2210 O'Toole Ave. #200, San Jose, CA 95131
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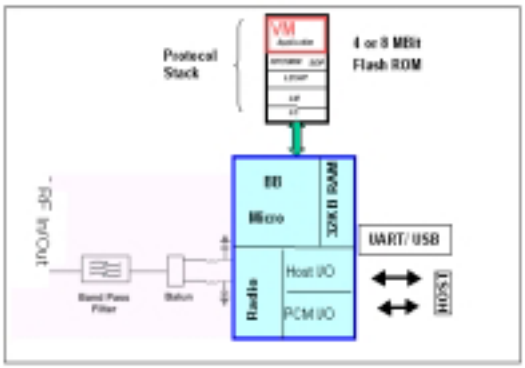
Product Brief for:

BTM02C2XX-X Windigo Class 2 Bluetooth™ Module Series

BTM02C2XX-X FEATURES

- **Radio Transceiver**
  - Typical –80dBm receiver sensitivity under high interference environment
  - Up to +4dBm RF transmit power with level control
- **Baseband**
  - Built-in link controller, link manager protocol and flash
  - Standard HCI interface
  - Support up to 7 ACL connections, and 3 SCO connections
  - PIO control
  - Full 723 kbps data rate
  - Surface mountable
- **Physical Interfaces**
  - Standard HCI interface
  - Synchronous serial interface up to 4Mbaud for software debugging
  - **UART, USB, PCM** codec interfaces
  - 13 bit PCM interface
  - UART interface with programmable baud rate
  - Full speed USB interface, compliant with USB 1.1
  - Basic module without both antenna and connector
  - Basic module as SMD type
- **Package Options**
  - Edge connector
  - Board to board connector
  - FPC connector



BTM02C2XX-X Functional Block

SUMMARY OF BENEFITS

- **Complete Bluetooth Solution**
  - Complete 2.4GHz Radio Transceiver and basband
  - CSR BlueCore2, single chip bluetooth system with 0.18 µm CMOS technology
  - Fully V1.1 BQB pre-qualifed
  - Small footprint (25 mmx14.5 mm)
  - Simplify overall design/development cycle
  - Full speed Class2 Bluetooth operation with full 7 slave piconet support
  - Bluetooth stack software support
- **Low Power standby modes to enable very efficient power management**
- **High Performance radio transceiver**
- **Operation in both commercial and industrial temperature ranges**
- **Low overall systems cost**
- **Applications**
  - PC, Notebooks, printers
  - Mobile phone
  - PDAs
  - Cordless Headsets
  - Computer Accessories (CF, PCMCIA and SD cards)
  - Digital camera
  - USB/RS232 adaptor
  - And many other computer peripherals or embedded devices applications
- **Software**
  - Support CSR Bluetooth Stack
  - Support Extended Systems and WidComm Bluetooth stacks
- **Available Solutions**

Immediately available solutions based on this module and other Windigo Bluetooth modules include:

- Bluetooth headset
- Bluetooth USB dongle for PC and notebook with Win98, WinME, Win2000 and WinXP support and applications support
- Bluetooth dongle for PDAs with WinCE, Pocket 2000 and Pocket 2002 driver support and application support
- Bluetooth compact flash card

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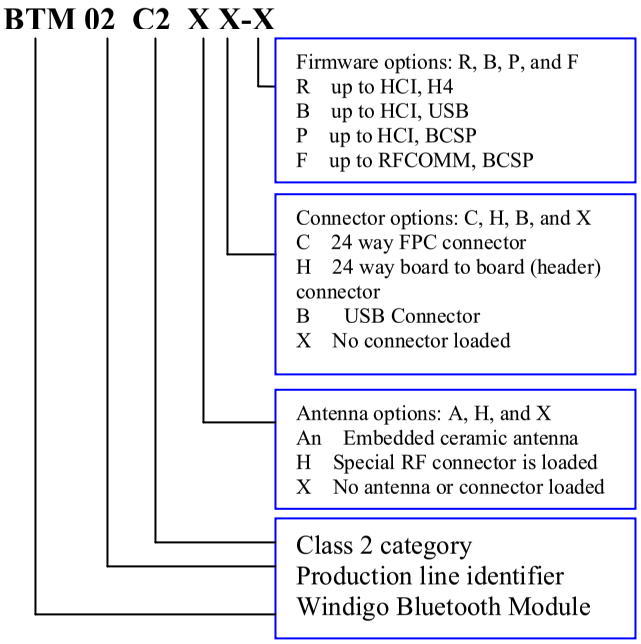
- Product Overview

The Windigo Universal Class 2 Bluetooth™ Module **BTM02C2XX-X series** are compact and qualified modules with several mount options that provide a complete 2.4GHz Bluetooth system for data and voice communications; these modules can be integrated into almost any electrical device, providing the OEM with an affordable and relatively simple method of enabling their products with Bluetooth technology. The **BTM02C2XX-X** series is Windigo's core Universal Class 2 Bluetooth™ Module and comes without an antenna or connector. Options such as a built-in antenna and USB, FPC and B-to-B connectors can be integrated into the **BTM02C2XX-X** series module by Windigo to meet the customer's specifications.

- **Quick Selection Guide**



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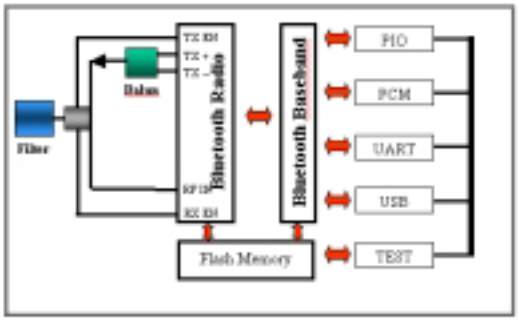
- BTM02C2XX – Bluetooth Module

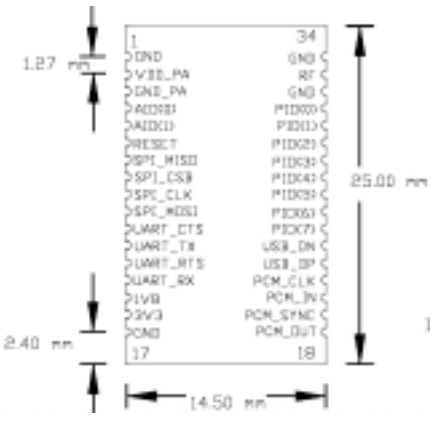


- Snapshot and Dimensions

Figure 1 is a snapshot of the **BTM02C2XX-X** series module and figure 2 shows the dimensions of the **BTM02C2XX-X** module.

Figure 1

Figure 2



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Module PIN Layout

Figure 3 illustrates the PIN layout for the **BTM02C2XX-X** series module, and figure 4 shows the PIN definition layout.

Figure 3

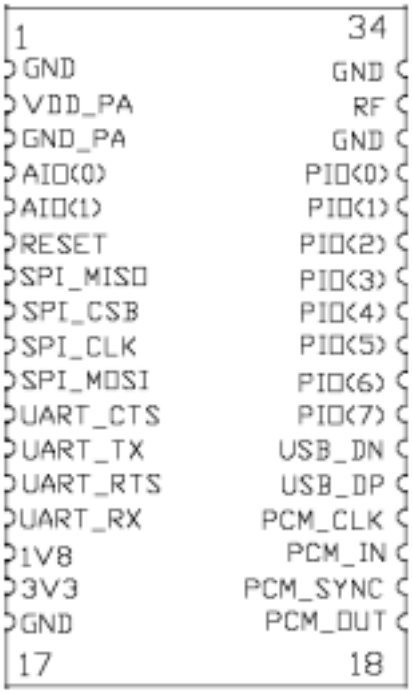

Figure 4

Pin Name	Pin	Type	Description
GND	1, 17	GND	Module supply ground
VDD_PA	2	VDD_PA	VDD for other Input/Output
GND_PA	3	VDD_PA	GND for other Input/Output
AIO(0)	4	Bi_Dir	Programmable I/O line
AIO(1)	5	Bi_Dir	Programmable I/O line
RESET	6	CMOS input	Reset active high
SPI_MISO	7	CMOS output	Synchronous Serial Interface data output
SPI_CSB	8	CMOS input	Chip select for Synchronous Serial Interface
SPI_CLK	9	CMOS input	Synchronous clock
SPI_MOSI	10	CMOS input	Synchronous Serial Interface data input
UART_CTS	11	CMOS input	UART Clear to Send
UART_TX	12	CMOS output	UART data output
UART_RTS	13	CMOS output	UART Ready To Send
UART_RX	14	CMOS input	UART data input
1V8	15	VDD	Module supply positive 1.8V
3V3	16	VDD	Module supply positive 3.3V
PCM_OUT	18	CMOS output	Synchronous data output
PCM_SYNC	19	Bi_Dir	Synchronous data strobe
PCM_IN	20	CMOS input	Synchronous data input
PCM_CLK	21	Bi_Dir	Synchronous data clock
USB_DP	22	Bi_Dir	USB D+
USB_DN	23	Bi_Dir	USB D-
PIO(0)-PIO(1), PIO(6)-PIO(7)	24-25, 30-31	Bi-Dir	I/O port
PIO(2)/ USB_PULL_UP	26	Bi_Dir	I/O port or USB Pull-Up
PIO(3)/ USB_WAKE_UP	27	Bi_Dir	I/O port or Output goes high to wake up PC when in USB mode
PIO(4)/ USB_ON	28	Bi_Dir	I/O port or USB on
POI(5)/ USB_DETACH	29	Bi_Dir	I/O port or chip detached from USB when this input is high
GND	32-34	GND	RF ground
RF	33	Bi_Dir	Antenna RF port

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- **Power Consumptions**

Mode	Average	Peak	Unit
SCO connection HV3 (1s interval sniff mode) (Slave)	28	-	mA
SCO connection HV3 (1s interval sniff mode) (Master)	28	-	mA
SCO connection HV1 (Slave)	53	-	mA
SCO connection HV1 (Master)	53	-	mA
ACL data transfer 115.2kbps UART (Master)	15	-	mA
ACL data transfer 720kbps USB (Slave)	61	-	mA
ACL data transfer 720kbps USB (Master)	61	-	mA
ACL connection, Sniff Mode 40ms interval, 38.4kbps UART	4	-	mA
ACL connection, Sniff Mode 1.28s interval, 38.4kbps UART	0.5	-	mA
Parked Slave, 1.28s beacon interval, 38.4kbps UART	0.6	-	mA
Deep Sleep Mode	15	-	µA
Peak RF current during RF burst	80	-	mA

VDD = 3.0V Temperature = 20°C Output power = 0dBm

- **Electrical Characteristics**

Receiver	Min	Typ	Max	Bluetooth Specifications	Unit
Sensitivity at 0.1% BER (1)	-	-83	-	≤-70	dBm
Maximum received signal at 0.1% BER (1)	-	-5.0	-	≥-20	dBm
C/I Co-channel (1)	-	9	-	≤11	dB
Adjacent channel selectivity C/I 1MHz (1)	-	-2.0	-	≤0	dB
2nd adjacent channel selectivity C/I 2MHz (1)	-	-34	-	≤-30	dB
3rd adjacent channel selectivity C/I ≥3MHz (1) (2)	-	-43	-	≤-40	dB
Image rejection C/I (1) (3)	-	-12	-	≤-9	dB
Maximum level of intermodulation interferes (1) (4)	-	-30	-	≥-39	dBm
Maximum level of GSM signal at 1.8GHz (5)	-	-7	-	-	dBm
Maximum level of W-CDMA signal at 1.8GHz (5)	-	-9.5	-	-	dBm
Maximum level of W-CDMA signal at 2.2GHz (5)	-	-11	-	-	dBm
Transmitter	**Min**	**Typ**	**Max**	**Bluetooth Specifications**	**Unit**
Maximum RF transmit power (1)	-	5	-	-6 to +4 (6)	dBm
RF power control range (1)	-	30	-	≥16	dB
RF power range control resolution	-	2.0	-	-	dB
20 dB bandwidth for modulated carrier	-	900	-	≤1000	kHz
2nd adjacent channel transmit power (1)	-	-52	-	≤-20	dBm
3rd adjacent channel transmit power (1)	-	-57	-	≤-40	dBm

VDD = 3.0V Temperature = 20°C Frequency = 2.441GHz

Notes:

(1) Measured according to the Bluetooth specification.
(2) Up to five spurious responses within Bluetooth limits are allowed
(3) At carrier –3MHz.
(4) Measured at $f_1 - f_2 = 5$MHz.
(5) For 0.1% BER with wanted input at –67dBM, and with the RF filter removed from the circuit.
(6) For Class 2 specification only.