

50 MIPS, 16x16 MAC, 32 kB Flash, 10-Bit ADC, Mixed-Signal MCU

Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 17 external inputs; programmable as single-ended or differential
- Reference from internal V_{RFF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor (±3 °C)

10-bit DAC (Current Mode)

Two Comparators

- 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 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

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

Digital Peripherals

- 25 port I/O: all are 5 V tolerant
- Hardware SMBus™ (I2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

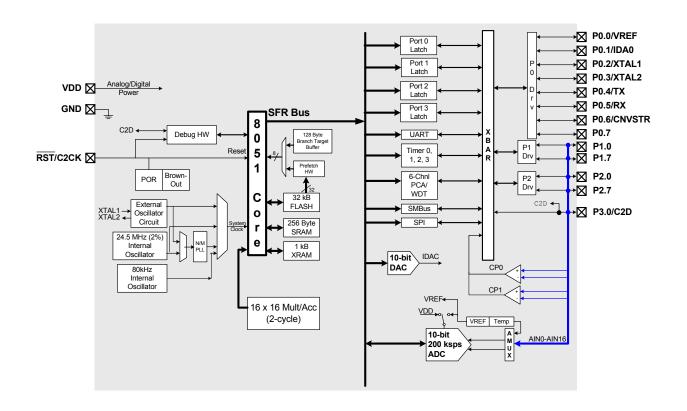
- Two internal oscillators:
 - 24.5 MHz, 2% accuracy supports UART operation
 - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- On-Chip programmable PLL: up to 50 MHz

Package

- 28-pin QFN
- Pin compatible with C8051F311

Ordering Part Number

- C8051F367-GM





50 MIPS, 16x16 MAC, 32 kB Flash, 10-Bit ADC, Mixed-Signal MCU

Selected Electrical Specifications

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

Parameter	Conditions	Min	Тур	Max	Units
	Global Characteristics				
Supply Voltage		2.7	_	3.6	V
	Clock = 100 MHz	_	TBD	_	mA
Supply Current with	Clock = 25 MHz	_	TBD	_	mA
CPU active	Clock = 1 MHz	_	TBD	_	μA
0 0 1 (-1	Clock = 80 kHz; V _{DD} Monitor Disabled Clock = 32 kHz; V _{DD} Monitor Disabled	_	TBD	_	μA
Supply Current (shutdown)	Oscillator off; V _{DD} Monitor Disabled		<0.1		μA
Clock Frequency Range		DC	_	100	MHz
Internal Oscillators					
Frequency (OSC0)		24.0	24.5	25.0	MHz
Frequency (OSC1)	OSC1 can be calibrated in 2.5% steps using an internal calibration register.	_	80	_	kHz
	A/D Converter				
Resolution			10		bits
Integral Nonlinearity		TBD	±0.5	TBD	LSB
Differential Nonlinearity	Guaranteed Monotonic	TBD	±0.5	TBD	LSB
Signal-to-Noise Plus Distortion		TBD	TBD	_	dB
Throughput Rate		_	_	200	ksps
Input Voltage Range		0	_	V_{REF}	V
	D/A Converter		l		
Resolution			10		bits
Integral Nonlinearity		_	±0.5	TBD	LSB
Differential Nonlinearity	Guaranteed Monotonic	_	±0.5	TBD	LSB
Output Settling Time		_	5	_	μs
	Comparator				
Response Time Mode0	(CP+) - (CP-) = 100 mV	_	100	_	ns
Current Consumption Mode0		_	TBD	_	μA
Response Time Mode1	(CP+) - (CP-) = 100 mV	_	175	_	ns
Current Consumption Mode1			TBD	_	μA
Response Time Mode2	(CP+) - (CP-) = 100 mV	_	320	_	ns
Current Consumption Mode2		_	TBD	_	μA
Response Time Mode3	(CP+) – (CP-) = 100 mV		1050	_	ns
Current Consumption Mode3			TBD	_	μA

Package Information

C8051F360DK Development Kit

