C8051F120

100 MIPS, 128 kB Flash, 12-Bit ADC, 100-Pin Mixed-Signal MCU

Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

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

Two Comparators

Internal Voltage Reference

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

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

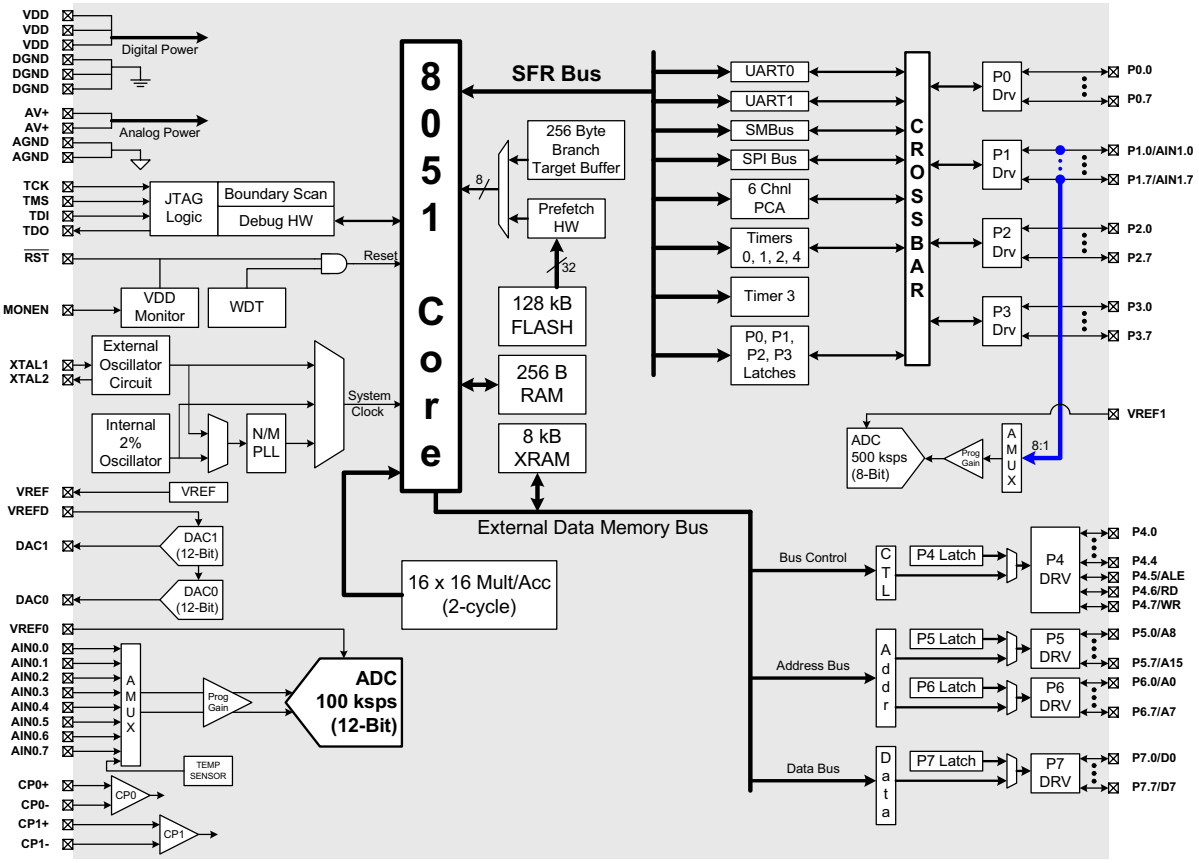
- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 100 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 3.0 to 3.6 V

- Typical operating current: 50 mA at 100 MHz
- Typical stop mode current: 0.4 uA

100-Pin TQFP

Temperature Range: –40 to +85 °C



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