



LM780 Bluetooth Serial Data Module 25m Distance with On-Board Antenna

Product: LM780
Part No: 780-0220 for BT2.0 F/W
Part No: 780-0223 for BT2.1 F/W
Datasheet Rev1.2/19-04-12



1 General Description

LM780 is LM Technologies Ltd Class 2 Bluetooth Data module with on-board 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 (i.e. it does not need a host to drive it) and can interface with embedded microcontrollers via UART. It operates over a wide voltage range of 3.3V to 5V and gives excellent performance over a distance of 10-25 m.

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.

2 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 upto 3 Mbps supported
- Interface : UART (upto 921600 bps), PIO
- Multipoint firmware support
- SPP firmware supported by default. HID firmware available upon request
- CSR Bluecore 04 (BC04) chipset
- AT Command set provided for module configuration
- 802.11 Coexistence supported
- Lead free - RoHS compliant
- Small Size : 15.24 mm x 27.67 mm x 3.2mm

3 Applications

- Serial Communications
- Medical Devices
- Domestic and Industrial Applications
- Embedded Devices
- Remote Monitoring and Control
- Payment Terminals
- GPS, POS, Barcode Readers



4 Packaging Options

Tape and Reel

Part No 780-0222

LM780 with BT2.0 + EDR firmware

Part No 780-0225

LM780 with BT2.1 + EDR firmware

Tray Packaging

Part No 780-0221

LM780 with BT2.0 + EDR firmware

Part No 780-0224

LM780 with BT2.1 + EDR firmware

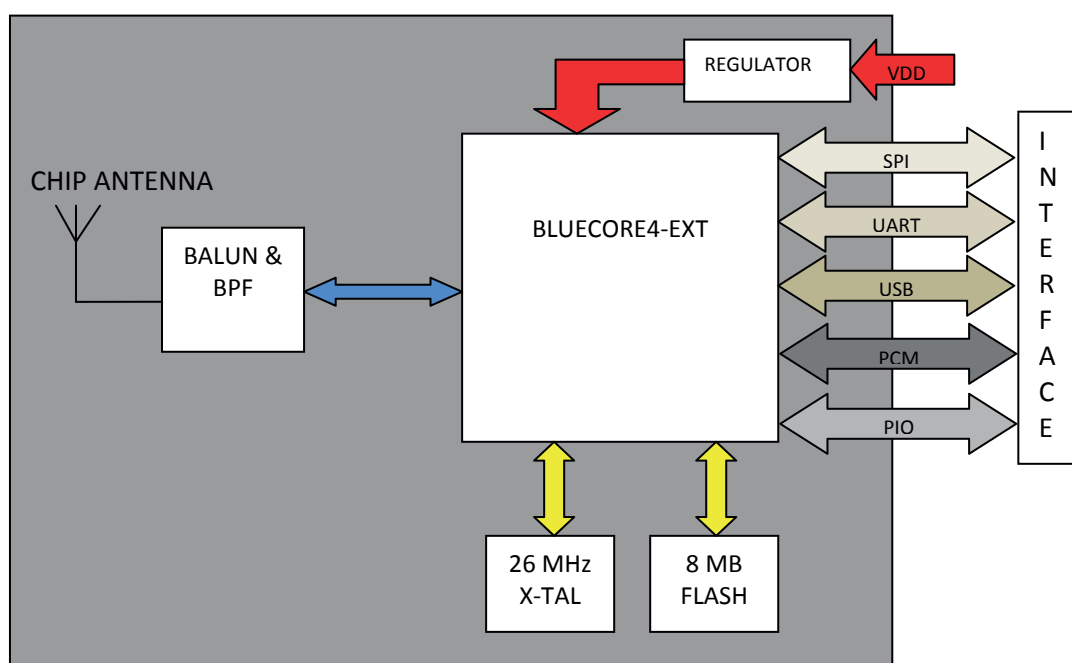
Product: LM780

Part No: 780-0220 for BT2.0 F/W

Part No: 780-0223 for BT2.1 F/W

Datasheet Rev1.2/19-04-12

5 Block Diagram



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



6 Electrical Characteristics

Product: LM780
Part No: 780-0220 for BT2.0 F/W
Part No: 780-0223 for BT2.1 F/W
Datasheet Rev1.2/19-04-12

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

7 Power Consumption Characteristics

Current Consumption		
Operation Mode	Average	Unit
Slave mode, Unconnected Idle State	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 upto 37mA and then falls to 5.3mA after about 15 seconds

8 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: Enabled (Hardware)

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

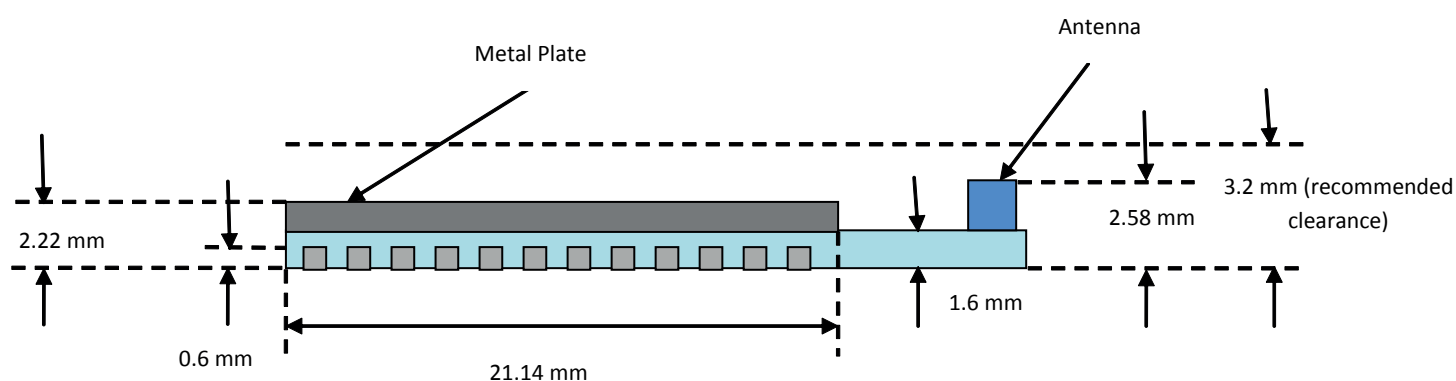


9 Pin Assignments

Product: LM780
Part No: 780-0220 for BT2.0 F/W
Part No: 780-0223 for BT2.1 F/W
Datasheet Rev1.2/19-04-12

Pin Number	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

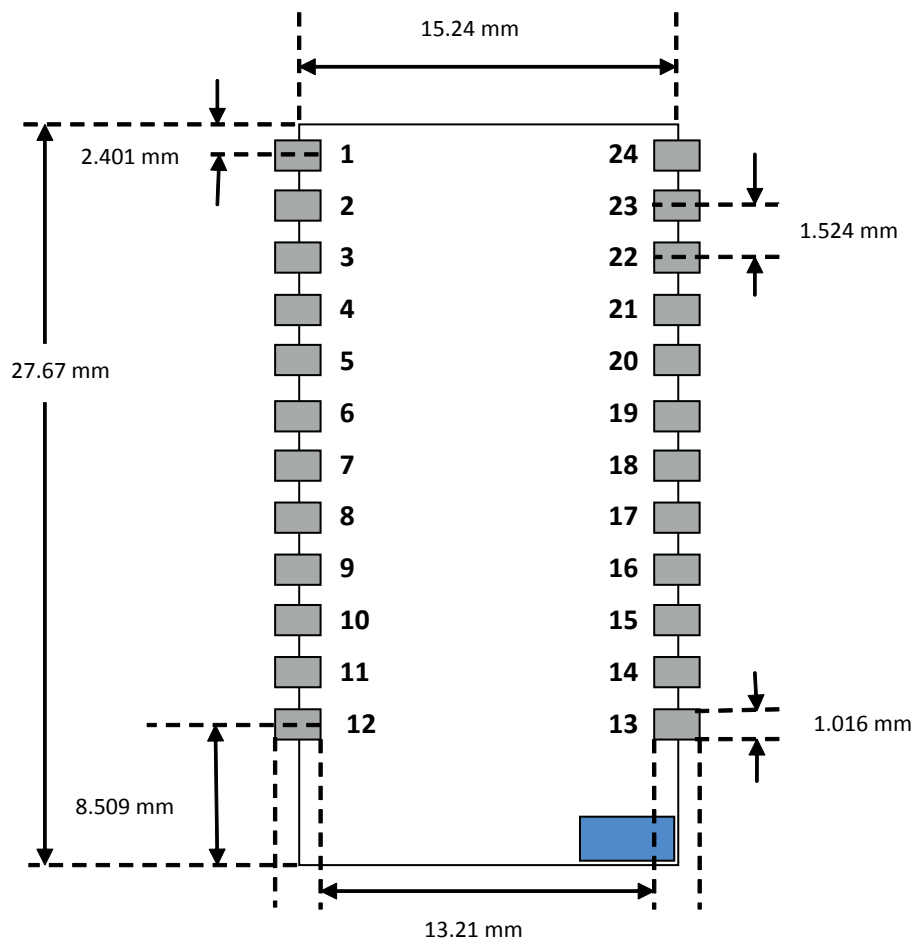
10 Dimensions



*: Note- Shown Dimensions not as per scale



Product: LM780
Part No: 780-0220 for BT2.0 F/W
Part No: 780-0223 for BT2.1 F/W
Datasheet Rev1.2/19-04-12



Module dimension and suggested landing pattern*

*: Note- Shown Dimensions not as per scale

11 Revision History

Revision	Date	Comments
v1.0	17/12/2010	First Version
v1.1	03/04/2012	- Added metal cap to the module - Module dimensions changed - Added part number information - Added packaging options
v1.2	19/04/2012	- Added antenna outline to landing pattern diagram - Added Revision History