Wireless MCU Solutions

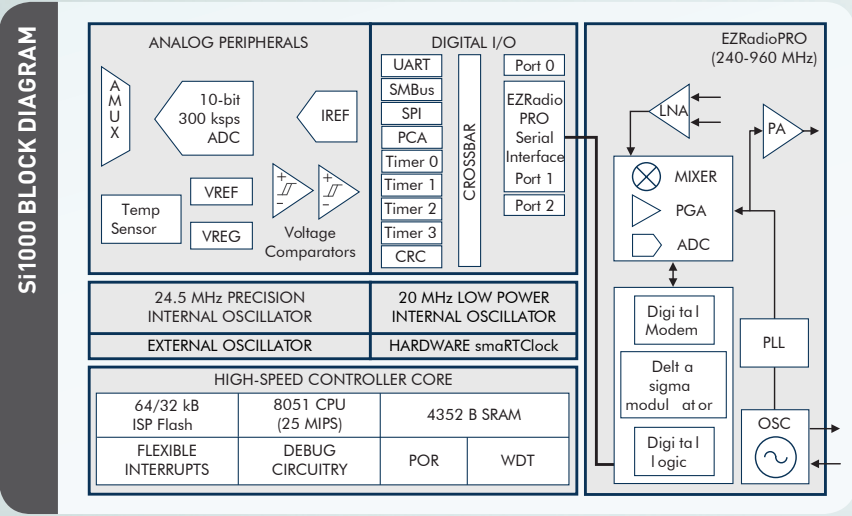www.silabs.com/wirelessmcu

DESCRIPTION

The Si100x/1x family is the industry's lowest power single-chip MCU with an integrated sub-GHz RF transceiver. This family of wireless MCUs is designed to address the specific requirements of low power embedded systems requiring an RF bi-directional communication link such as smart metering, in-home utility monitoring, wireless security panels, wireless sensors, access control as well as home and building automation.

Having the lowest system power allows for longer battery life, higher product performance and lower system cost. The family has the industry's lowest power consumption in all modes: active, sleep and deep sleep. The ultra low power consumption is achieved without any compromises in wireless transceiver performance. The integrated EZRadioPRO® RF transceiver offers added benefits such as high integration, flexibility, easy design-in, continuous frequency coverage from 240 - 960 MHz, and output power up to +20 dBm. Varients include the dc-dc boost converter and support operation down to 0.9 V.

Si10xx FEATURES

- Industry's lowest active & sleep currents
  - 160 µA / MHz — active mode
  - 10 nA sleep w/BOD disabled
  - 50 nA sleep w/BOD enabled
  - 300 nA sleep w/internal RTC
  - 600 nA sleep with external crystal
- LDO voltage regulator
- 2 µS wake-up time
- 1.5 µS analog settling time
- 25 MHz, single-cycle 8051 compatible CPU
- Integrated sub-GHz RF Transceiver
  - 240–960 MHz
  - -121 dBm sensitivity
  - Max output power +20 dBm
  - FSK, GFSK and OOK modulation
- Integrated dc-dc boost converter to support operation down to 0.9 V

APPLICATIONS

- RFID tags
- Water/gas meters
- Sensor interfaces
- Energy harvesting applications
- Alarm systems
- Smoke/fire detectors
- Portable health care products

LOWEST POWER SINGLE-CHIP WIRELESS MCU

Si1000 BLOCK DIAGRAM

MORE INFORMATION AND DOCUMENTATION DOWNLOADS AT: silabs.com/wirelessmcu

SILICON LABS

Wireless MCU Solutions

www.silabs.com/wirelessmcu

Development Tools and Turnkey Support

Si1000/Si1010 Development Kits

The Si1000DK and Si1010DK development kits provide everything needed to begin development using our Wireless MCU in your application.

- Use the Si1000DK for applications needing up to 64 K flash
- OR use the Si1010DK for applications requiring 16 K or less

Each kit includes:

- Si11xx motherboard
- 915 MHz test card (Si1000 or Si1010)
- Quick start guide
- AC to DC power adapter
- USB debug adapter (USB to debug interface)
- 2 USB cables
- CD-ROM, which includes the following:
  Silicon Labs Integrated Development Environment (IDE), source code examples and register definition files, documentation, Si10xx development kits user's guide, AN474: Si10xx Code Examples Application Note, AN474SW: Si10xx Code Examples

Wireless MCU Test Cards

Additional wireless MCU test cards are available to support the Si1000 and Si1010 Development Kits and to aid engineers in developing RF links using designs similar to those they will use in their final board layouts. Designs include those focused on regional regulations other frequencies. Supported frequencies include 915, 868, 470, 433 and 950 MHz
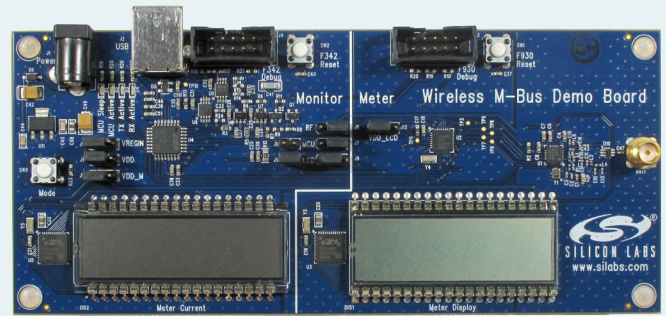
Wireless MBus Evaluation Kit

The Wireless MBus Evaluation Kit is an easy and effective way to demonstrate the low power characteristics of a virtual utility meter running the wireless MBus stack.

The right hand side of the demonstration kit acts as a meter that contains:

- Low-power C8051F930 MCU
- Si4431 transceiver
- CP2400 LCD controller

The left hand side of the board is a measurement system that monitors the virtual meter and determines its power consumption. Using a wireless MBus metering application, you can easily adjust parameters of the meter (e.g. message size, RX/TX parameters, etc.) and observe the effect on the real-time power monitor display.

WIRELESS MBUS EVALUATION KIT

Wireless MCUs

PART NUMBER	FLASH MEMORY	MIPS (PEAK)	RAM (BYTES)	DIG. I/O	COMMUNICATIONS	FSK/GFSK (KBPS)	OOK (KBPS)	OUTPUT POWER (DBM)	2/4.8 KBPS SENSITIVITY	TX CURRENT (dBm) (mA) +11	+13	+20	TIMERS (16-BIT)	PWM/ PCA	INTERNAL OSC	ADC	COMP.	OTHER	PACKAGE	DEV KIT
Si1000	64 kB	25	4352	22	I²C, SPI, UART	256	40	+1 to +20	-121/-110	35		85	4	6	±2%	10-bit, 18-ch., 300 ksps	2	Temp Sensor, RTC, CRC, VREF	QFN42	Si1000DK
Si1002	64 kB	25	4352	22	I²C, SPI, UART	256	40	-8 to +13	-121/-110		30		4	6	±2%	10-bit, 18-ch., 300 ksps	2	Temp Sensor, RTC, CRC, VREF	QFN42	Si1000DK
Si1004	64 kB	25	4352	19	I²C, SPI, UART	256	40	-8 to +13	-121/-110		30		4	6	±2%	10-bit, 15-ch., 300 ksps	2	VREF, RTC, CRC, Temp Sensor, DC-DC	QFN42	Si1000DK
Si1001	32 kB	25	4352	22	I²C, SPI, UART	256	40	+1 to +20	-121/-110	35		85	4	6	±2%	10-bit, 18-ch., 300 ksps	2	Temp Sensor, RTC, CRC, VREF	QFN42	Si1000DK
Si1003	32 kB	25	4352	22	I²C, SPI, UART	256	40	-8 to +13	-121/-110		30		4	6	±2%	10-bit, 18-ch., 300 ksps	2	Temp Sensor, RTC, CRC, VREF	QFN42	Si1000DK
Si1005	32 kB	25	4352	19	I²C, SPI, UART	256	40	-8 to +13	-121/-110		30		4	6	±2%	10-bit, 15-ch., 300 ksps	2	VREF, RTC, CRC, Temp Sensor, DC-DC	QFN42	Si1000DK
Si1010	16 kB	25	768	15	I²C, SPI, UART	256	40	+1 to +20	-121/-110	35		85	4	6	±2%	12-bit, 11-ch., 75 ksps	2	Temp Sensor, RTC, CRC, VREF	QFN42	Si1010DK
Si1012	16 kB	25	768	15	I²C, SPI, UART	256	40	-8 to +13	-121/-110		30		4	6	±2%	12-bit, 11-ch., 75 ksps	2	Temp Sensor, RTC, CRC, VREF	QFN42	Si1010DK
Si1014	16 kB	25	768	15	I²C, SPI, UART	256	40	-8 to +13	-121/-110		30		4	6	±2%	12-bit, 11-ch., 75 ksps	2	VREF, RTC, CRC, Temp Sensor, DC-DC	QFN42	Si1010DK
Si1011	8 kB	25	768	15	I²C, SPI, UART	256	40	+1 to +20	-121/-110	35		85	4	6	±2%	12-bit, 11-ch., 75 ksps	2	Temp Sensor, RTC, CRC, VREF	QFN42	Si1010DK
Si1013	8 kB	25	768	15	I²C, SPI, UART	256	40	-8 to +13	-121/-110		30		4	6	±2%	12-bit, 11-ch., 75 ksps	2	Temp Sensor, RTC, CRC, VREF	QFN42	Si1010DK
Si1015	8 kB	25	768	15	I²C, SPI, UART	256	40	-8 to +13	-121/-110		30		4	6	±2%	12-bit, 11-ch., 75 ksps	2	VREF, RTC, CRC, Temp Sensor, DC-DC	QFN42	Si1010DK

Mixed Sources
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SILICON LABORATORIES INC. | 400 W. CESAR CHAVEZ | AUSTIN, TX 78701 | 877-444-3032 | SILABS.COM/WIRELESSMCU