BLE Transparent Transmission

BM7701-00-1

Revision: V1.00 Date: June 14, 2022

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Features

- Operating voltage: 2.0V~3.6V
- Operating current
  - Power down mode: 2μA
  - Broadcast mode: 765μA @ 100ms, 3V
  - Transparent transmission: 1mA @ 20 bytes, 5 times/sec, 3V
- RX sensitivity @ 25°C
  - 1Mbps: -94dBm (Typ.)
  - 2Mbps: -91dBm (Typ.)
- Frequency range: 2402MHz~2480MHz
- TX output power: +3.5dBm @ Max. power setting
- Modulation: GFSK
- Transmission distance: >100m @ +3.5dBm in open area
- Interface: 8 pins×3 – pitch=1.27mm stamp hole
- Dimensions: 18mm(L)×17mm(W)
- Operating temperature: -40°C~85°C

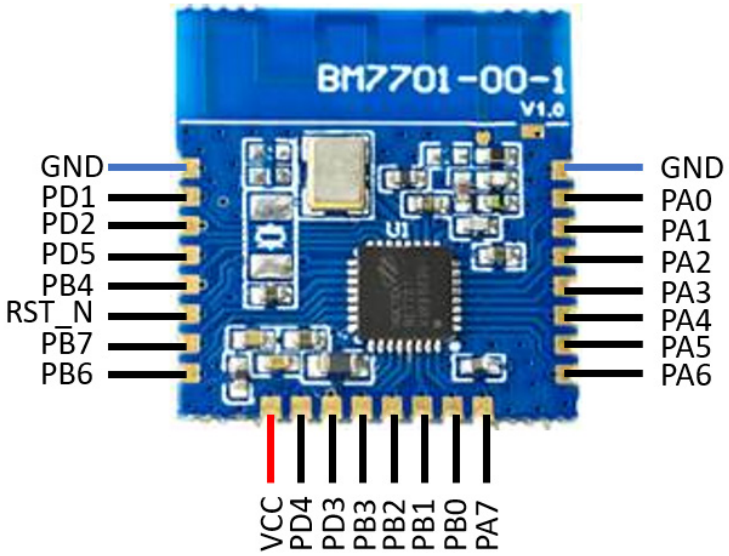
General Description

The BM7701-00-1 is a Bluetooth Low Energy, BLE, transparent transceiver module which is a design based on the BC7701 BLE transparent transmission device. More detailed information is described in the BC7701 datasheet. This module can wirelessly control external devices and supports bidirectional data transfer suitable for lighting products, health care products and home appliances

Selection Table

Part NO.	Temperature	Interface
BM7701-00-1	-40°C~85°C	UART

Pin Definition



Pin No.	Pin Name	Type	Function Description
1	GND	P	RF negative power supply, ground
2	PD1	I/O	General purpose I/O
3	PD2	I/O	General purpose I/O
4	PD5	I/O	General purpose I/O
5	PB4	I/O	General purpose I/O
6	RST_N	I	Hardware reset input, active low
7	PB7	I/O	General purpose I/O, UART2_RX
8	PB6	I/O	General purpose I/O, UART2_TX
9	VCC	P	RF positive power supply, 2.0V~3.6V
10	PD4	I/O	General purpose I/O
11	PD3	I/O	General purpose I/O
12	PB3	I/O	General purpose I/O
13	PB2	I/O	General purpose I/O
14	PB1	I/O	General purpose I/O
15	PB0	I/O	General purpose I/O
16	PA7	I/O	General purpose I/O
17	PA6	I/O	General purpose I/O
18	PA5	I/O	General purpose I/O
19	PA4	I/O	General purpose I/O
20	PA3	I/O	General purpose I/O
21	PA2	I/O	General purpose I/O
22	PA1	I/O	General purpose I/O, UART1_RX
23	PA0	I/O	General purpose I/O, UART1_TX
24	GND	P	RF negative power supply, ground

Legend: I=Input; O=Output; P=Power.

D.C Characteristics

Ta=25°C, V_{CC}=3.0V, f_{XTAL}=16MHz, TX Power=+3.5dBm

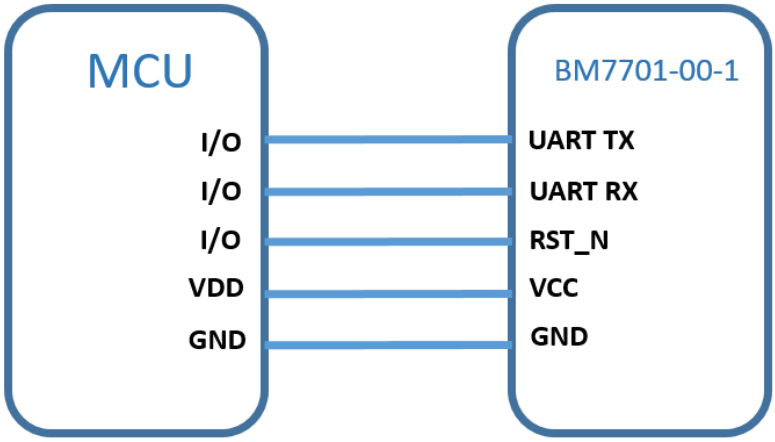
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Ta	Operating Temperature	—	-40	—	85	°C
V_{CC}	External Main Supply Voltage	—	2.0	—	3.6	V
Current Consumption						
I_{POR}	Power-on Reset Current	—	—	780	—	μA
I_{ADV}	Broadcast Current	ADVINTV=100ms, TX Power=+3.5dBm	—	765	—	μA
I_{CON}	Connection Current	CONINTV=100ms	—	680	—	μA
I_{PD}	Power down Current	—	—	2	—	μA
I_{TX}	TX Current	TX Power=+0dBm	—	6.9	—	mA
I_{RX}	RX Current	Data rate=1Mbps	—	8.6	—	mA

A.C Characteristics

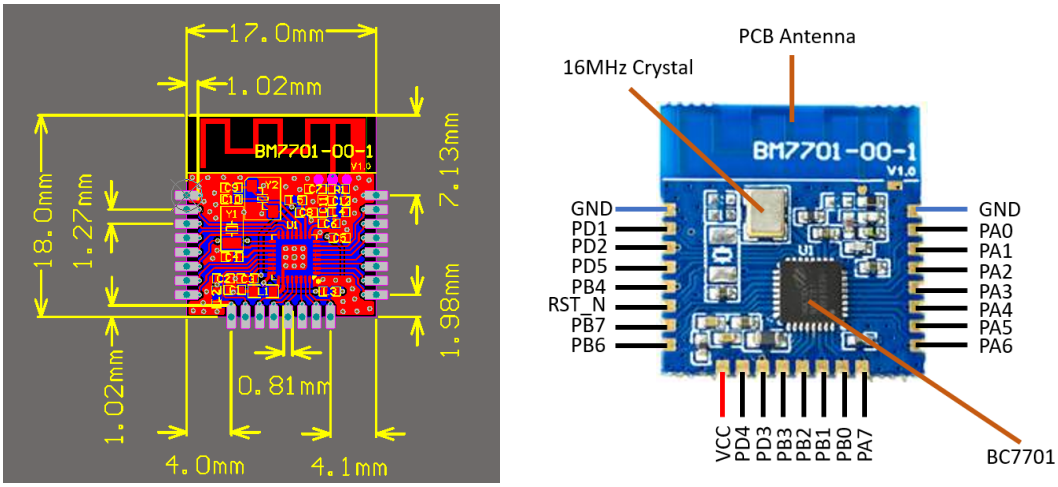
Ta=25°C

Symbol	Parameter		Min.	Typ.	Max.	Unit
RX Characteristics						
CI0	In-band Blocking	Co-channel Interference	—	7	—	dB
CI1		Interfere at f_{OFFS}=±1MHz	-9	—	-6	
CI2		Interfere at f_{OFFS}=±2MHz	—	-44	—	
CI3		Interfere at f_{OFFS}=±3MHz	—	-50	—	
CI4		Interfere at f_{IMAGE}	—	-25	—	
CI5		Interfere at f_{IMAGE}=±1MHz	—	-35	—	
Intermodulation	P_{in}=-64dBm; P_{unwant}=-50dBm; $f_0=2f_1-f_2$, f_2-f_1=3/4/5MHz		-25	—	-22	dBm
PSENS	Sensitivity @ 1Mbps		—	-94	—	dBm
	Sensitivity @ 2Mbps		—	-91	—	dBm
TX Characteristics						
P_{TX}	Output Power		—	3.5	—	dBm
P_{BW}	Modulation 20dB Bandwidth		—	—	1	MHz
PRF1	Out of Band Emission 2MHz		—	-20	—	dB
PRF2	Out of Band Emission 3MHz		—	-58	—	dB
Dev	Transmit FM Deviation		115	250	300	kHz
Drift	Transmit Drift in any Position		—	—	400	Hz/μs

Application Circuits



Module Dimension Drawing



Top View