AN2640SA-B Module Datasheet V1.0

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Description

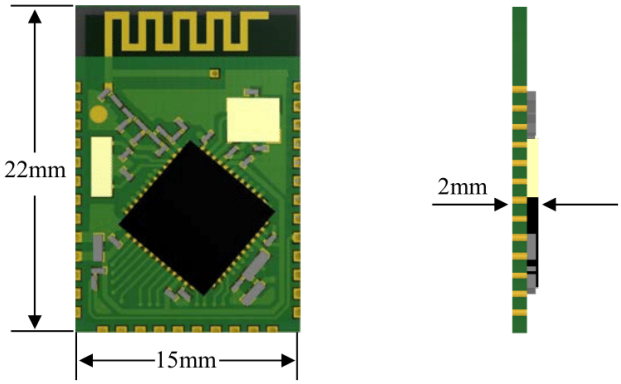
AN2640SA-B Module is designed based on CC2640F128 Bluetooth Smart (BLE4.1) System-on-Chip, fully supports the single mode Bluetooth Low Energy operation. The module provides the ability to either put your entire application into the integrated ARM Cortex M3 microcontroller, or use the module in Network Processor mode in conjunction with the microcontroller of your choice.

Features

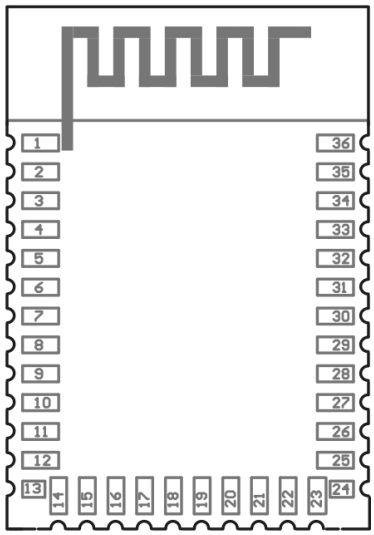
• Microcontroller
  – Powerful ARM® Cortex®-3
  – EEMBC CoreMark® Score: 142
  – Up to 48-MHz Clock Speed
  – 128KB of In-System Programmable Flash
  – 8KB of SRAM for Cache
  – 20KB of Ultralow-Leakage SRAM
  – 2-Pin cJTAG and JTAG Debugging
  – Supports Over-The-Air Upgrade (OTA)
• Ultralow-Power Sensor Controller
  – Can Run Autonomous From the Rest of the System
  – 16-Bit Architecture
  – 2KB of Ultralow-Leakage SRAM for Code and Data
• Efficient Code Size Architecture, Placing Drivers, *Bluetooth*® Low Energy Controller, and Bootloader in ROM
• RoHS-Compliant Packages
  – 7-mm × 7-mm RGZ VQFN48 (31 GPIOs)
• Peripherals
  – All Digital Peripheral Pins Can Be Routed to Any GPIO
  – Four General-Purpose Timer Modules (Eight 16-Bit or Four 32-Bit Timers, PWM Each)
  – 12-Bit ADC, 200-ksamples/s, 8-Channel Analog MUX
  – Continuous Time Comparator
  – Ultralow-Power Analog Comparator
  – Programmable Current Source
  – UART
  – 2× SSI (SPI, MICROWIRE, TI)
  – I2C
  – I2S
  – Real-Time Clock (RTC)
  – AES-128 Security Module
  – True Random Number Generator (TRNG)
  –31 GPIOs, Depending on Package Option
  – Support for Eight Capacitive-Sensing Buttons
  – Integrated Temperature Sensor
• Low Power
  – Wide Supply Voltage Range
• Normal Operation: 1.8 to 3.8 V
• External Regulator Mode: 1.7 to 1.95 V
  – Active-Mode RX: 5.9 mA
• External System
  – On-Chip internal DC-DC Converter
  – Active-Mode TX at 0 dBm: 6.1 mA
  – Active-Mode TX at +5 dBm: 9.1 mA
  – Active-Mode MCU: 61 µA/MHz
  – Active-Mode MCU: 48.5 CoreMark/mA
  – Active-Mode Sensor Controller: 8.2

μA/MHz
– Standby: 1 μA (RTC Running and RAM/CPU Retention)
– Shutdown: 100 nA (Wake Up on External Events)

Mechanical Drawing



Terminal Description

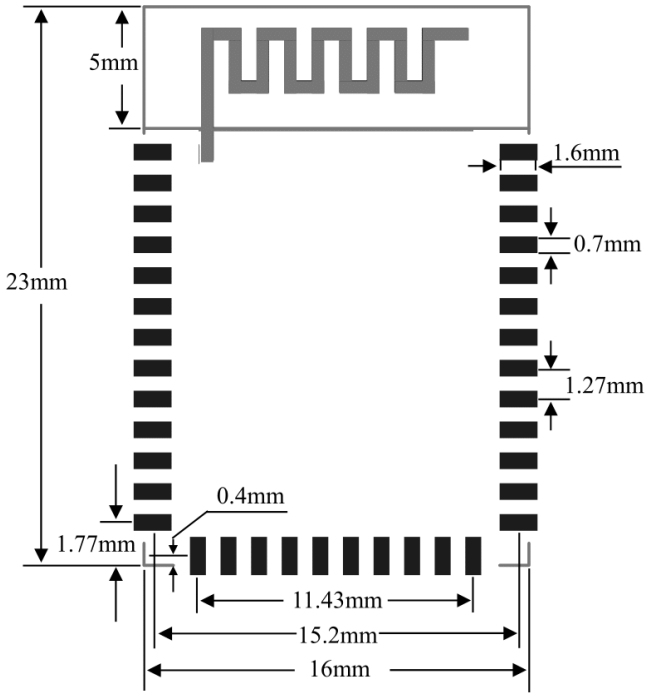


Pad Number	Name	Description	Pin Type
1	DIO0	GPIO, Sensor Controller	Digital I/O
2	DIO1	GPIO, Sensor Controller	Digital I/O
3	DIO2	GPIO, Sensor Controller	Digital I/O
4	DIO3	GPIO, Sensor Controller	Digital I/O
5	DIO4	GPIO, Sensor Controller	Digital I/O
6	DIO5	GPIO, Sensor Controller, High drive capacity	Digital I/O
7	DIO6	GPIO, Sensor Controller, High drive capacity	Digital I/O
8	DIO7	GPIO, Sensor Controller, High drive capacity	Digital I/O
9	GND	Connect to GND	Ground pin
10	VDD	1.8V to 3.8V main chip supply	Power
11	DIO8	GPIO	Digital I/O
12	DIO9	GPIO	Digital I/O
13	DIO10	GPIO	Digital I/O
14	DIO11	GPIO	Digital I/O
15	DIO12	GPIO	Digital I/O
16	DIO13	GPIO	Digital I/O
17	DIO14	GPIO	Digital I/O
18	DIO15	GPIO	Digital I/O
19	JTAG-TMSC	JTAG TMSC, High drive capability	Digital I/O
20	JTAG-TCKC	JTAG TCKC	Digital I/O
21	DIO16	GPIO,High drive capability, JTAG_TDO	Digital I/O
22	DIO17	GPIO, High drive capability, JTAG_TDI	Digital I/O
23	DIO18	GPIO	Digital I/O
24	DIO19	GPIO	Digital I/O
25	DIO20	GPIO	Digital I/O
26	DIO21	GPIO	Digital I/O
27	DIO22	GPIO	Digital I/O
28	RESET_N	Reset, active-low. No internal pullup	Digital input
29	DIO23	GPIO, Sensor Controller, Analog	Digital/Analog I/O
30	DIO24	GPIO, Sensor Controller, Analog	Digital/Analog I/O
31	DIO25	GPIO, Sensor Controller, Analog	Digital/Analog I/O
32	DIO26	GPIO, Sensor Controller, Analog	Digital/Analog I/O
33	DIO27	GPIO, Sensor Controller, Analog	Digital/Analog I/O
34	DIO28	GPIO, Sensor Controller, Analog	Digital/Analog I/O
35	DIO29	GPIO, Sensor Controller, Analog	Digital/Analog I/O
36	DIO30	GPIO, Sensor Controller, Analog	Digital/Analog I/O

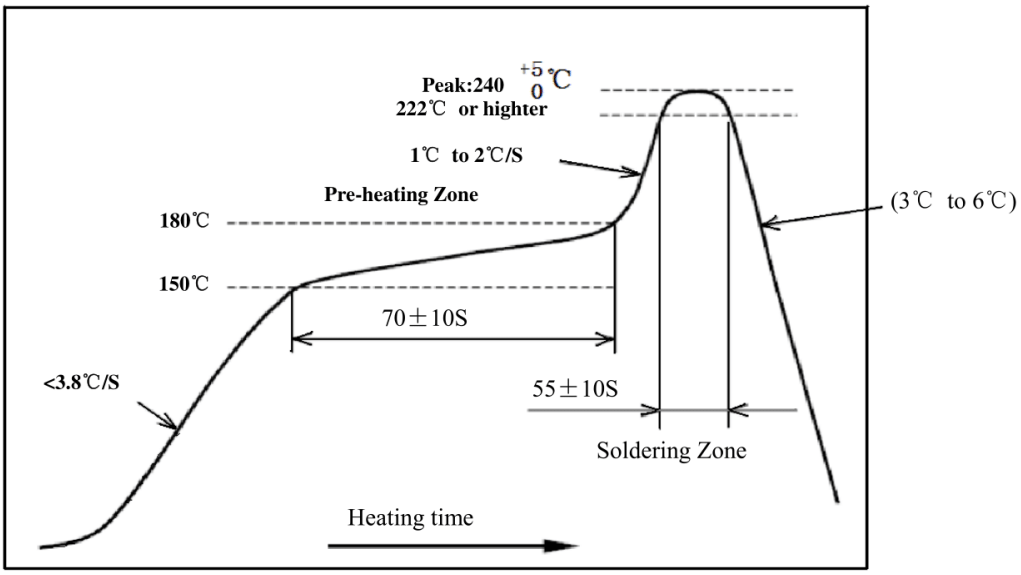
Specifications

Parameter			Min	Max	Unit
Operating Voltage			1.8	3.8	V
Operating Temperature			-40	85	℃
Current Consumption	BLE Advertising （Interval 100mS）		0.23	-	mA
	BLE Connection	Interval 30mS	0.35	-	mA
		Interval 50mS	0.22	-	mA
		Interval 100mS	0.12	-	mA
		Interval 500mS	0.02	-	mA
	Sleep mode		-	1	μA
TX Power			-21	+5	dBm
RX Sensitivity			-87	-96	dBm
Storage Temperature			-40	150	℃

Recommended PCB Layout for Package



Soldering Recommendations



Contact details

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