

Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 μ 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 μ A at 32 kHz
- Typical stop mode current: <0.1 μ A

Temperature Range: -40 to +85 °C

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 clock
- Expanded interrupt handler

Memory

- 256 bytes data RAM
- 8 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

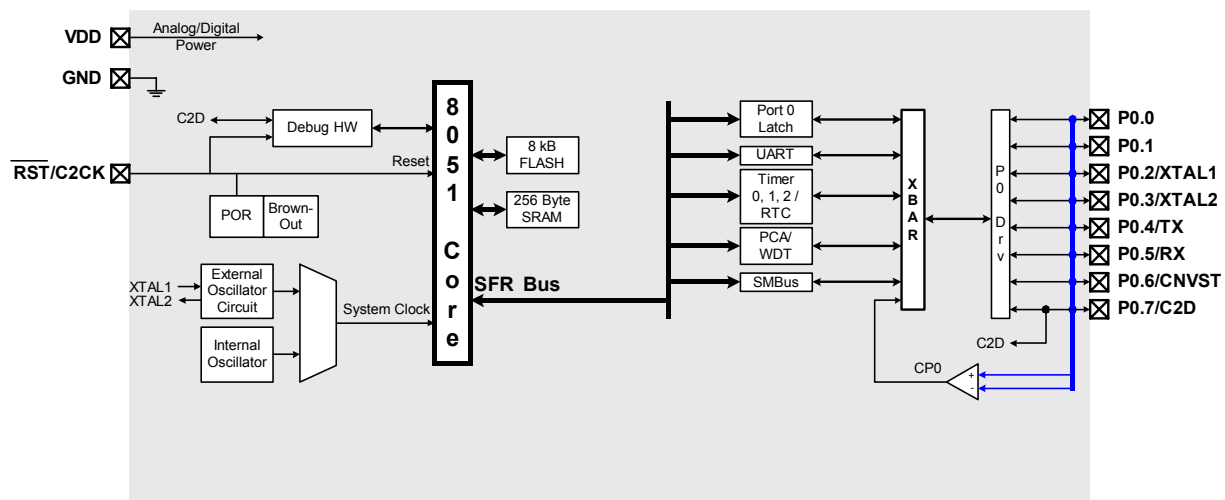
- Internal oscillator: 20 MHz nominal
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Package

- 11-pin MLP (Standard Lead and Lead-free packages)

Ordering Part Numbers

- Lead-free package: C8051F303-GM
- Standard package: C8051F303

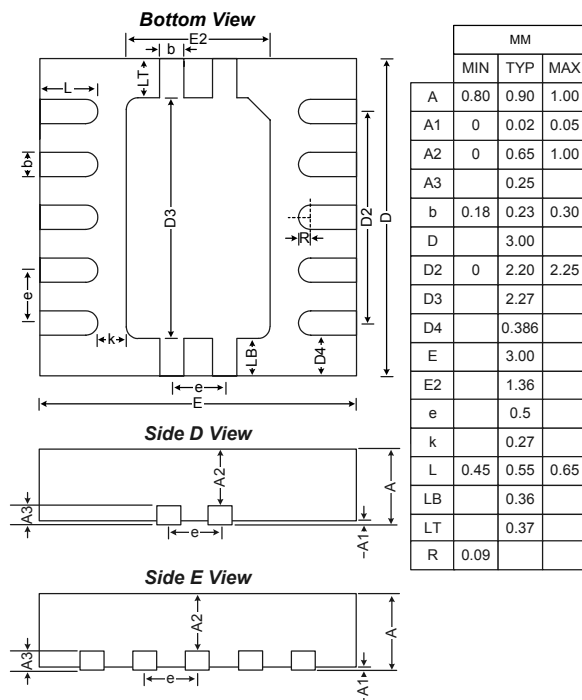


Selected Electrical Specifications

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

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|------------------------------------|---|---------------------|------|---------------------|---------|
| GLOBAL CHARACTERISTICS | | | | | |
| 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 | | μ A |
| Supply Current (shutdown) | Oscillator off; V_{DD} Monitor Enabled | | 10 | | μ A |
| | Oscillator off; V_{DD} Monitor Disabled | | <0.1 | | μ A |
| CPU & DIGITAL I/O PORTS | | | | | |
| Clock Frequency Range | | DC | | 25 | MHz |
| Port Output High Voltage | $I_{OH} = -3$ mA, Port I/O push-pull | $V_{DD} - 0.7$ | | | V |
| Port Output Low Voltage | $I_{OL} = 8.5$ mA | | | 0.6 | V |
| Input High Voltage | | $0.7 \times V_{DD}$ | | | V |
| Input Low Voltage | | | | $0.3 \times V_{DD}$ | V |
| INTERNAL OSCILLATOR | | | | | |
| Frequency | | 15.0 | 20.0 | 25.0 | MHz |
| COMPARATOR | | | | | |
| Response Time Mode0 | $(CP+) - (CP-) = 100$ mV | | 0.1 | | μ s |
| Current Consumption Mode0 | | | 7.6 | | μ A |
| Response Time Mode1 | $(CP+) - (CP-) = 100$ mV | | 0.18 | | μ s |
| Current Consumption Mode1 | | | 3.2 | | μ A |
| Response Time Mode2 | $(CP+) - (CP-) = 100$ mV | | 0.32 | | μ s |
| Current Consumption Mode2 | | | 1.3 | | μ A |
| Response Time Mode3 | $(CP+) - (CP-) = 100$ mV | | 1 | | μ s |
| Current Consumption Mode3 | | | 0.4 | | μ A |

Package Information



C8051F300DK Development Kit

