



# C8051F018

## 16K Flash, 1.25K RAM, 10-Bit ADC, 64-Pin MCU

PRELIMINARY

### ANALOG PERIPHERALS

#### 10-bit ADC

- $\pm 1$ LSB INL; No Missing Codes
- Programmable Throughput up to 100ksps
- 8 External Inputs; Differential or Single-Ended mode
- Data Dependent Windowed Interrupt Generator
- Built-in Temperature Sensor ( $\pm 3^\circ\text{C}$ )

#### Two Comparators

- 16 Programmable Hysteresis Values
- Configurable to Generate Interrupts or Reset

#### Internal Voltage Reference

#### Precision VDD 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
- Low Cost, **Complete** Development Kit

### HIGH SPEED 8051 $\mu\text{C}$ CORE

- Pipe-lined Instruction Architecture; Executes 70% of Instructions in 1 or 2 System Clocks
- Up to 25MIPS Throughput with 25MHz System Clock
- Expanded Interrupt Handler

### MEMORY

- 1280 Bytes Internal Data RAM (256 + 1k)
- 16k Bytes In-System Programmable FLASH Program Memory

### DIGITAL PERIPHERALS

- 32 Port I/O; All are 5V tolerant
- Hardware SMBus™ (I2C™ Compatible), SPI™, and UART Serial Ports Available Concurrently
- Programmable 16-bit Counter/Timer Array with Five Capture/Compare Modules
- Four General Purpose 16-bit Counter/Timers
- Dedicated Watch-Dog Timer; Bi-directional Reset

### CLOCK SOURCES

- Internal Programmable Oscillator: 2-to-16MHz
- External Oscillator: Crystal, RC, C, or Clock

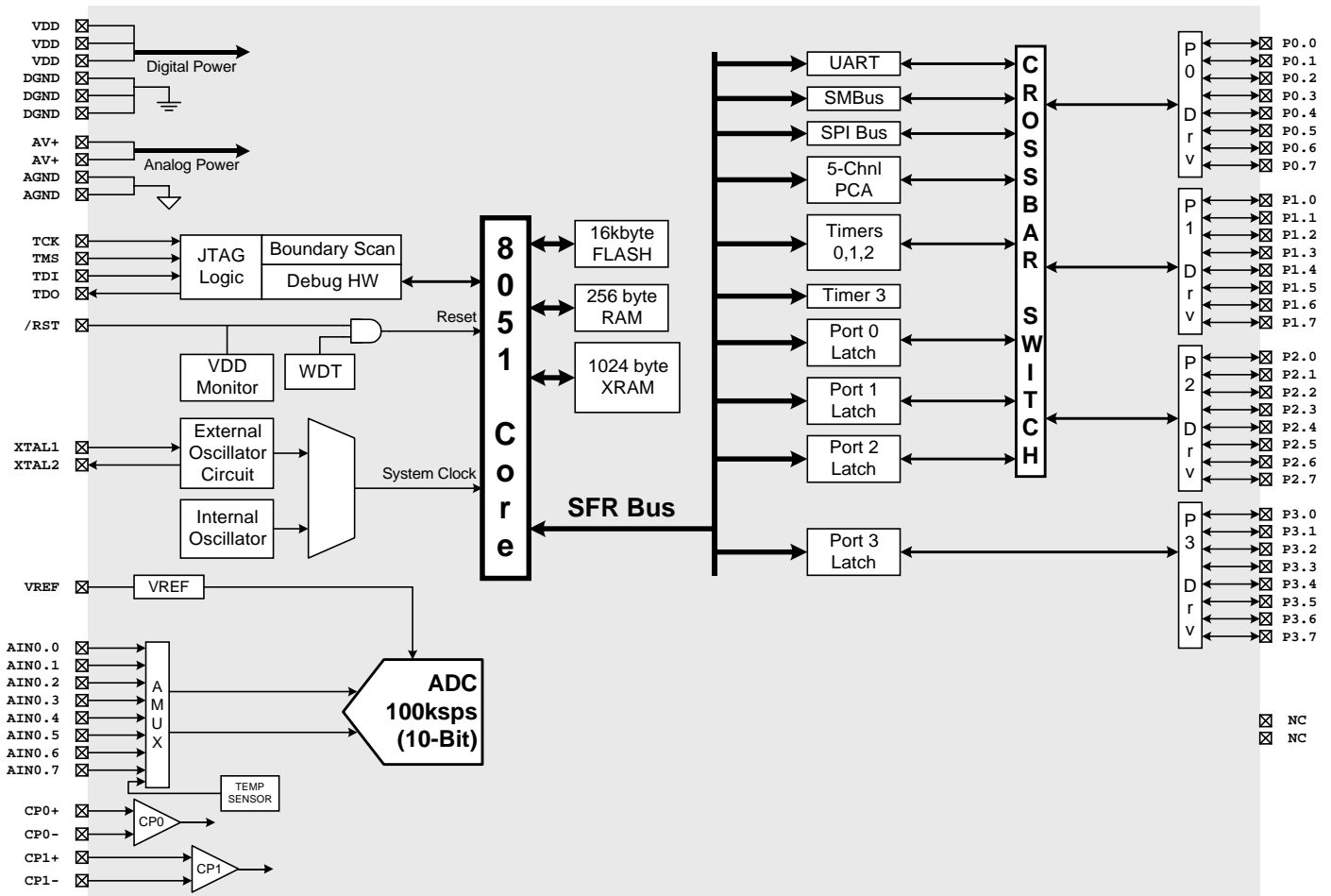
### SUPPLY VOLTAGE .....2.8V to 3.6V

- Typical Operating Current: 12.5mA @ 25MHz
- Multiple Power Saving Sleep and Shutdown Modes

### 64-Pin TQFP

### Temperature Range: $-40^\circ\text{C}$ to $+85^\circ\text{C}$

SMBus is a trademark of Intel Corp.; I2C is a trademark of Philips Semi.; SPI is a trademark of Motorola, Inc.





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**SELECTED ELECTRICAL SPECIFICATIONS** T<sub>A</sub> = -40°C to +85°C, V<sub>DD</sub> = 2.8V 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=25MHz		12.5		mA
	Clock=1MHz		0.5		mA
	Clock=32kHz		20		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			± 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		VREF	V
<b>COMPARATORS</b>					
Supply Current	(each Comparator)		1.3		μA
Response Time	CP+ - CP-  = 100mV		4		μs

