



seeed studio
The IoT Hardware Enabler



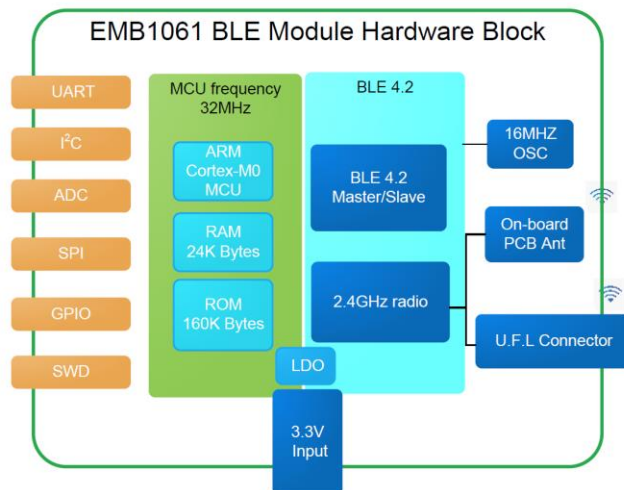
EMB1061 is an embedded BLE module by MXCHIP. It integrates a BLE4.2 single mode SOC, including ARM Cortex-M0 Core, BLE/2.4G Radio, 24KB RAM, 160KB Flash and rich peripherals. EMB1061 uses half-hole package which is easy for soldering.

Hardware diagram is shown below with three main parts:

- 32-bit Cortex-M0 Core
- BLE 2.4GHz RF
- Power management

With:

- Up to 16MHz ARM Cortex-M0 MCU with 24KB RAM , 160KB FLASH, UART , I2C , SPI , ADC , Timer/PWM
- RF part: support PCB antenna or IPEX connector
- Power management: DC3.3V power supply, operating voltage range: 1.7V~3.6V

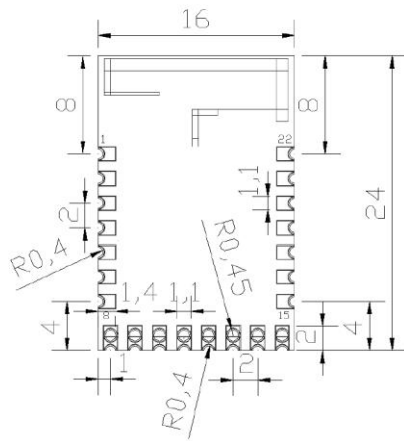


Features

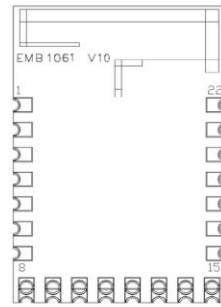
- Based on an ultra-low power BLE SOC
 - ARM Cortex-M0 Core 32MHz
 - 24KB RAM
 - 160KB Flash
- Operating Voltage: 1.7V ~ 3.6V
- Bluetooth Features
 - Support Bluetooth 4.2 (BLE single mode)
 - Max TX power: 8dBm
 - Min RX sensitivity: -87dBm
 - Support BLE Master/ Slave mode
 - Support broadcasting, data encryption, and adaptive frequency hopping
- Operating Temperature : -40°C to +105°C
- Antenna: PCB antenna or IPEX connector (Optional)

Application

- Intelligent lighting
- Smart Home Application
- Wearables
- Smart healthcare
- Portable devices



EMB1061 mechanical size



EMB1061 PIN assignment

Operating Conditions

EMB1061 would be unstable when input voltage is less than the lowest rated voltage. Range of input voltage:

Symbol	Illustration	Condition	Details			
			Minimum	Typ	Maximum	Unit
VDD	Power Supply		1.7	3.3	3.6	V

There would be permanent damage in hardware if the device operates at the voltage over rated value.

Meanwhile, reliability could be influenced when the device has a long-term operating at maximum voltage.

Absolute maximum voltage rating:

Symbol	Description	Minimum	Typ	Unit
VDD	Module input voltage	–	3.8	V
VIN	GPIO input voltage	–	3.8	V

Power Consumption:

	Mode	Description	Average	Max
			TA=25°C	TA=25°C
EMB1061 Power consumption	CPU_HALT	CPU running halted, all peripherals keep running and can wake up CPU by interrupt/event.	2.49mA	2.63mA
	Advertisement (TIMER_SLEEP ON)	Advertise every 1.28s, keep in TIMER_SLEEP mode between the advertisement intervals.	19.53uA	8.43mA
	Connected	Keep connected with other BLE device, communicate every 50ms, and keep in TIMER_SLEEP mode between the communication intervals.	138.96uA	8.39mA
	Scanning	Scan every 1.28s, and keep in TIMER_SLEEP mode between the scan intervals.	568.75uA	8.26mA
	Sleep	TIMER_SLEEP ON CPU and all peripherals	3.54uA	2.76mA

		<p>OFF, internal slow RC clock and wakeup pins ON</p> <p>Can be waked up by internal RTC or wakeup pins (IO9/10/11/12/13) .</p> <p>Wake up every 10s in this test.</p>		
	Standby	<p>CPU and all peripherals OFF Wakeup pins ON</p> <p>Can be waked up by wakeup pins (IO9/10/11/12/13) .</p>	375.98nA	2.68uA

Working Environment:

Symbol	Name	Maximum	Unit
TSTG	Storage Temperature	-40 to +110	°C
TA	Operation Temperature	-40 to +105	°C
Humidity	Non-condensing, Relative humidity	95	%

Electrostatic Discharge:

Symbol	Name	Details	Level	Maximum	Unit
VESD(HBM)	Electrostatic discharge voltage	TA= +25 °C , JESD22-A114	2	2000	V

	(Human Body Model)				
VESD(CDM)	Electrostatic discharge voltage (Charged Device Model)	TA = +25 °C , JESD22-C101	II	500	

Part List

EMB1061 BLE Module x 1

ECCN/HTS

HSCODE	8517709000
USHSCODE	85177000