BTM970S

Bluetooth® Low Energy (BLE) Module

Features

- Qualified for Bluetooth SIG v5.0 core specification
- Certified to FCC, ISED, MIC, KCC, NCC, and SRRC radio regulations
- Certified by European RED Assessed Radio module
- Compliant to RoHS
- Supports UART interface
- Supports transparent UART data service of BLE
- The BTM970S module supports 3-channel pulse- width modulation (PWM)
- Supports Precision Temperature Sensor (PTS) for ambient temperature detection
- Supports 12-bit ADC (ENOB=10 or 8 bits) for battery and voltage detection
- Provides 8-channel ADC for the BTM970S module
- Features 18 general purpose I/O (GPIO) pins for the BTM970S module
- Features integrated 32 MHz crystal
- Small and compact surface mount module
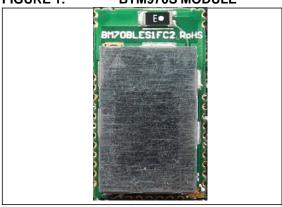- Castellated surface mount pads for easy and reliable host PCB mounting

RF Features

- ISM band 2.402 GHz to 2.480 GHz operation
- Channels: 0 to 39
- Receive Sensitivity: typical -90 dBm (LE)
- Transmit Power: 0 dBm (typical)
- Received Signal Strength Indication (RSSI) monitor with 1 dB resolution

MAC/Baseband/Higher Layer Features

- Secure AES128 encryption
- Bluetooth 4.2 specification optional features: GAP, GATT, SMP, L2CAP and integrated public profile
- To create custom GATT services, refer to the "BM70/71 Bluetooth® Low Energy Module User's Guide" (DS50002542) for details.
- Configurable role as peripheral/central, client/server

FIGURE 1:   **BTM970S MODULE**

Antenna

- Integrated chip antenna (BM70BLES1FC2)
  - Refer to **4.0 "Antenna"**, Table 4-1, and Table 4-2 for antenna performance specifications

Power Management

- Two low power modes supported, with wake-up through GPIO or internal timer
- Average current: Tx=3.3 mA and Rx=3.2 mA with buck at 3.0V V$_{BAT}$ input and 18.75 ms connection interval, when transmitting full data packets to achieve a data rate of approximately 8.6 kbps

Operating Conditions

- Operating voltage range: 1.9V to 3.6V
- Operating temperature: -40ºC to +85ºC

Applications

- Internet of Things (IoT)
- Secure Payment
- Wearable Devices
- Home and Security
- Health and Fitness
- Beacons
- Industrial and Data Logger

General Description

The BTM970S module offers BLE solutions for embed- ded applications. It conforms to the Bluetooth 5 core specification to enhance the throughput and security for the IoT applications. It also supports beacon technology to enhance the user experience for the IoT applications, and enables users to control the cloud and receive data without opening the application through a smartphone.

The BTM970S module has an integrated Bluetooth stack and is available in different form factors to optimize space, cost, and RF performance. The power-optimized design minimizes the current consumption and extends battery life for portable and wearable applications.

8.0   ORDERING GUIDE

Table 8-1 provides the ordering information for the BTM970S module.

TABLE 8-1:   BM970S MODULE ORDERING INFORMATION

Module	Description	Operating Temperature Range	Antenna	Shield	Pin #	Regulatory Certification	Regulatory Model No. (see **Note 3**)
BTM970S	Bluetooth BLE module, (12x22x2.4 mm)	-40°C to +85°C	On board	Yes	33	FCC, ISED, CE, MIC, KCC, NCC, SRRC	BM70BLES1FC2

Note 1: The numbers listed under "Orderable Part Number" must be used when purchasing a specific module from Microchip.

3: "Regulatory Model No." column represents the Model No. listed in Microchip's regulatory notices. The extensions used to order/buy a specific version of the module are listed in the "Orderable Part Number".