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## Mixed-Signal MCU Selector Guide

### High-Performance 8051, Highest Functional Density

- Highest Performance Integrated Analog
  - Up to 24-bit ADCs
  - Up to 1 Msps ADCs
- World's Fastest 8-bit MCU
  - Up to 100 MIPS
- Smallest Mixed-Signal MCU Footprint
  - 3 x 3 mm
- World's Lowest-Voltage/Low-Power MCUs



# Low-Voltage/Low-Power MCUs

## Lowest Voltage Operation

- Single-cell mode supports 0.9 to 1.8 V operation
- Dual-cell mode supports 1.8 to 3.6 V operation

## Greatest Power Efficiency

- Ultra-low current sleep mode; fast wake-up time; low active current

## Highest Functional Density

- 64 kB of Flash and 4 kB of RAM into a 4 x 4 mm package

## Best-in-Class Tools

- Complete, low-cost professional development kit and inexpensive ToolStick daughter card option help speed design and accelerate market entry



Part Number	Flash Memory	MIPS (peak)	RAM (bytes)	Dig. I/O	Serial Buses	Timers (16-bit)	PCA Chnls	Internal Osc	ADC	DAC	Temp Sensor	VREF	Comp.	Other	Package	Dev Kit
C8051F930	64 kB	25	4352	24	UART, EMIF I <sup>2</sup> C, 2 SPI	4	6	±2%	10-bit, 23-ch., 300 ksp/s	-	Y	Y	2	smaRTClock; up to 23 touch sense inputs	QFN32/LQFP32	C8051F930DK
C8051F931	64 kB	25	4352	16	UART, I <sup>2</sup> C, 2SPI	4	6	±2%	10-bit, 15-ch., 300 ksp/s	-	Y	Y	2	smaRTClock; up to 15 touch sense inputs	QFN24	C8051F930DK
C8051F920	32 kB	25	4352	24	UART, EMIF I <sup>2</sup> C, 2 SPI	4	6	±2%	10-bit, 23-ch., 300 ksp/s	-	Y	Y	2	smaRTClock; up to 23 touch sense inputs	QFN32/LQFP32	C8051F930DK
C8051F921	32 kB	25	4352	16	UART, I <sup>2</sup> C, 2 SPI	4	6	±2%	10-bit, 15-ch., 300 ksp/s	-	Y	Y	2	smaRTClock; up to 15 touch sense inputs	QFN24	C8051F930DK

# Small Form Factor Mixed-Signal MCUs

Part Number	Flash Memory	MIPS (peak)	RAM (bytes)	Dig. I/O	Serial Buses	Timers (16-bit)	PWM/PCA	Internal Osc	ADC	DAC	Temp Sensor	VREF	Comp.	Other	Package	OTP-EPROM Version	Dev Kit
C8051F410	32 kB	50	2304	24	I <sup>2</sup> C, SPI, UART	4	6	±2%	12-bit, 24-ch., 200 ksp/s	12-bit, 2-ch.	Y	Y	2	VREG, smaRTClock	LQFP32	-	C8051F410DK
C8051F411	32 kB	50	2304	20	I <sup>2</sup> C, SPI, UART	4	6	±2%	12-bit, 20-ch., 200 ksp/s	12-bit, 2-ch.	Y	Y	2	VREG, smaRTClock	QFN28	-	C8051F410DK
C8051F412	16 kB	50	2304	24	I <sup>2</sup> C, SPI, UART	4	6	±2%	12-bit, 24-ch., 200 ksp/s	12-bit, 2-ch.	Y	Y	2	VREG, smaRTClock	LQFP32	-	C8051F410DK
C8051F413	16 kB	50	2304	20	I <sup>2</sup> C, SPI, UART	4	6	±2%	12-bit, 20-ch., 200 ksp/s	12-bit, 2-ch.	Y	Y	2	VREG, smaRTClock	QFN28	-	C8051F410DK
C8051F360	32 kB	100	1280	39	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	10-bit, 2-ch.	Y	Y	2	16x16 MAC	TQFP48	-	C8051F360DK
C8051F361	32 kB	100	1280	27	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	10-bit, 2-ch.	Y	Y	2	16x16 MAC	LQFP32	-	C8051F360DK
C8051F362	32 kB	100	1280	24	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	10-bit, 2-ch.	Y	Y	2	16x16 MAC	QFN28	-	C8051F360DK
C8051F363	32 kB	100	1280	39	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	2	16x16 MAC	TQFP48	-	C8051F360DK
C8051F364	32 kB	100	1280	27	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	2	16x16 MAC	LQFP32	-	C8051F360DK
C8051F365	32 kB	100	1280	24	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	2	16x16 MAC	QFN28	-	C8051F360DK
C8051F366	32 kB	50	1280	29	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	-	Y	Y	2	16x16 MAC	LQFP32	-	C8051F360DK
C8051F367	32 kB	50	1280	25	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	-	Y	Y	2	16x16 MAC	QFN28	-	C8051F360DK
C8051F368	16 kB	50	1280	29	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	-	Y	Y	2	16x16 MAC	LQFP32	-	C8051F360DK
C8051F369	16 kB	50	1280	25	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	-	Y	Y	2	16x16 MAC	QFN28	-	C8051F360DK
C8051F336	16 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	10-bit, 1-ch.	-	-	1	LFO	QFN20	-	C8051F336DK
C8051F337	16 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	1	LFO	QFN20	-	C8051F336DK
C8051F338	16 kB	25	768	21	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	10-bit, 1-ch.	-	-	1	LFO	QFN24	-	C8051F336DK
C8051F339	16 kB	25	768	21	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	1	LFO	QFN24	-	C8051F336DK
C8051F310	16 kB	25	1280	29	I <sup>2</sup> C, SPI, UART	4	5	±2%	10-bit, 21-ch., 200 ksp/s	-	Y	-	2	-	LQFP32	T610	C8051F310DK
C8051F311	16 kB	25	1280	25	I <sup>2</sup> C, SPI, UART	4	5	±2%	10-bit, 17-ch., 200 ksp/s	-	Y	-	2	-	QFN28	T611	C8051F310DK
C8051F312	8 kB	25	1280	29	I <sup>2</sup> C, SPI, UART	4	5	±2%	10-bit, 21-ch., 200 ksp/s	-	Y	-	2	-	LQFP32	T612	C8051F310DK
C8051F313	8 kB	25	1280	25	I <sup>2</sup> C, SPI, UART	4	5	±2%	10-bit, 17-ch., 200 ksp/s	-	Y	-	2	-	QFN28	T613	C8051F310DK
C8051F314	8 kB	25	1280	29	I <sup>2</sup> C, SPI, UART	4	5	±2%	-	-	Y	-	2	-	LQFP32	T614	C8051F310DK
C8051F315	8 kB	25	1280	25	I <sup>2</sup> C, SPI, UART	4	5	±2%	-	-	Y	-	2	-	QFN28	T615	C8051F310DK
C8051F316	16 kB	25	1280	21	I <sup>2</sup> C, SPI, UART	4	5	±2%	10-bit, 13-ch., 200 ksp/s	-	Y	-	2	-	QFN24	T616	C8051F310DK
C8051F317	16 kB	25	1280	21	I <sup>2</sup> C, SPI, UART	4	5	±2%	-	-	Y	-	2	-	QFN24	T617	C8051F310DK
C8051F530A	8 kB	25	256	16	LIN 2.0, SPI, UART	3	3	±0.5%	12-bit, 16-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN20/TSSOP20	-	C8051F530DK
C8051F531A	8 kB	25	256	16	SPI, UART	3	3	±0.5%	12-bit, 16-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN20/TSSOP20	-	C8051F530DK
C8051F533A	4 kB	25	256	16	LIN 2.0, SPI, UART	3	3	±0.5%	12-bit, 16-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN20/TSSOP20	-	C8051F530DK
C8051F534A	4 kB	25	256	16	SPI, UART	3	3	±0.5%	12-bit, 16-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN20/TSSOP20	-	C8051F530DK
C8051F536A	2 kB	25	256	16	LIN 2.0, SPI, UART	3	3	±0.5%	12-bit, 16-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN20/TSSOP20	-	C8051F530DK
C8051F537A	2 kB	25	256	16	SPI, UART	3	3	±0.5%	12-bit, 16-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN20/TSSOP20	-	C8051F530DK

## Small Form Factor Mixed-Signal MCUs (continued)

Part Number	Flash Memory	MIPS (peak)	RAM (bytes)	Dig. I/O	Serial Buses	Timers (16-bit)	PWM/FCA	Internal Osc	ADC	DAC	Temp Sensor	VREF	Comp.	Other	Package	OTP-EPROM Version	Dev Kit
C8051F520A	8 kB	25	256	6	LIN 2.0, SPI, UART	3	3	±0.5%	12-bit, 6-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN10	-	C8051F530DK
C8051F521A	8 kB	25	256	6	SPI, UART	3	3	±0.5%	12-bit, 6-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN10	-	C8051F530DK
C8051F523A	4 kB	25	256	6	LIN 2.0, SPI, UART	3	3	±0.5%	12-bit, 6-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN10	-	C8051F530DK
C8051F524A	4 kB	25	256	6	SPI, UART	3	3	±0.5%	12-bit, 6-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN10	-	C8051F530DK
C8051F526A	2 kB	25	256	6	LIN 2.0, SPI, UART	3	3	±0.5%	12-bit, 6-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN10	-	C8051F530DK
C8051F527A	2 kB	25	256	6	SPI, UART	3	3	±0.5%	12-bit, 6-ch., 200 ksp/s	-	Y	Y	1	VREG, -40 to 125 °C	QFN10	-	C8051F530DK
C8051F330	8 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	10-bit, 1-ch.	Y	Y	1	-	QFN20	T630	C8051F330DK
C8051F330D	8 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	10-bit, 1-ch.	Y	Y	1	-	PDIP20	-	C8051F330DK
C8051F331	8 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	1	-	QFN20	T631	C8051F330DK
C8051F332	4 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	-	Y	Y	1	-	QFN20	T632	C8051F330DK
C8051F333	4 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	1	-	QFN20	T633	C8051F330DK
C8051F334	2 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 200 ksp/s	-	Y	Y	1	-	QFN20	T634	C8051F330DK
C8051F335	2 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	1	-	QFN20	T635	C8051F330DK
C8051F300	8 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±20%	8-bit, 8-ch., 500 ksp/s	-	Y	-	1	-	QFN11	T600	C8051F300DK
C8051F301	8 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±20%	-	-	-	-	1	-	QFN11	T601	C8051F300DK
C8051F302	8 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±20%	8-bit, 8-ch., 500 ksp/s	-	Y	-	1	-	QFN11	T602	C8051F300DK
C8051F303	8 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±20%	-	-	-	-	1	-	QFN11	T603	C8051F300DK
C8051F304	4 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±20%	-	-	-	-	1	-	QFN11	T604	C8051F300DK
C8051F305	2 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±20%	-	-	-	-	1	-	QFN11	T605	C8051F300DK
C8051F206	8 kB	25	1280	32	UART, SPI	3	-	±20%	12-bit, 32-ch., 100 ksp/s	-	-	-	2	-	TQFP48	-	C8051F226DK
C8051F220	8 kB	25	256	32	UART, SPI	3	-	±20%	8-bit, 32-ch., 100 ksp/s	-	-	-	2	-	TQFP48	-	C8051F226DK
C8051F221	8 kB	25	256	22	UART, SPI	3	-	±20%	8-bit, 32-ch., 100 ksp/s	-	-	-	2	-	LQFP32	-	C8051F226DK
C8051F226	8 kB	25	1280	32	UART, SPI	3	-	±20%	8-bit, 32-ch., 100 ksp/s	-	-	-	2	-	TQFP48	-	C8051F226DK
C8051F230	8 kB	25	256	32	UART, SPI	3	-	±20%	-	-	-	-	2	-	TQFP48	-	C8051F226DK
C8051F231	8 kB	25	256	22	UART, SPI	3	-	±20%	-	-	-	-	2	-	LQFP32	-	C8051F226DK
C8051F236	8 kB	25	1280	32	UART, SPI	3	-	±20%	-	-	-	-	2	-	TQFP48	-	C8051F226DK

## OTP-EPROM Based MCUs (Pin Compatible with Flash)

Part Number	EPROM Memory	MIPS (peak)	RAM (bytes)	Dig. I/O	Serial Buses	Timers (16-bit)	PCA Chnls	Internal Osc	ADC	DAC	Temp Sensor	VREF	Comp.	Other	Package	Flash Version	Dev Kit
C8051T610	16 kB	25	1280	29	I <sup>2</sup> C, SPI, UART	4	5	±2%	10-bit, 21-ch., 500 ksp/s	-	Y	Y	2	VREG	LQFP32	F310	C8051T610DK
C8051T611	16 kB	25	1280	25	I <sup>2</sup> C, SPI, UART	4	5	±2%	10-bit, 21-ch., 500 ksp/s	-	Y	-	2	VREG	QFN28	F311	C8051T610DK
C8051T612	8 kB	25	1280	29	I <sup>2</sup> C, SPI, UART	4	5	±2%	10-bit, 21-ch., 500 ksp/s	-	Y	-	2	VREG	LQFP32	F312	C8051T610DK
C8051T613	8 kB	25	1280	25	I <sup>2</sup> C, SPI, UART	4	5	±2%	10-bit, 21-ch., 500 ksp/s	-	Y	-	2	VREG	QFN28	F313	C8051T610DK
C8051T614	8 kB	25	1280	29	I <sup>2</sup> C, SPI, UART	4	5	±2%	-	-	-	-	2	VREG	LQFP32	F314	C8051T610DK
C8051T615	8 kB	25	1280	25	I <sup>2</sup> C, SPI, UART	4	5	±2%	-	-	-	-	2	VREG	QFN28	F315	C8051T610DK
C8051T616	16 kB	25	1280	21	I <sup>2</sup> C, SPI, UART	4	5	±2%	10-bit, 17-ch., 500 ksp/s	-	Y	-	2	VREG	QFN24	F316	C8051T610DK
C8051T617	16 kB	25	1280	21	I <sup>2</sup> C, SPI, UART	4	5	±2%	-	-	-	-	2	VREG	QFN24	F317	C8051T610DK
C8051T630	8 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 6-ch., 500 ksp/s	10-bit, 1-ch.	Y	Y	1	VREG, LFO	QFN20	F330	C8051T630DK
C8051T631	8 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	1	VREG, LFO	QFN20	F331	C8051T630DK
C8051T632	4 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 500 ksp/s	10-bit, 1-ch.	Y	Y	1	VREG, LFO	QFN20	F332	C8051T630DK
C8051T633	4 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	1	VREG, LFO	QFN20	F333	C8051T630DK
C8051T634	2 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	10-bit, 16-ch., 500 ksp/s	10-bit, 1-ch.	Y	Y	1	VREG, LFO	QFN20	F334	C8051T630DK
C8051T635	2 kB	25	768	17	I <sup>2</sup> C, SPI, UART	4	3	±2%	-	-	-	-	1	VREG, LFO	QFN20	F335	C8051T630DK
C8051T600	8 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±2%	10-bit, 8-ch., 500 ksp/s	-	Y	-	1	VREG	QFN11/SOIC14	F300	C8051T600DK
C8051T601	8 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±2%	-	-	-	-	1	VREG	QFN11/SOIC14	F301	C8051T600DK
C8051T602	4 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±2%	10-bit, 8-ch., 500 ksp/s	-	Y	-	1	VREG	QFN11/SOIC14	F302	C8051T600DK
C8051T603	4 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±2%	-	-	-	-	1	VREG	QFN11/SOIC14	F303	C8051T600DK
C8051T604	2 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±2%	10-bit, 8-ch., 500 ksp/s	-	Y	-	1	VREG	QFN11/SOIC14	F304	C8051T600DK
C8051T605	2 kB	25	256	8	UART, I <sup>2</sup> C	3	3	±2%	-	-	-	-	1	VREG	QFN11/SOIC14	F305	C8051T600DK

## Embedded USB Made Easy

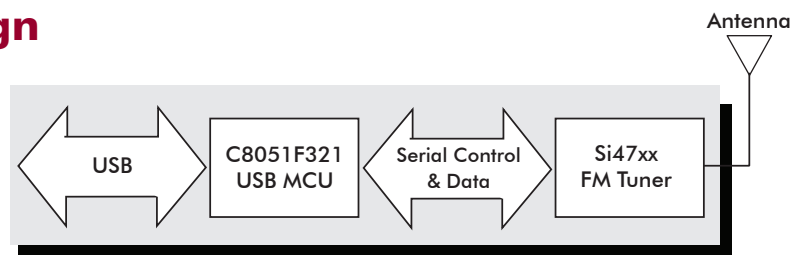
- Extensive hardware and software reference designs
- Full range of single-chip USB MCUs
- Device and host drivers



## USB Mixed-Signal MCUs

Part Number	Flash Memory	MIPS (peak)	RAM (bytes)	Ext Mem I/F	Dig. I/O	Serial Buses	Timers (16-bit)	PWM/PCA	Internal Osc	ADC1	Temp Sensor	VREF	Comp.	Other	Package	Dev Kit
C8051F340	64 kB	48	5376	Y	40	USB 2.0, I <sup>2</sup> C, 2 x UART, SPI	4	5	±1.5%	10-bit, 17-ch., 200 ksps	Y	Y	2	-	TQFP48	C8051F340DK
C8051F341	32 kB	48	3328	Y	40	USB 2.0, I <sup>2</sup> C, 2 x UART, SPI	4	5	±1.5%	10-bit, 17-ch., 200 ksps	Y	Y	2	-	TQFP48	C8051F340DK
C8051F342	64 kB	48	5376	-	25	USB 2.0, I <sup>2</sup> C, 2 x UART, SPI	4	5	±1.5%	10-bit, 17-ch., 200 ksps	Y	Y	2	-	LQFP32	C8051F340DK
C8051F343	32 kB	48	3328	-	25	USB 2.0, I <sup>2</sup> C, 2 x UART, SPI	4	5	±1.5%	10-bit, 17-ch., 200 ksps	Y	Y	2	-	LQFP32	C8051F340DK
C8051F344	64 kB	25	5376	Y	40	USB 2.0, I <sup>2</sup> C, 2 x UART, SPI	4	5	±1.5%	10-bit, 17-ch., 200 ksps	Y	Y	2	-	TQFP48	C8051F340DK
C8051F345	32 kB	25	3328	Y	40	USB 2.0, I <sup>2</sup> C, 2 x UART, SPI	4	5	±1.5%	10-bit, 17-ch., 200 ksps	Y	Y	2	-	TQFP48	C8051F340DK
C8051F346	64 kB	25	5376	-	25	USB 2.0, I <sup>2</sup> C, UART, SPI	4	5	±1.5%	10-bit, 17-ch., 200 ksps	Y	Y	2	-	LQFP32	C8051F340DK
C8051F347	32 kB	25	3328	-	25	USB 2.0, I <sup>2</sup> C, UART, SPI	4	5	±1.5%	10-bit, 17-ch., 200 ksps	Y	Y	2	-	LQFP32	C8051F340DK
C8051F326	16 kB	25	1536	-	15	USB 2.0, UART	2	-	±1.5%	-	-	-	-	Separate I/O Supply Pin	QFN28	C8051F326DK
C8051F327	16 kB	25	1536	-	15	USB 2.0, UART	2	-	±1.5%	-	-	-	-	Fixed I/O Supply	QFN28	C8051F326DK
C8051F320	16 kB	25	2304	-	25	USB 2.0, I <sup>2</sup> C, UART, SPI	4	5	±1.5%	10-bit, 17-ch., 200 ksps	Y	Y	2	-	LQFP32	C8051F320DK
C8051F321	16 kB	25	2304	-	21	USB 2.0, I <sup>2</sup> C, UART, SPI	4	5	±1.5%	10-bit, 13-ch., 200 ksps	Y	Y	2	-	QFN28	C8051F320DK

## USB FM Radio Reference Design

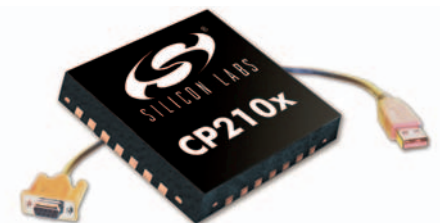


The USB FM Radio Reference Design is a unique example of Silicon Labs' mixed-signal leadership and complementary product portfolio. This reference design combines a high-performance USB enabled microcontroller (C8051F321) and the revolutionary single-chip FM Radio Tuner family.

Buy online at [www.silabs.com/USBRadio](http://www.silabs.com/USBRadio)

## USB-to-UART Bridge

Part Number	EEPROM (bytes)	FIFO (bytes)	Digital Port I/O Pins	Serial Buses	Internal Osc	Other	Package	Eval Kit
CP2103	1024	1 kB	4	UART to USB Bridge	Y	Volt Reg, RS485, Split V <sub>DDIO</sub>	QFN28	CP2103EK
CP2102	1024	1 kB	-	UART to USB Bridge	Y	Volt Reg.	QFN28	CP2102EK



CP2103-EK

Easily update legacy RS-232 and RS-485 designs to USB. The CP210x single-chip solution provides a full-speed USB-to-UART bridge in a 5 x 5 mm package with no crystal, voltage regulator, EEPROM, or other external components required. System development is simplified by the Evaluation Kit, which includes a complete evaluation board and royalty-free device drivers.

Buy online at [www.silabs.com/USB](http://www.silabs.com/USB)

# Precision Mixed-Signal MCUs

Part Number	Flash (bytes)	MIPS (peak)	RAM (bytes)	Ext Mem I/F	Dig. I/O	Serial Buses	Timers (16-bit)	PWM/PCA	Internal Osc	ADC1	ADC2	DAC	Temp Sensor	VREF	Comp.	Other	Package	Dev Kit
C8051F120	128 kB	100	8448	Y	64	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	12-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	16x16 MAC	TQFP100	C8051F120DK
C8051F121	128 kB	100	8448	Y	32	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	12-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	16x16 MAC	TQFP64	C8051F120DK
C8051F122	128 kB	100	8448	Y	64	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	10-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	16x16 MAC	TQFP100	C8051F120DK
C8051F123	128 kB	100	8448	Y	32	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	10-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	16x16 MAC	TQFP64	C8051F120DK
C8051F124	128 kB	50	8448	Y	64	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	12-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	-	TQFP100	C8051F120DK
C8051F125	128 kB	50	8448	Y	32	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	12-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	-	TQFP64	C8051F120DK
C8051F126	128 kB	50	8448	Y	64	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	10-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	-	TQFP100	C8051F120DK
C8051F127	128 kB	50	8448	Y	32	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	10-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	-	TQFP64	C8051F120DK
C8051F130	128 kB	100	8448	Y	64	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	10-bit, 8-ch., 100 ksp/s	-	-	Y	Y	2	16x16 MAC	TQFP100	C8051F120DK
C8051F131	128 kB	100	8448	Y	32	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	10-bit, 8-ch., 100 ksp/s	-	-	Y	Y	2	16x16 MAC	TQFP64	C8051F120DK
C8051F132	64kB	100	8448	Y	64	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	10-bit, 8-ch., 100 ksp/s	-	-	Y	Y	2	16x16 MAC	TQFP100	C8051F120DK
C8051F133	64kB	100	8448	Y	32	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	10-bit, 8-ch., 100 ksp/s	-	-	Y	Y	2	16x16 MAC	TQFP64	C8051F120DK
C8051F064	64 kB	25	4352	Y	59	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	16-bit, 1-ch., 1 Msps	16-bit, 1ch., 1 Msps	-	-	Y	3	DMA	TQFP100	C8051F060DK
C8051F065	64 kB	25	4352	-	24	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	16-bit, 1-ch., 1 Msps	16-bit, 1ch., 1 Msps	-	-	Y	3	DMA	TQFP64	C8051F060DK
C8051F066	32 kB	25	4352	Y	59	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	16-bit, 1-ch., 1 Msps	16-bit, 1ch., 1 Msps	-	-	Y	3	DMA	TQFP100	C8051F060DK
C8051F067	32 kB	25	4352	-	24	2 x UART, I <sup>2</sup> C, SPI	5	6	±2%	16-bit, 1-ch., 1 Msps	16-bit, 1ch., 1 Msps	-	-	Y	3	DMA	TQFP64	C8051F060DK
C8051F020	64 kB	25	4352	Y	64	2 x UART, I <sup>2</sup> C, SPI	5	5	±20%	12-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	-	TQFP100	C8051F020DK
C8051F021	64 kB	25	4352	Y	32	2 x UART, I <sup>2</sup> C, SPI	5	5	±20%	12-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	-	TQFP64	C8051F020DK
C8051F022	64 kB	25	4352	Y	64	2 x UART, I <sup>2</sup> C, SPI	5	5	±20%	10-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	-	TQFP100	C8051F020DK
C8051F023	64 kB	25	4352	Y	32	2 x UART, I <sup>2</sup> C, SPI	5	5	±20%	10-bit, 8-ch., 100 ksp/s	8-bit, 8-ch., 500 ksp/s	12-bit, 2-ch.	Y	Y	2	-	TQFP64	C8051F020DK
C8051F000	32 kB	20	256	-	32	SPI, I <sup>2</sup> C, UART	4	5	±20%	12-bit, 8-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	2	-	TQFP64	C8051F005DK
C8051F001	32 kB	20	256	-	16	SPI, I <sup>2</sup> C, UART	4	5	±20%	12-bit, 8-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	2	-	TQFP48	C8051F005DK
C8051F002	32 kB	20	256	-	8	SPI, I <sup>2</sup> C, UART	4	5	±20%	12-bit, 4-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	1	-	LQFP32	C8051F005DK
C8051F005	32 kB	25	2304	-	32	SPI, I <sup>2</sup> C, UART	4	5	±20%	12-bit, 8-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	2	-	TQFP64	C8051F005DK
C8051F006	32 kB	25	2304	-	16	SPI, I <sup>2</sup> C, UART	4	5	±20%	12-bit, 8-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	2	-	TQFP48	C8051F005DK
C8051F007	32 kB	25	2304	-	8	SPI, I <sup>2</sup> C, UART	4	5	±20%	12-bit, 4-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	1	-	LQFP32	C8051F005DK
C8051F010	32 kB	20	256	-	32	SPI, I <sup>2</sup> C, UART	4	5	±20%	10-bit, 8-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	2	-	TQFP64	C8051F005DK
C8051F011	32 kB	20	256	-	16	SPI, I <sup>2</sup> C, UART	4	5	±20%	10-bit, 8-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	2	-	TQFP48	C8051F005DK
C8051F012	32 kB	20	256	-	8	SPI, I <sup>2</sup> C, UART	4	5	±20%	10-bit, 8-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	1	-	LQFP32	C8051F005DK
C8051F015	32 kB	25	2304	-	32	SPI, I <sup>2</sup> C, UART	4	5	±20%	10-bit, 8-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	2	-	TQFP64	C8051F005DK
C8051F016	32 kB	25	2304	-	16	SPI, I <sup>2</sup> C, UART	4	5	±20%	10-bit, 8-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	2	-	TQFP48	C8051F005DK
C8051F017	32 kB	25	2304	-	8	SPI, I <sup>2</sup> C, UART	4	5	±20%	10-bit, 4-ch., 100 ksp/s	-	12-bit, 2-ch.	Y	Y	1	-	LQFP32	C8051F005DK
C8051F018	16 kB	25	1280	-	32	SPI, I <sup>2</sup> C, UART	4	5	±20%	10-bit, 8-ch., 100 ksp/s	-	-	Y	Y	2	-	TQFP64	C8051F005DK
C8051F019	16 kB	25	1280	-	16	SPI, I <sup>2</sup> C, UART	4	5	±20%	10-bit, 8-ch., 100 ksp/s	-	-	Y	Y	2	-	TQFP48	C8051F005DK
C8051F350	8 kB	50	768	-	17	SPI, I <sup>2</sup> C, UART	4	3	±2%	24-bit, 8-ch., 1 ksp/s	-	8-bit, 2-ch.	Y	Y	1	-	LQFP32	C8051F350DK
C8051F351	8 kB	50	768	-	17	SPI, I <sup>2</sup> C, UART	4	3	±2%	24-bit, 8-ch., 1 ksp/s	-	8-bit, 2-ch.	Y	Y	1	-	QFN28	C8051F350DK
C8051F352	8 kB	50	768	-	17	SPI, I <sup>2</sup> C, UART	4	3	±2%	16-bit, 8-ch., 1 ksp/s	-	8-bit, 2-ch.	Y	Y	1	-	LQFP32	C8051F350DK
C8051F353	8 kB	50	768	-	17	SPI, I <sup>2</sup> C, UART	4	3	±2%	16-bit, 8-ch., 1 ksp/s	-	8-bit, 2-ch.	Y	Y	1	-	QFN28	C8051F350DK

## C8051F064 Low Cost Evaluation Kit

The C8051F064 Evaluation Kit includes the following:

- Analog testing software for performance of the C8051F064's dual 16-bit 1 Msps ADCs
- C8051F064 based evaluation board, USB cable, software CD and full documentation
- Silicon Labs' standard IDE development tools with up to 2 kB compiler



Buy online at [www.silabs.com/DevKits](http://www.silabs.com/DevKits)

# Ethernet Controllers

Part Number	Flash	Parallel Host Interface	Parallel Host Interface Speed	Auto - Negotiation	Pre-Programmed MAC Address	RAM Size	LEDs	Temp Range	Transceiver	Package	Eval Kit	Dev Kit
CP2200	8 kB	8-bit non-multiplexed EMIF	30 Mbps	Y	Y	2 kB TX and 4 kB RX buffer	Separate link and activity	-40 to +85	Included	TQFP48	CP2201EK	ETHERNETDK
CP2201	8 kB	8-bit multiplexed EMIF	25 Mbps	Y	Y	2 kB TX and 4 kB RX buffer	Combined link and activity	-40 to +85	Included	QFN28	CP2201EK	ETHERNETDK

## CP2201 Evaluation Kit

- Demonstrates embedded Ethernet connectivity
- Remote temperature and light sensing from web browser
- Sensor data transmission via email
- Automatic network configuration using net finder utility

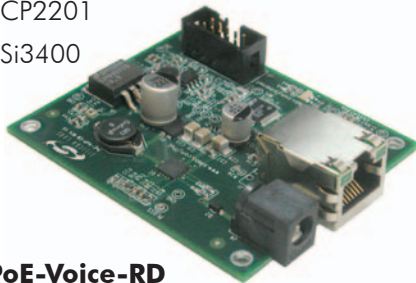
Buy online at [www.silabs.com/Ethernet](http://www.silabs.com/Ethernet)



**CP2201EK**

### Featured Devices

- C8051F340
- CP2201
- Si3400



**PoE-Voice-RD**

## Power over Ethernet Voice Reference Design

This reference design includes an IEEE 802.3af compliant Power over Ethernet circuit, 8 kHz voice/speech sampling system and an IEEE 802.3 embedded Ethernet connection. The board provides a platform for evaluating and developing software for embedded systems using the C8051F340 as the main controller, the CP2201 as the Ethernet controller and the Si3400 as the PoE controller. The software uses the TCP/IP Configuration Wizard, which generates starter firmware based on the industry standard CMX™ Micronet Stack.

Buy online at [www.silabs.com/Ethernet](http://www.silabs.com/Ethernet)

## CP2120 SPI-I<sup>2</sup>C Bridge and GPIO Port Expander

The CP2120 allows an SPI master to communicate as an I<sup>2</sup>C master device. The chip includes a 4-wire slave SPI bus, bridge control logic, a bi-directional I<sup>2</sup>C bus interface and 8 general purpose input/output pins. The CP2120 Evaluation Kit demonstrates the SPI-I<sup>2</sup>C fixed functionality and requires absolutely no code development.

Buy online at [www.silabs.com/CP2120](http://www.silabs.com/CP2120)

## 802.15.4/ZigBee™ Development Kits

Silicon Labs offers 802.15.4 and ZigBee development kits that allow customers to focus on application development rather than hardware selection. These comprehensive kits include all the hardware and software needed to immediately begin developing 802.15.4 or ZigBee network solutions.

- Demonstration GUI
  - Graphical representation of 13 ZigBee topologies
  - Three demo applications to monitor data from any of the networked devices: temperature, received signal strength indicator (RSSI) and thumbwheel (analog)
- 802.15.4 MAC-level application development
- ZigBee application development
- Silicon Labs Integrated Development Environment (IDE)

Buy online at [www.silabs.com/ZigBee](http://www.silabs.com/ZigBee)



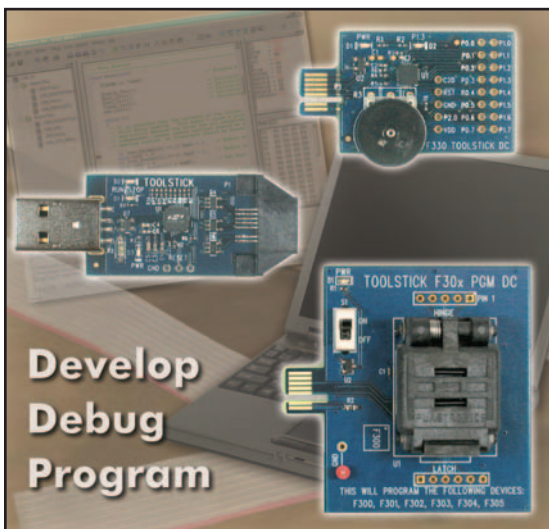
**ZigBee-2.4-DK**

# CAN Mixed-Signal MCUs

Part Number	Flash (bytes)	MIPS (peak)	RAM (bytes)	Ext Mem I/F	Dig. I/O	Serial Buses	Timers (16-bit)	PWM/PCA	Internal Osc	ADC1	ADC2	DAC	Temp Sensor	VREF	Comp.	Other	Package	Dev Kit
C8051F060	64 kB	25	4352	Y	59	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	16-bit, 1-ch., 1 Msps	16-bit, 1-ch., 1 Msps	12-bit, 2-ch.	Y	Y	3	10-bit, 8-ch., 200 ksps	TQFP100	C8051F060DK
C8051F061	64 kB	25	4352	-	24	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	16-bit, 1-ch., 1 Msps	16-bit, 1-ch., 1 Msps	12-bit, 2-ch.	Y	Y	3	10-bit, 8-ch., 200 ksps	TQFP64	C8051F060DK
C8051F062	64 kB	25	4352	Y	59	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	16-bit, 1-ch., 1 Msps	16-bit, 1-ch., 1 Msps	12-bit, 2-ch.	Y	Y	3	10-bit, 8-ch., 200 ksps	TQFP100	C8051F060DK
C8051F063	64 kB	25	4352	-	24	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	16-bit, 1-ch., 1 Msps	16-bit, 1-ch., 1 Msps	12-bit, 2-ch.	Y	Y	3	10-bit, 8-ch., 200 ksps	TQFP64	C8051F060DK
C8051F040	64 kB	25	4352	Y	64	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	12-bit, 13-ch., 100 ksps	8-bit, 8-ch., 500 ksps	12-bit, 2-ch.	Y	Y	3	±60 V PGA	TQFP100	C8051F040DK
C8051F041	64 kB	25	4352	Y	32	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	12-bit, 13-ch., 100 ksps	8-bit, 8-ch., 500 ksps	12-bit, 2-ch.	Y	Y	3	±60 V PGA	TQFP64	C8051F040DK
C8051F042	64 kB	25	4352	Y	64	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	10-bit, 13-ch., 100 ksps	8-bit, 8-ch., 500 ksps	12-bit, 2-ch.	Y	Y	3	±60 V PGA	TQFP100	C8051F040DK
C8051F043	64 kB	25	4352	Y	32	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	10-bit, 13-ch., 100 ksps	8-bit, 8-ch., 500 ksps	12-bit, 2-ch.	Y	Y	3	±60 V PGA	TQFP64	C8051F040DK
C8051F044	64 kB	25	4352	Y	64	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	10-bit, 13-ch., 100 ksps	-	-	Y	Y	3	±60 V PGA	TQFP100	C8051F040DK
C8051F045	64 kB	25	4352	Y	32	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	10-bit, 13-ch., 100 ksps	-	-	Y	Y	3	±60 V PGA	TQFP64	C8051F040DK
C8051F046	32 kB	25	4352	Y	64	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	10-bit, 13-ch., 100 ksps	-	-	Y	Y	3	±60 V PGA	TQFP100	C8051F040DK
C8051F047	32 kB	25	4352	Y	32	SPI, 2 x UART, CAN2.0B, I <sup>2</sup> C	5	6	±2%	10-bit, 13-ch., 100 ksps	-	-	Y	Y	3	±60 V PGA	TQFP64	C8051F040DK

## ToolStick Development Platform

The USB ToolStick platform is a fully contained evaluation and development system in a USB stick that demonstrates Silicon Labs' easy-to-use development tools. The ToolStick, along with only a PC with a USB port, allows designers to develop and debug application firmware directly on the target microcontroller using the Silicon Labs Integrated Development Environment (IDE). Once complete, designers can replace the Daughter Card with a Programming Adapter and program devices for use in their actual system.



### Base Adapter

The Base Adapter connects to the PC using a USB connector and supports any Daughter Card or Programming Adapter.

### Daughter Card

The target MCU and application circuitry are located on the Daughter Card; the IDE interfaces with this MCU. The Daughter Card plugs into the Base Adapter.

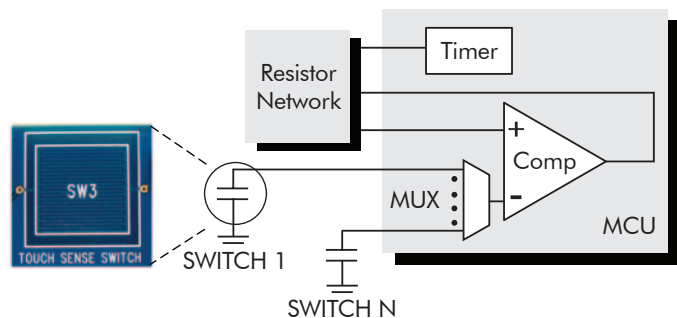
### Programming Adapter

The Programming Adapter provides the appropriate mechanical socket to program a blank device. The Programming Adapter plugs into the Base Adapter.

Buy online at [www.silabs.com/ToolStick](http://www.silabs.com/ToolStick)

## Capacitive Touch Sense Solutions

Contactless switches are found in a variety of consumer products and are attractive because of their small size and reliability. Silicon Labs' MCUs provide a cost-effective technique for implementing a contactless switch by leveraging our capacitive touch sense technology. This unique solution requires only a comparator and timer leaving many resources available for the rest of the system. The capacitive touch sense solution has many advantages including a reduced BOM, low Flash requirements (less than 400 bytes), little MCU overhead, low power requirements and no requirement for a precise voltage source.

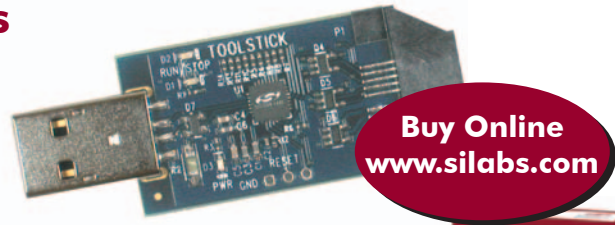


# Microcontroller Development Tools

## Development Kits

Complete development/prototyping system includes the following:

- Prototyping/demonstration board
- USB adapter for in-system programming and debugging
- Silicon Laboratories IDE
- MCU configuration wizard



Buy online at [www.silabs.com/DevKits](http://www.silabs.com/DevKits)

## Integrated Development Environment

4 kB C compiler included

Source code editor

Project manager

Keil 8051 macro assembler and linker

Flash programmer

Supports full-speed, non-intrusive, in-circuit debug logic

Source-level debug

Variable watch window

Real-time breakpoints

Conditional memory watchpoints

Memory and register inspect/modify

Supports third-party development tools

Single-step and animated execution modes



## Third Party Tool Support

A broad range of third-party compilers and development tools are available including a free Small Device C Compiler (SDCC) supported by App Note 198, "Integrating SDCC 8051 Tools into the Silicon Labs IDE." Flash programming and source-level debug of OMF-51 object files is fully supported.

## Design Support at [www.silabs.com/MCU](http://www.silabs.com/MCU)

Silicon Laboratories' Reference Designs, Application Notes and source code examples address a wide range of applications and markets. Visit our website at [www.silabs.com/MCU](http://www.silabs.com/MCU) for complete access to all of our design resources.

## Product Support at [www.silabs.com/support](http://www.silabs.com/support)

💡 MCU Knowledge Base: answers to common technical questions about the MCU product line and product use.

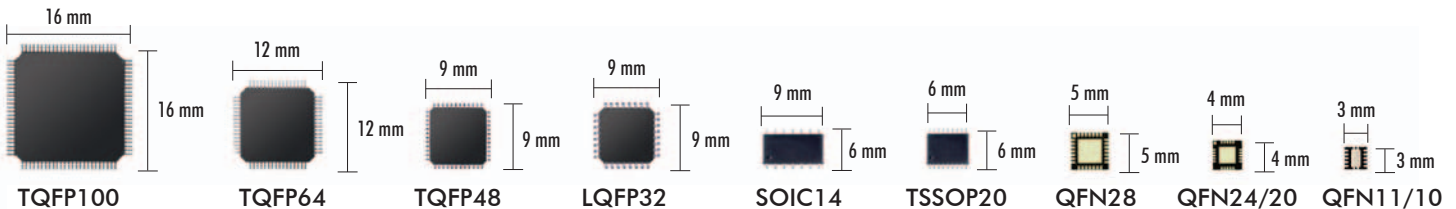
MCU User's Forum: where C8051F MCU users can share experiences and technical questions with other users.

Microcontroller support email:

Americas: [mcuapps@silabs.com](mailto:mcuapps@silabs.com)

Europe and Asia: [eumcuapps@silabs.com](mailto:eumcuapps@silabs.com)

Development Kit or IDE support email: [mcutools@silabs.com](mailto:mcutools@silabs.com)



**Pricing and availability:**  
[www.silabs.com/sales](http://www.silabs.com/sales)

### Corporate Headquarters

400 West Cesar Chavez  
Austin, TX 78701  
512.416.8500  
877.444.3032 (toll free)  
Fax: 512.416.9669