

### Analog Peripherals

#### Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4  $\mu$ A)

#### POR/Brown-Out Detector

#### On-Chip Debug

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

#### Supply Voltage: 2.7 to 3.6 V

- Typical operating current: 5.8 mA at 25 MHz  
11  $\mu$ A at 32 kHz
- Typical stop mode current: <0.1  $\mu$ A

#### 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 clock
- Expanded interrupt handler

### Memory

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

### Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Enhanced Hardware SMBus™ (I2C™ compatible) and UART serial ports
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using PCA or timer and external clock source

### Clock Sources

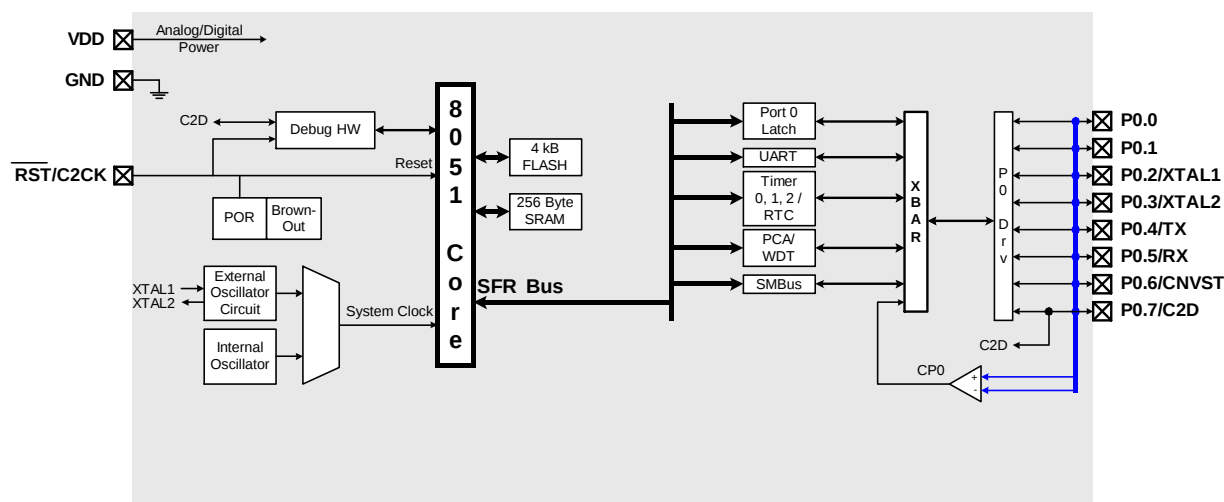
- Internal oscillator: 20 MHz nominal
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

### Package

- 11-pin QFN
- 14-pin SOIC

### Ordering Part Numbers

- Lead-free package: C8051F304-GM (QFN)
- Lead-free package: C8051F304-GS (SOIC)

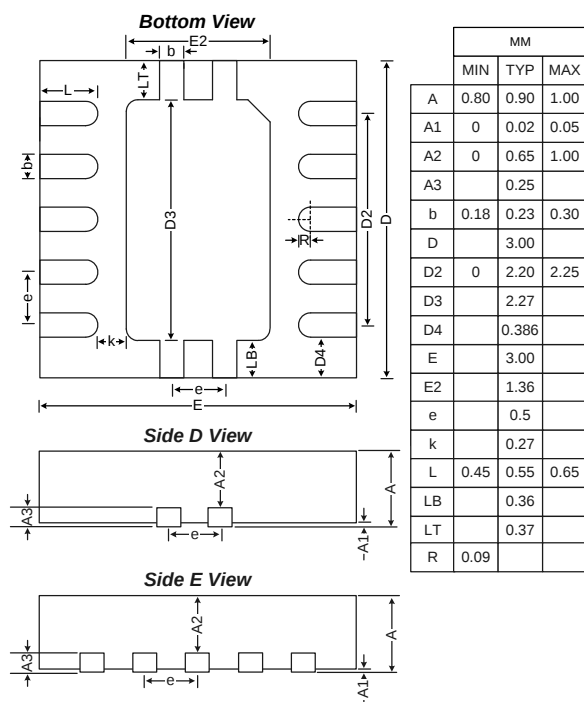


### Selected Electrical Specifications

( $T_A = -40$  to  $+85$  °C,  $V_{DD} = 2.7$  V unless otherwise specified)

| PARAMETER                      | CONDITIONS                                | MIN  | TYP  | MAX  | UNITS |
|--------------------------------|-------------------------------------------|------|------|------|-------|
| <b>GLOBAL CHARACTERISTICS</b>  |                                           |      |      |      |       |
| Supply Voltage                 |                                           | 2.7  |      | 3.6  | V     |
| Supply Current with CPU active | Clock = 25 MHz                            |      | 5.8  |      | mA    |
|                                | Clock = 1 MHz                             |      | 0.34 |      | mA    |
|                                | Clock = 32 kHz; $V_{DD}$ Monitor Disabled |      | 11   |      | μA    |
| Supply Current (shutdown)      | Oscillator off; $V_{DD}$ Monitor Enabled  |      | 10   |      | μA    |
|                                | Oscillator off; $V_{DD}$ Monitor Disabled |      | <0.1 |      | μA    |
| Clock Frequency Range          |                                           | DC   |      | 25   | MHz   |
| <b>INTERNAL OSCILLATOR</b>     |                                           |      |      |      |       |
| Frequency                      |                                           | 15.0 | 20.0 | 25.0 | MHz   |
| <b>COMPARATOR</b>              |                                           |      |      |      |       |
| Response Time Mode0            | (CP+) – (CP-) = 100 mV                    |      | 0.1  |      | μs    |
| Current Consumption Mode0      |                                           |      | 7.6  |      | μA    |
| Response Time Mode1            | (CP+) – (CP-) = 100 mV                    |      | 0.18 |      | μs    |
| Current Consumption Mode1      |                                           |      | 3.2  |      | μA    |
| Response Time Mode2            | (CP+) – (CP-) = 100 mV                    |      | 0.32 |      | μs    |
| Current Consumption Mode2      |                                           |      | 1.3  |      | μA    |
| Response Time Mode3            | (CP+) – (CP-) = 100 mV                    |      | 1    |      | μs    |
| Current Consumption Mode3      |                                           |      | 0.4  |      | μA    |

### Package Information



### C8051F300DK Development Kit

