



C8051F High Performance Mixed-Signal MCUs (Cont.) Automotive



Flash Mem. (Bytes)	RAM (Bytes)	Digital Port I/O Pins	Timers (16-Bit)	PCA Chnls	Serial Buses	ADC	Comp.	Temp. Range	Internal Osc	MIPS (peak)	Package	Digi-Key Part No.	Price Each			Silicon Labs Part No.	Development Kit Part No.
													1	25	100		
2K	256	16	3	3	SPI™, UART	12-Bit, 16-Ch., 200ksps	1	-40°C ~ 125°C	±0.5%	25	20-TSSOP	336-1401-ND	2.80	2.24	1.87	C8051F537-IT	C8051F530DK
8K	256	16	3	3	LIN 2.0, SPI, UART	12-Bit, 16-Ch., 200ksps	1	-40°C ~ 125°C	±0.5%	25	20-OFN	336-1342-ND	3.30	2.64	2.20	C8051F530-IM	C8051F530DK
32K	256	40	4	6	I²C, SPI, UART	12-Bit, 32-Ch., 200ksps	2	-40°C ~ 125°C	±0.5%	50	48-OFN	336-1518-ND	5.02	4.02	3.35	C8051F504-IQ	C8051F500DK
32K	256	40	4	6	I²C, SPI, UART	12-Bit, 32-Ch., 200ksps	2	-40°C ~ 125°C	±0.5%	50	48-OFN	336-1519-5-ND†	4.65	3.73	3.11	C8051F504-IM	C8051F500DK
32K	256	40	4	6	I²C, SPI, UART	12-Bit, 32-Ch., 200ksps	2	-40°C ~ 125°C	±1.0%	50	48-OFN	336-1520-ND	4.74	3.79	3.16	C8051F505-IQ	C8051F500DK
32K	256	40	4	6	I²C, SPI, UART	12-Bit, 32-Ch., 200ksps	2	-40°C ~ 125°C	±1.0%	50	48-OFN	336-1521-5-ND†	4.39	3.52	2.93	C8051F505-IM	C8051F500DK
32K	256	24	4	6	I²C, SPI, UART	12-Bit, 28-Ch., 200ksps	2	-40°C ~ 125°C	±0.5%	50	32-OFN	336-1522-ND	4.70	3.77	3.14	C8051F506-IQ	C8051F500DK
32K	256	24	4	6	I²C, SPI, UART	12-Bit, 28-Ch., 200ksps	2	-40°C ~ 125°C	±0.5%	50	32-OFN	336-1523-5-ND†	4.30	3.44	2.87	C8051F506-IM	C8051F500DK
32K	256	24	4	6	I²C, SPI, UART	12-Bit, 28-Ch., 200ksps	2	-40°C ~ 125°C	±1.0%	50	32-QFP	336-1524-ND	4.44	3.56	2.97	C8051F507-IQ	C8051F500DK
32K	256	24	4	6	I²C, SPI, UART	12-Bit, 28-Ch., 200ksps	2	-40°C ~ 125°C	±1.0%	50	32-OFN	336-1525-5-ND†	4.02	3.22	2.68	C8051F507-IM	C8051F500DK
64K	256	40	4	6	I²C, SPI, UART	12-Bit, 32-Ch., 200ksps	2	-40°C ~ 125°C	±0.5%	50	48-OFN	336-1510-ND	3.87	3.10	2.59	C8051F500-IQ	C8051F500DK
64K	256	40	4	6	I²C, SPI, UART	12-Bit, 32-Ch., 200ksps	2	-40°C ~ 125°C	±0.5%	50	48-OFN	336-1511-5-ND†	5.11	4.10	3.41	C8051F500-IM	C8051F500DK
64K	256	40	4	6	I²C, SPI, UART	12-Bit, 28-Ch., 200ksps	2	-40°C ~ 125°C	±1.0%	50	48-OFN	336-1512-ND	5.29	4.24	3.53	C8051F501-IQ	C8051F500DK
64K	256	40	4	6	I²C, SPI, UART	12-Bit, 28-Ch., 200ksps	2	-40°C ~ 125°C	±1.0%	50	48-OFN	336-1513-5-ND†	4.92	3.94	3.28	C8051F501-IM	C8051F500DK
64K	256	24	4	6	I²C, SPI, UART	12-Bit, 28-Ch., 200ksps	2	-40°C ~ 125°C	±0.5%	50	32-OFN	336-1514-ND	5.24	4.20	3.50	C8051F502-IQ	C8051F500DK
64K	256	24	4	6	I²C, SPI, UART	12-Bit, 28-Ch., 200ksps	2	-40°C ~ 125°C	±0.5%	50	32-OFN	336-1515-5-ND†	4.78	3.83	3.20	C8051F502-IM	C8051F500DK
64K	256	24	4	6	I²C, SPI, UART	12-Bit, 28-Ch., 200ksps	2	-40°C ~ 125°C	±1.0%	50	32-QFP	336-1516-ND	4.98	3.99	3.33	C8051F503-IQ	C8051F500DK
64K	256	24	4	6	I²C, SPI, UART	12-Bit, 28-Ch., 200ksps	2	-40°C ~ 125°C	±1.0%	50	32-OFN	336-1517-5-ND†	4.54	3.64	3.03	C8051F503-IM	C8051F500DK

† Tube

C8051T High Performance Mixed-Signal MCUs OTP



C8051Tx devices are fully integrated mixed-signal System-on-a-Chip MCUs.

Performance Specifications:

- High-speed pipelined 8051-compatible microcontroller core (up to 25MIPS)
- In-system, full-speed, non-intrusive debug interface (on-chip)
- C8051F31xISP Flash devices are available for quick in-system code development
- Precision calibrated 24.5MHz internal oscillator
- 16kB (C8051T610/1/6/7), 8kB (C8051T612/3/4/5, C8051T630/1 and C8051T600), 4kB (C8051T632/3) and 2kB (C8051T634/5) byte-programmable EPROM
- SMBus/I²C, Enhanced UART and SPI™ serial interfaces implemented in hardware
- Four general-purpose 16-bit timers
- Programmable Counter/Timer Array (PCA) with five capture/compare modules and Watchdog Timer function
- On-chip Power-On Reset, V_{DD} Monitor and Temperature Sensor

With on-chip Power-On Reset, V_{DD} monitor, Watchdog Timer and clock oscillator, the C8051T61x devices are truly stand-alone System-on-a-Chip solutions. User software has complete control of all peripherals and may individually shut down any or all peripherals for power savings.

Code written for the C8051T61x family of processors will run on the C8051F31x family of Mixed-signal ISP Flash Microcontrollers, providing a quick, cost effective way to develop code without requiring special emulator circuitry. The C8051T61x processors include Silicon Laboratories' 2-Wire C2 Debug and Programming interface, which allows non-intrusive (uses no on-chip resources), full speed, in-circuit debugging using the production MCU installed in the final application. This debug logic supports inspection of the memory, viewing and modification of special function registers, setting breakpoints, single stepping, run and halt commands. All analog and digital peripherals are fully functional while debugging using C2. The two C2 interface pins can be shared with user functions, allowing in-system debugging without occupying package pins.

Each device is specified for 1.8V ~ 3.6 V operation over the industrial temperature range (C8051T61x: -45°C ~ 85°C; C8051T63x/60x: -40°C ~ 85°C). An internal LDO is used to supply the processor core voltage at 1.8V. The Port I/O and RST pins are tolerant of input signals up to 5V. The C8051T61x are available in 32-pin LQFP, 28-pin QFN and 24-pin QFN packages.

Flash Mem. (Bytes)	RAM (Bytes)	Digital Port I/O Pins	Timers (16-Bit)	PCA Chnls	Serial Buses	ADC1	ADC2	DAC	Comp.	Other	Internal Osc	MIPS (peak)	Package	Digi-Key Part No.	Price Each			Silicon Labs Part No.	Development Kit Part No.
															1	25	100		
16K	1280	29	4	5	UART SMBus	10-Bit, 8-Ch., 500ksps	—	—	2	—	±2%	25	32-LQFP	336-1435-ND	3.06	2.45	2.04	C8051T610-GQ	C8051F610DK
16K	1280	25	4	5	UART SMBus	10-Bit, 8-Ch., 500ksps	—	—	2	—	±2%	25	28-OFN	336-1436-5-ND†	2.42	1.94	1.62	C8051T611-GM	C8051F610DK
16K	1280	21	4	5	UART SMBus	10-Bit, 8-Ch., 500ksps	—	—	2	—	±2%	25	24-OFN	336-1437-5-ND†	1.95	1.56	1.30	C8051T616-GM	C8051F610DK
16K	1280	21	4	5	UART SMBus	—	—	—	2	—	±2%	25	24-OFN	336-1438-5-ND†	1.71	1.38	1.15	C8051T617-GM	C8051F610DK
8K	1280	29	4	5	UART SMBus	10-Bit, 8-Ch., 500ksps	—	—	2	—	±2%	25	32-LQFP	336-1439-ND	2.39	1.91	1.59	C8051T612-GQ	C8051F610DK
8K	1280	25	4	5	UART SMBus	10-Bit, 8-Ch., 500ksps	—	—	2	—	±2%	25	28-OFN	336-1440-5-ND†	1.96	1.57	1.31	C8051T613-GM	C8051F610DK
8K	1280	25	4	5	UART SMBus	—	—	—	2	—	±2%	25	28-OFN	336-1442-5-ND†	1.75	1.40	1.17	C8051T615-GM	C8051F610DK
8K	768	17	4	3	UART, SPI™, I²C	10-Bit, 16-Ch., 500ksps	—	10-Bit, 1-Ch.	1	VREG, LFO	±2%	25	20-OFN	336-1458-5-ND†	1.65	1.32	1.10	C8051T630-GM	C8051T630DK
8K	768	17	4	3	UART, SPI, I²C	—	—	—	1	VREG, LFO	±2%	25	20-OFN	336-1459-5-ND†	1.58	1.27	1.06	C8051T631-GM	C8051T630DK
8K	256	8	3	3	UART, I²C	10-Bit, 8-Ch., 500ksps	—	—	1	VREG	±2%	25	11-OFN	336-1402-5-ND†	.97	.78	.65	C8051T600-GM	C8051T600DK
8K	256	8	3	3	UART, I²C	10-Bit, 8-Ch., 500ksps	—	—	1	VREG	±2%	25	14-SOIC	336-1403-5-ND†	.97	.78	.65	C8051T600-GS	C8051T600DK
4K	768	17	4	3	UART, SPI, I²C	10-Bit, 16-Ch., 500ksps	—	10-Bit, 1-Ch.	1	VREG, LFO	±2%	25	20-OFN	336-1460-5-ND†	1.31	1.05	.88	C8051T632-GM	C8051T630DK
4K	768	17	4	3	UART, SPI, I²C	—	—	—	1	VREG, LFO	±2%	25	20-OFN	336-1461-5-ND†	1.28	1.02	.85	C8051T633-GM	C8051T630DK
2K	768	17	4	3	UART, SPI, I²C	10-Bit, 16-Ch., 500ksps	—	10-Bit, 1-Ch.	1	VREG, LFO	±2%	25	20-OFN	336-1462-5-ND†	1.11	.89	.75	C8051T634-GM	C8051T630DK
2K	768	17	4	3	UART, SPI, I²C	—	—	—	1	VREG, LFO	±2%	25	20-OFN	336-1463-5-ND†	1.03	.83	.69	C8051T635-GM	C8051T630DK

† Tube

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