

### Analog Peripherals

#### 10-Bit ADC

- Programmable throughput up to 200 ksp/s
- Up to 16 external inputs; programmable as single-ended or differential
- Reference from internal  $V_{REF}$ ,  $V_{DD}$ , or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor

#### 10-bit DAC (Current Mode)

#### Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current

### 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**

**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

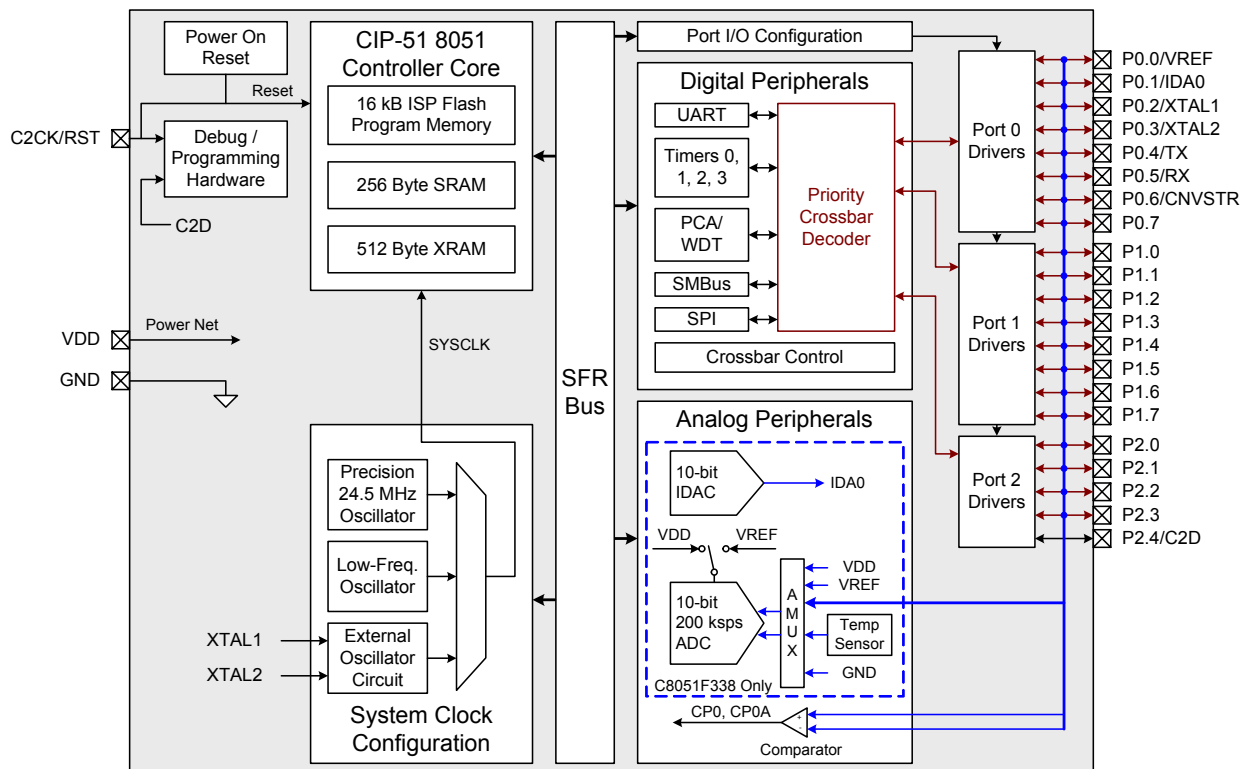
- 768 bytes data RAM
- 16 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

### Digital Peripherals

- 21 port I/O; all are 5 V tolerant
- Hardware SMBus™ ( $I^2C$ ™ compatible), SPI™, and crystalless-UART serial ports available concurrently
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Timer with real-time clock mode
- Clock sources
  - Two internal oscillators:
    - Precision 24.5 MHz, 2% accuracy over  $V_{DD}$  and temperature
    - 80 kHz low frequency, low-power
  - External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly
- Suspend mode for maximum power savings with fast wake-up (<1  $\mu$ s)

### Package

- 24-pin QFN

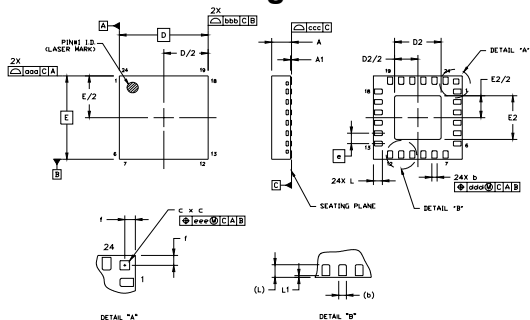


### Selected Electrical Specifications

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

	Conditions	Min	Typ	Max	Units
<b>Global Characteristics</b>					
Supply Voltage				3.6	V
Supply Current with CPU Active	Clock = 25 MHz	—	TBD	—	mA
	Clock = 1 MHz	—	TBD	—	mA
	Clock = 80 kHz; $V_{DD}$ monitor disabled	—	TBD	—	$\mu$ A
	Clock = 32 kHz; $V_{DD}$ monitor disabled	—	TBD	—	$\mu$ A
Supply Current (shutdown)	Oscillator off; $V_{DD}$ monitor disabled	—	TBD	—	$\mu$ A
Clock Frequency Range			—	25	MHz
<b>Internal Oscillators</b>					
Frequency (OSC0)			24.5	25.0	MHz
Frequency (OSC1)			80	—	kHz
<b>A/D Converter</b>					
Resolution					bits
Integral Nonlinearity			$\pm 1/2$	TBD	LSB
Differential Nonlinearity	Guaranteed monotonic	—	$\pm 1/2$	TBD	LSB
Signal-to-Noise Plus Distortion			55.5	—	dB
Throughput Rate			—	200	ksps
Input Voltage Range			—	$V_{REF}$	V
<b>D/A Converter</b>					
Resolution					bits
Integral Nonlinearity			$\pm 1/2$	—	LSB
Differential Nonlinearity	Guaranteed monotonic	—	$\pm 1/2$	TBD	LSB
Output Settling Time			5	—	$\mu$ s
<b>Comparator</b>					
Response Time Mode0	$(CP+) - (CP-) = 100$ mV	—	TBD	—	$\mu$ s
Current Consumption Mode0			TBD	—	$\mu$ A
Response Time Mode1	$(CP+) - (CP-) = 100$ mV	—	TBD	—	$\mu$ s
Current Consumption Mode1			TBD	—	$\mu$ A
Response Time Mode2	$(CP+) - (CP-) = 100$ mV	—	TBD	—	$\mu$ s
Current Consumption Mode2			TBD	—	$\mu$ A
Response Time Mode3	$(CP+) - (CP-) = 100$ mV	—	TBD	—	$\mu$ s
Current Consumption Mode3			TBD	—	$\mu$ A

### QFN-24 Package Information



Dimension	Millimeters			Dimension	Millimeters		
	Min	Nom	Max		Min	Nom	Max
A	0.80	0.85	0.90	E2	2.00	2.10	2.20
A1	0.00	0.02	0.05	L	0.30	0.40	0.50
b	0.18	0.25	0.30	L1	0.03	0.05	0.08
c	0.19	0.24	0.29	aaa	—	—	0.10
D	4.00 BSC.			bbb	—	—	0.10
D2	2.00	2.10	2.20	ccc	—	—	0.08
e	0.50 BSC.			ddd	—	—	0.10
f	0.27 BSC.			eee	—	—	0.10
E	4.00 BSC.						

### C8051F338DK Development Kit

