



### ANALOG PERIPHERALS

#### 10-bit ADC

- ±1LSB 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 (± 3°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 μC 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

- 16 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

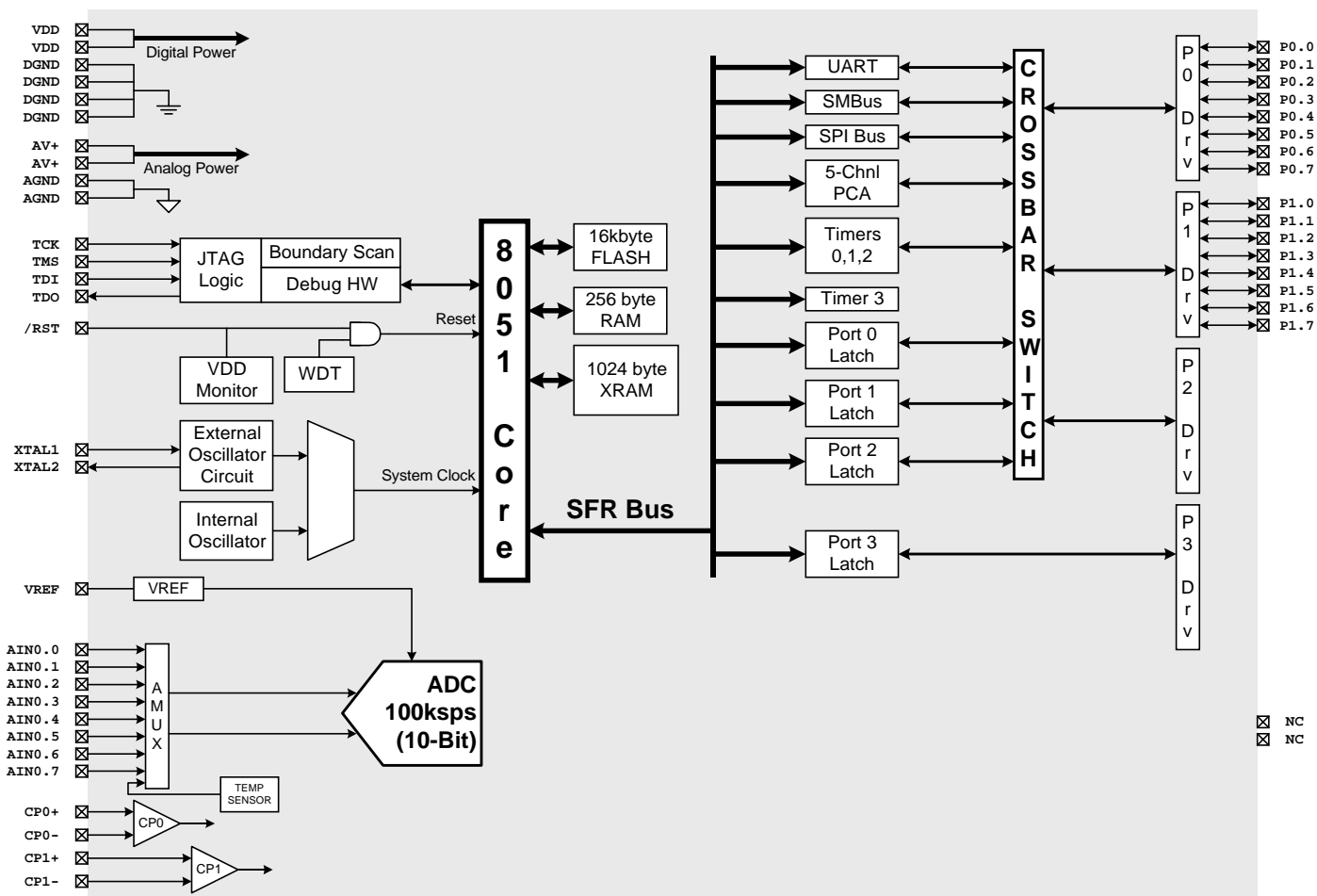
### SUPPLY VOLTAGE .....2.8V to 3.6V

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

### 48-Pin TQFP

### Temperature Range: -40°C to +85°C

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





# C8051F019

## 16K Flash, 1.25K RAM, 10-Bit ADC, 48-Pin MCU

PRELIMINARY

**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    |

