

25 MIPS, 8 kB Flash, 12-Bit ADC, 48-Pin Mixed-Signal MCU

Analog Peripherals

12-Bit ADC

- No missing codes
- Programmable throughput up to 100 ksps
- 32 external inputs (each port I/O can be configured as an ADC input onthe-fly)
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- V_{REF} from external pin or V_{DD}

Two comparators

- Programmable hysteresis
- Configurable to generate interrupts or reset

V_{DD} Monitor and Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Supply Voltage: 2.7 to 3.6 V

- Typical operating current: 9 mA at 25 MHz
- Typical stop mode current: <0.1 μA

Temperature Range: -40 to +85 °C

High-Speed 8051 µC 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; up to 21 interrupt sources

Memory

- 1280 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O: all are 5 V tolerant
- Hardware SPI™ and UART serial ports available concurrently
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

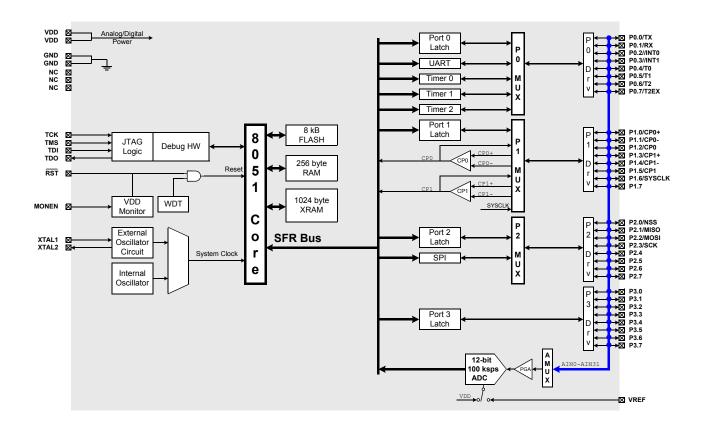
- Internal programmable oscillator: 2-16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Package

- 48-pin TQFP (standard lead and lead-free packages)

Ordering Part Numbers

- Lead-free package: C8051F206-GQ
- Standard package: C8051F206



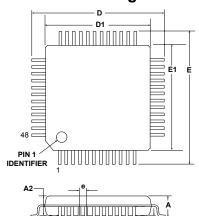
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Selected Electrical Specifications

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

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS		
GLOBAL CHARACTERISTICS							
Digital Supply Voltage		2.7		3.6	V		
Digital Supply Current	Clock = 25 MHz		9		mA		
with CPU active	Clock = 1 MHz		0.4		mA		
	Clock = 32 kHz; V _{DD} Monitor Enabled		20		μΑ		
Digital Supply Current	Oscillator not running; V _{DD} Monitor		10		μΑ		
(shutdown)	Enabled						
	Oscillator not running; V _{DD} Monitor		0.1		μΑ		
	Disabled						
Digital Supply RAM Data			1.5		V		
Retention Voltage							
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		
SPI Bus Clock Frequency	fCLK=MCU Clock; SPI Master Mode			fCLK/2	MHz		
A/D CONVERTER							
Resolution			12		bits		
Integral Nonlinearity			±1	±2	LSB		
Differential Nonlinearity	Guaranteed Monotonic			±1	LSB		
Signal-to-Noise Plus		64			dB		
Distortion							
Throughput Rate				100	ksps		
Input Voltage Range		0		V_{REF}	V		
COMPARATORS							
Supply Current	(each Comparator)		1.3		μA		
Response Time	CP+ – CP- = 100 mV		4		μs		
Input Voltage Range		-0.25		VDD + 0.25	V		
Input Bias Current		- 5	0.001	+5	nA		
Input Offset Voltage		-10		+10	mV		

Package Information



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		MIN (mm)	NOM (mm)	l .				
	A	-	-	1.20				
	A 1	0.05	-	0.15				
	A2	0.95	1.00	1.05				
	b	0.17	0.22	0.27				
	D	-	9.00	-				
	D1	-	7.00	-				
	е	-	0.50	-				
	E	-	9.00	-				
	E1	-	7.00	-				

C8051F206DK Development Kit

