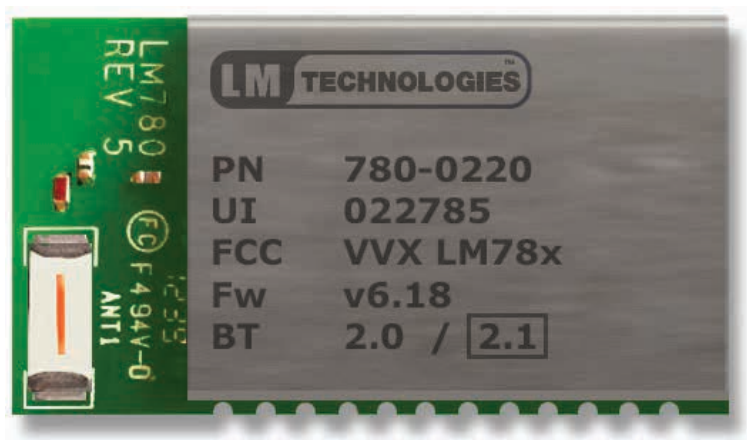




LM780 Bluetooth Serial Data Module

Class 2 with Onboard Antenna

Product LM780
 Part No 780-0220 (for BT2.0 f/w)
 Part No 780-0223 (for BT2.1 f/w)
 Revised 12/MAR/2015



Features

- Bluetooth v2.0 + EDR and v2.1 + EDR compliant firmware available
- Class 2 radio with integrated chip antenna - 25 m range in open space
- Low Power Consumption
- Secure Simple Pairing supported (in Bluetooth 2.1 + EDR firmware)
- 3V - 5.5V operation
- Full Bluetooth EDR data rate of up to 3Mbps supported
- Interface: UART (up to 921600bps), PIO
- Multipoint firmware support
- SPP firmware supported by default. HID firmware available upon request
- CSR Bluecore 04 (BC04) chipset

- Lead Free, RoHS compliant
- Small Size: 15.24mm x 27.67mm x 3.2mm
- AT Command set provided for module configuration

Applications

- SPP firmware supported by default. HID firmware available upon request
- CSR Bluecore 04 (BC04) chipset
- AT Command set provided for module configuration
- Lead Free, RoHS compliant
- Small Size: 15.24mm x 27.67mm x 3.2mm

Overview

LM780 is LM Technologies Ltd Class 2 Bluetooth Data module with an onboard chip antenna.

This module is a CSR Bluecore 4 (BC04) chip based surface mount module available with Bluetooth Serial Port Profile (SPP) firmware. This module is ideal for adding short range wireless connectivity to embedded products. The module acts as a standalone unit (ie: it does not need a host to drive it) and can interface with embedded micro-controllers via UART.

It operates over a wide voltage range of 3.3V to 5V and gives excellent performance over a distance of 10-25m.

This module is available with Bluetooth 2.0 + EDR as well as Bluetooth 2.1+EDR compliant SPP firmware.

The module also comes with Bluetooth 2.1 + EDR compliant HID Keyboard firmware which is available upon request.



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Packaging Options

Tape and Reel

Part No 780-0222

LM780 with BT2.0 + EDR Firmware

Tray Packaging

Part No 780-0221

LM780 with BT2.0 + EDR Firmware

Tape and Reel

Part No 780-0225

LM780 with BT2.1 + EDR Firmware

Tray Packaging

Part No 780-0224

LM780 with BT2.1 + EDR Firmware

- User Guides, Manuals and Wdcomm Configuration Software available to download via our website - <http://www.lm-technologies.com/support/downloads>

General Specification

Chipset	CSR Bluecore 4 (BC04)
Power Classification	Class 2
Module Type	Surface Mount
Bluetooth Specification	Bluetooth v2.1 and Bluetooth v2.0 + EDR SPP firmware
Frequency	2402 – 2480 MHz
Temperature Range	-10 to +70 C
Data Range	Up to 3Mbps in HCI mode
Range	25m in open space
Rx Sensitivity	TBC
Antenna	Onboard chip antenna
Voltage Operation	3 – 5.5V
Average Current Consumption (Idle Mode)	19mA
Average Current Consumption (Deep Sleep Mode)	0.9mA
Power Output	+4 dBm
Default Firmware	v6.18 (BT 2.1), v4.56 (BT 2.0)
Size	15.20mm x 26.92mm x 2.0mm
Bluetooth Profile	SPP Profile
Interface	UART
Serial Parameters	Default 19200, 8 N 1
UART lines	TxD, RxD, GND, CTS, RTS, DTR and DSR
Baud Rates	1.2/2.4/4.8/9.6/19.2/38.4/57.6/115.2/230.4/460.8/921.6 kbps
Configuration	AT Command Set
Flash Memory	8MB
RoHS Compliant	Yes
Certifications	CE, FCC



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Pin Assignments

Pin	Name	Type	Description
1	SPI_CLK	I	SPI Clock
2	PIO 0	I/O	Programmable Input Output
3	RESET	I	Active Low Reset
4	PCM_IN	I	Synchronous Data Input
5	PCM_OUT	O	Synchronous Data Output
6	UART_TX	O	UART Data Output
7	PCM_CLK	I/O	Synchronous Data Clock
8	UART_RX	I	UART Data Input
9	UART_CTS	I	UART Clear to Send (Active Low)
10	UART_RTS	O	UART Request to Send (Active Low)
11	USB_DN	I/O	USB Data Minus
12	USB_DP	I/O	USB Data Plus
13	PCM_SYNC	I/O	Synchronous Data Sync
14	PIO 7	I/O	Programmable Input Output
15	PIO 6	I/O	Programmable Input Output
16	SPI_MISO	O	SPI Data Output
17	SPI_MOSI	I	SPI Data Input
18	PIO 1	I/O	Programmable Input Output
19	SPI_CS	I	Chip Select for SPI Interface
20	PIO 2	I/O	Programmable Input Output
21	PIO 8	I/O	Programmable Input Output
22	PIO 3	I/O	Programmable Input Output
23	VSS	N/A	Ground
24	VDD	I	Power Supply

Factory Settings

The factory settings of the COM Port are as follows:

Baud Rate	19200 bps
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

Customised settings are available as factory settings upon special request; Bonding, Pre-Pairing, different Baud Rates, Data Bits, Parity and Flow Control Settings.



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Electrical Characteristics

Recommended Operating Conditions

Parameter	Min	Max	Unit
Storage Temperature	-10	+70	°C
Supply Voltage (VDD)	+3	+5.5	V
UART pins : Tx, Rx, RTS and CTS	-0.5	+5.5	V
All other pins	VSS - 0.4	+3.3	V

Absolute Maximum Ratings

Parameter	Min	Max	Unit
Storage Temperature	-40	+150	°C
Supply Voltage (VDD)	-0.3	+6.5	V
UART pins : Tx, Rx, RTS and CTS	-0.5	+7.0	V
All other pins	VSS - 0.4	+3.3	V

General Electrical Specification

Parameter	Description	Min	Max	Unit
Input Low Voltage	RESET, PIO, PCM	-0.3	+0.8	V
Input Low Voltage	UART		0.3x VDD	V
Input High Voltage	RESET, PIO, PCM	0.7 x VDD	VDD + 0.3	V
Input High Voltage	UART	0.7 x VDD		V

Power Consumption Characteristics

Current Consumption

Operation Mode	Average	Unit
Slave mode, Unconnected Idle	19	mA
Master mode, Unconnected Idle State	5.3**	mA
Connected State, no data transfer (master and slave mode)	19	mA
Unidirectional data traffic	27	mA
Bidirectional data traffic	29	mA
Low Power Sleep Mode	0.9	mA

Input Voltage: 3.3V*

UART Data rate: 19200 bps

Firmware: LM SPP v6.13

* : Increasing power supply voltage to 5V has negligible effect on power consumption figure

** : When switching role from Master to Slave, the current consumption goes up to 37mA and then falls to 5.3mA after about 15 seconds

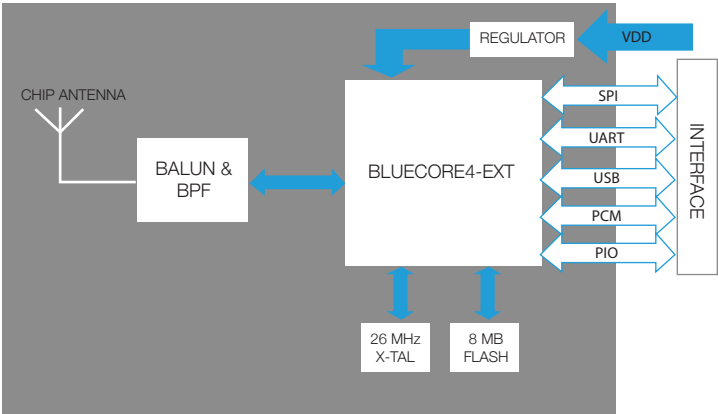


LM780 Bluetooth Serial Data Module

Class 2 with Onboard Antenna

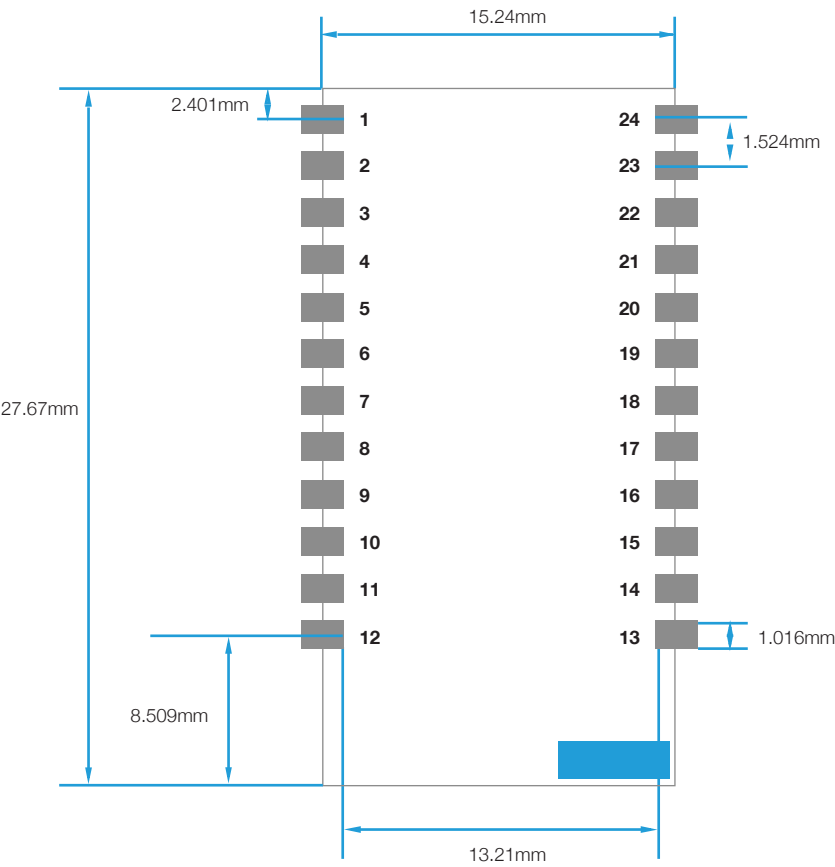
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Block Diagram



Note: USB and PCM interface are not handled by LM780 firmware at present

Pin Outs



Module dimension and suggested landing pattern (shown dimensions not to scale)



LM780 Bluetooth Serial Data Module

Class 2 with Onboard Antenna

Product

LM780

Part No

780-0220 (for BT2.0 f/w)

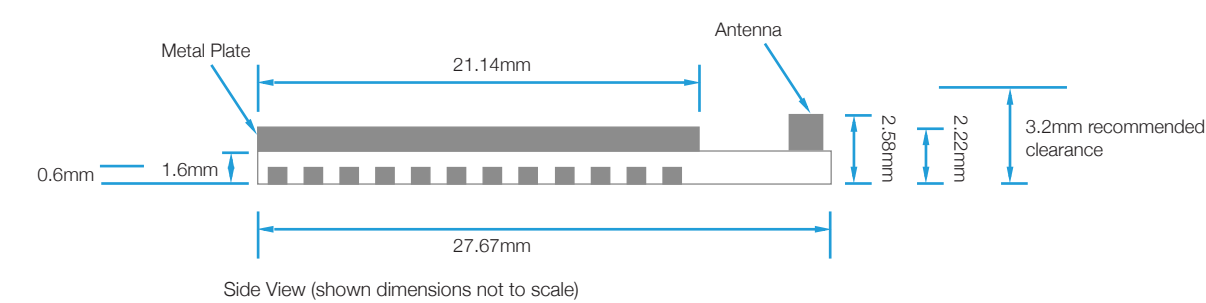
Part No

780-0223 (for BT2.1 f/w)

Revised

12/MAR/2015

Dimensions



Revision History

1.0	17/DEC/2010	First version
1.1	02/APR/2012	1. Added metal cap to the module 2. Module dimensions changed 3. Added part number information 4. Added packaging options
1.2	19/APR/2012	1. Added antenna outline to landing pattern diagram 2. Added Revision History
1.3	13/FEB/2015	Updated Datasheet