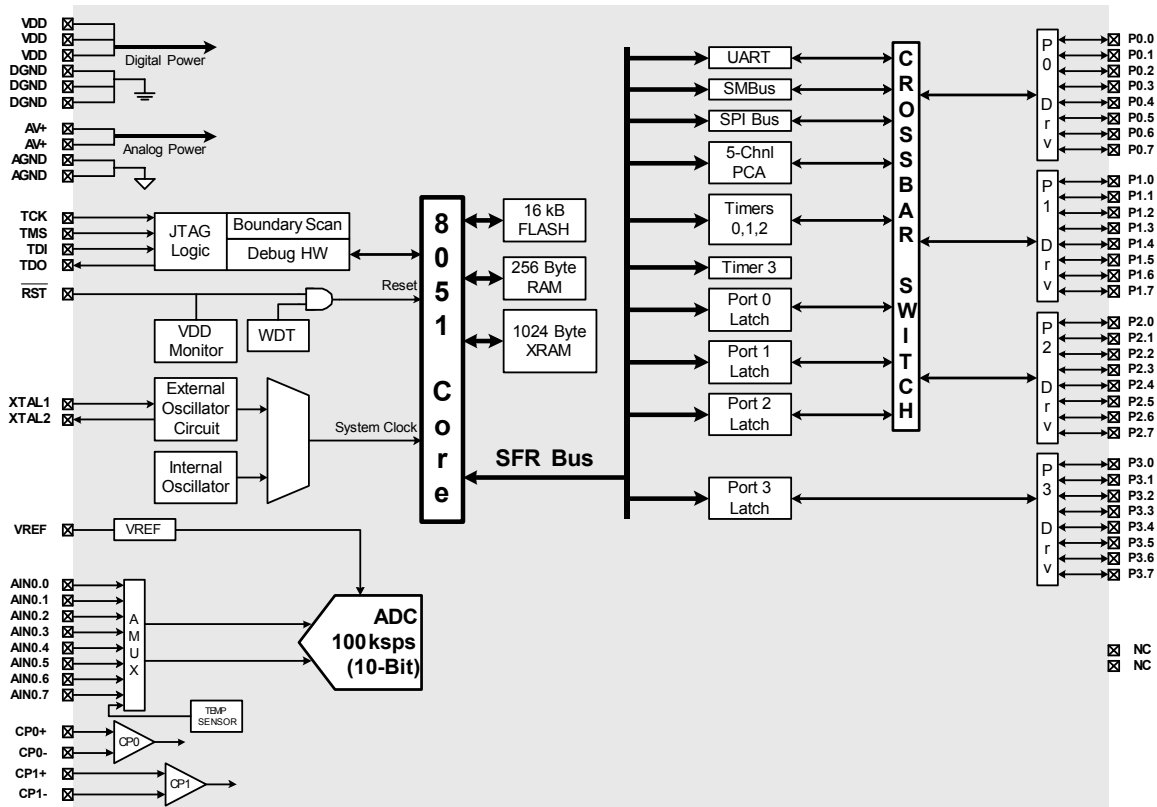
- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

### Package

- 64-pin TQFP (standard lead and lead-free packages)

### Ordering Part Numbers

- Lead-free package: C8051F018-GQ
- Standard package: C8051F018

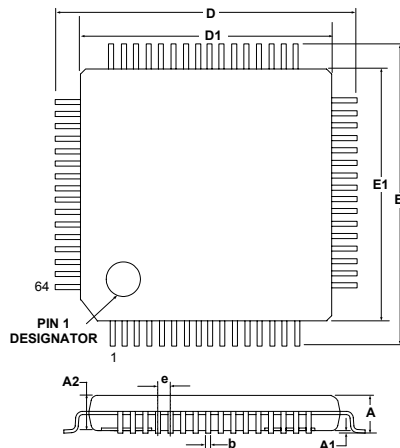


### Selected Electrical Specifications

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

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
<b>GLOBAL CHARACTERISTICS</b>					
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
<b>A/D CONVERTER</b>					
Resolution			10		bits
Integral Nonlinearity			$\pm 1/2$	$\pm 1$	LSB
Differential Nonlinearity	Guaranteed Monotonic		$\pm 1/2$	$\pm 1$	LSB
Signal-to-Noise Plus Distortion		59	61		dB
Throughput Rate				100	ksps
Input Voltage Range		0		$V_{REF}$	V
<b>COMPARATORS</b>					
Supply Current	(each Comparator)		1.3		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	-	1.05
b	0.17	0.22	0.27
D	-	12.00	-
D1	-	10.00	-
e	-	0.50	-
E	-	12.00	-
E1	-	10.00	-

### C8051F005DK Development Kit

