

Analog Peripherals

Two 16-Bit ADCs

- ± 1.5 LSB INL; guaranteed no missing codes
- Programmable throughput up to 1 Msps (each ADC)
- Configurable as two single-ended or one differential ADC
- DMA to XRAM or external memory interface
- Data-dependent windowed interrupt generator

10-Bit ADC

- Programmable throughput up to 200 ksp/s
- 8 external inputs
- Built-in temperature sensor (± 3 °C)

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Three Comparators

Internal Voltage Reference

Precision V_{DD} 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: 2.7 to 3.6 V

- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

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 system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

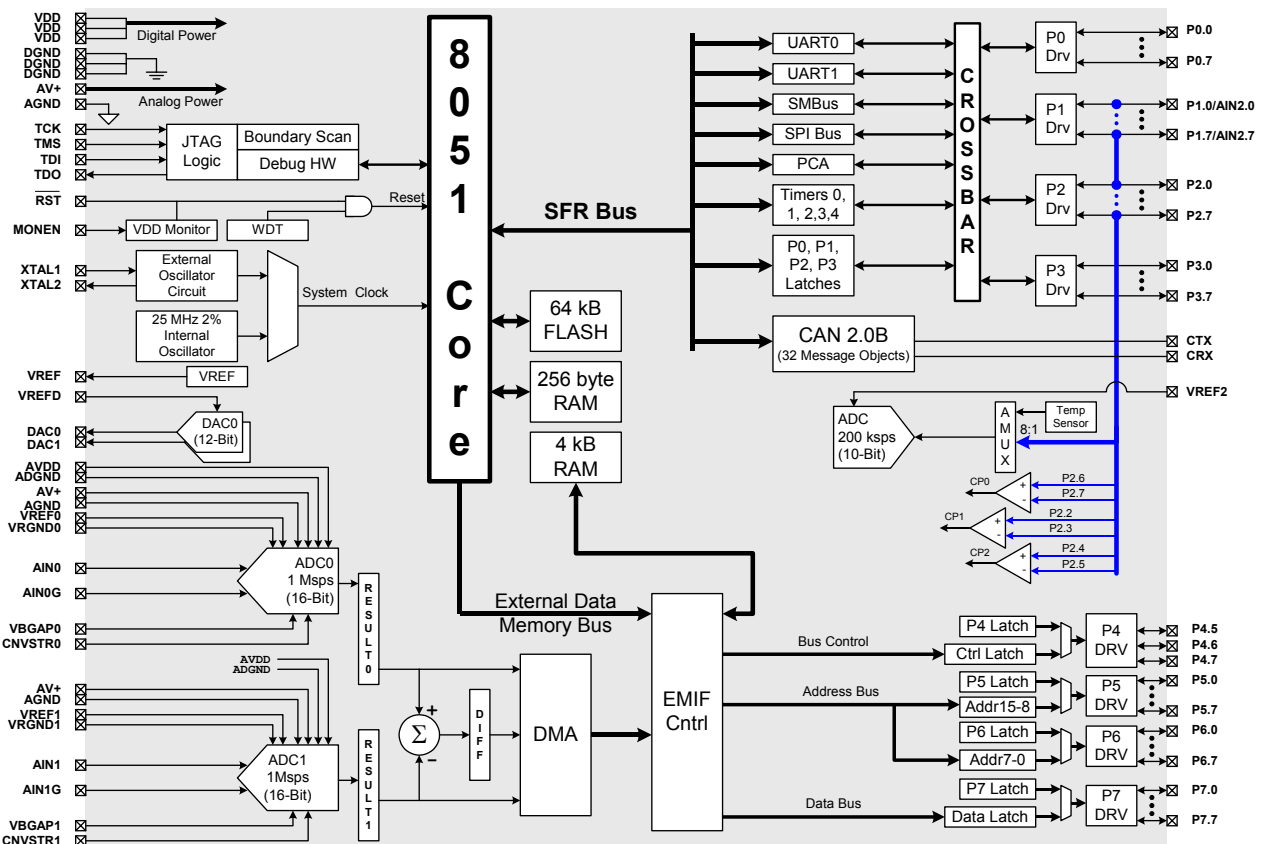
- 24 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timers or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 24.5 MHz
- External oscillator: Crystal, RC, C, or Clock

100-Pin TQFP

- Temperature Range: -40 to $+85$ °C

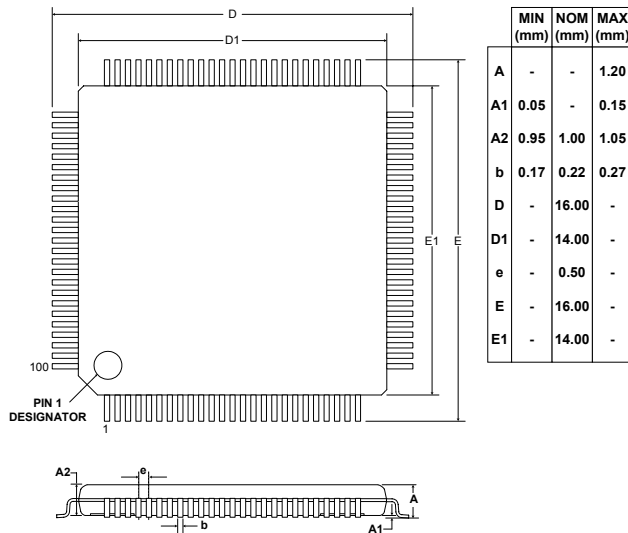


Selected Electrical Specifications

($T_A = -40$ 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 (CPU active) | Clock = 25 MHz | | 18 | | mA |
| | Clock = 1 MHz | | 0.7 | | mA |
| | Clock = 32 kHz; V_{DD} Monitor Enabled | | 20 | | μ A |
| Supply Current (shutdown) | Oscillator not running; V_{DD} Monitor Disabled | | 0.1 | | μ A |
| Clock Frequency Range | | DC | | 25 | MHz |
| 16-BIT A/D CONVERTERS | | | | | |
| Resolution | | | 16 | | bits |
| Integral Nonlinearity | Single-ended Mode | | ± 1.5 | ± 4 | LSB |
| | Differential Mode | | ± 1 | ± 2 | LSB |
| Differential Nonlinearity | Guaranteed Monotonic | | ± 0.5 | ± 1 | LSB |
| Signal-to-Noise Plus Distortion | $F_{in} = 10$ kHz, Single-ended | | 86 | | dB |
| | $F_{in} = 10$ kHz, Differential | | 89 | | dB |
| Total Harmonic Distortion | $F_{in} = 10$ kHz, Single-ended | | 96 | | dB |
| | $F_{in} = 10$ kHz, Differential | | 103 | | dB |
| Spurious-Free Dynamic Range | $F_{in} = 10$ kHz, Single-ended | | 97 | | dB |
| | $F_{in} = 10$ kHz, Differential | | 104 | | dB |
| Throughput Rate | | | | 1 | Msp/s |
| Input Voltage Range | Single-ended (AINn–AINnG) | 0 | | V_{REF} | V |
| | Differential (AIN0–AIN1) | $-V_{REF}$ | | V_{REF} | V |
| Power Supply Current (each ADC) | Operating Mode, 1 Msp/s (AVDD + AV+) | | 5.5 | | mA |
| | Shutdown Mode | | 1 | | μ A |
| D/A CONVERTERS | | | | | |
| Resolution | | | 12 | | LSB |
| Differential Nonlinearity | | | | ± 1 | LSB |
| Output Settling Time | | | 10 | | μ s |

Package Information



C8051F060DK Development Kit

