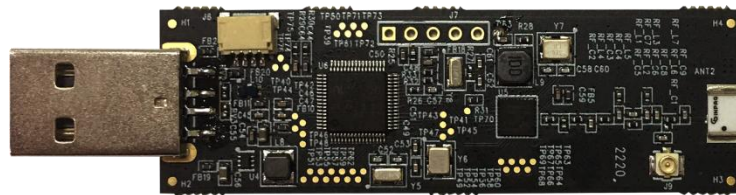
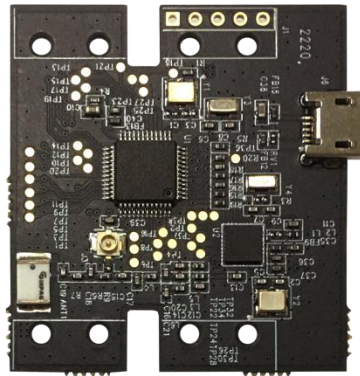


# ITM-MV8 / ITM-DV8



Datasheet

**(Preliminary)**

V0.1

# Revision History

Date	Revision Content	Revised By	Version
2022/07/06	- Initial released (Preliminary)	Marco Liu	0.1
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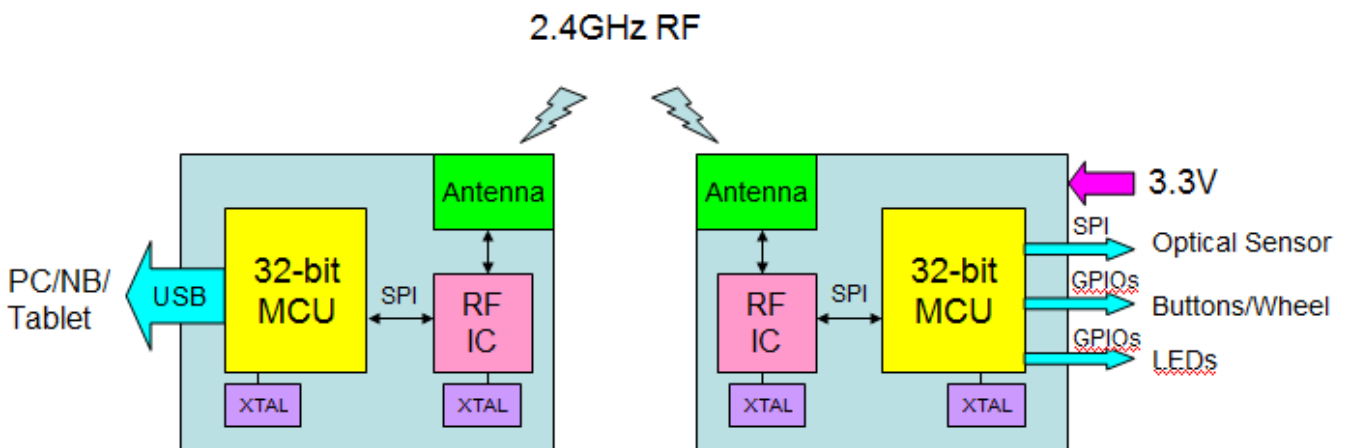
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# 1. General Description

ITM-MV8 and ITM-DV8 use MCU with high efficient RF front-end to implement the world-wide first wireless mouse solution up to 8KHz polling rate. ITM-MV8 is the module PCBA designed for the mouse side, connected to optical sensor, buttons, wheel, LEDs and 3.3V power source. ITM-DV8 is an USB dongle PCBA design for the PC/NB side, to transmit/receive data to/from ITM-MV8. Via USB2.0 HS, ITM-DV8 can transfer mouse data from ITM-MV8 to PC/NB with maximum 8KHz polling rate.

The block diagram for ITM-MV8 / ITM-DV8 are shown as below.



## 2. Features

### 2.1 ITM-MV8 (Module for Mouse Side)

- MCU
  - ARM® Cortex®- M4F 32-bit processor , running up to 192 MHz
  - Built-in Memory Protection Unit (MPU)
  - Built-in Nested Vectored Interrupt Controller (NVIC)
  - Hardware IEEE 754 compliant Floating-point Unit (FPU)
  - DSP extension with hardware divider and single-cycle 32-bit hardware multiplier
  - 24-bit system tick timer / 32-bit Timer \*4
  - Programmable and maskable interrupt
  - Low Power Sleep mode by WFI and WFE instructions
- Memory
  - 512KB flash and 160KB (include 32 KB cache for XIP) RAM
  - 4KB ISP Loader ROM
- Security
  - ◆ 96-bit Unique ID (UID)
  - ◆ 128-bit Unique Customer ID (UCID).
  - ◆ One built-in temperature sensor with 1°C resolution.
- Wireless
  - 2.4GHz-2.5GHz proprietary RF transceiver
  - -20 to +10 dBm configurable TX power
  - -96 dBm sensitivity at 1Mbps data rate
  - -93 dBm sensitivity at 2Mbps data rate
  - -87 dBm sensitivity at 4Mbps data rate

### 2.2 ITM-DV8 (USB Dongle PCBA)

- MCU / Memory / Security / Wireless
  - Refer to ITM-MV8
- USB
  - USB Specification reversion 2.0 compliant
  - Supports 12 configurable endpoints in addition to Control Endpoint
  - Supports DMA operation
  - 4092 Bytes Configurable RAM used as endpoint buffer
  - Supports Endpoint Maximum Packet Size up to 1024 bytes

## 3. General Specification

### 3.1 Voltages

#### 3.1.1 Absolute Maximum Ratings

##### ITM-MV8

Symbol	Description	Min.	Max.	Unit
VDD	Input supply Voltage	-0.3	3.6	V

##### ITM-DV8

Symbol	Description	Min.	Max.	Unit
VDD	Input supply Voltage	-0.3	5.8	V

#### 3.1.2 Recommended Operating Ratings

##### ITM-MV8

Test conditions: At operating temperature 0°C ~ 70°C				
Symbol	Min.	Typ.	Max.	Unit
VDD	3.0	3.3	3.6	V

##### ITM-DV8

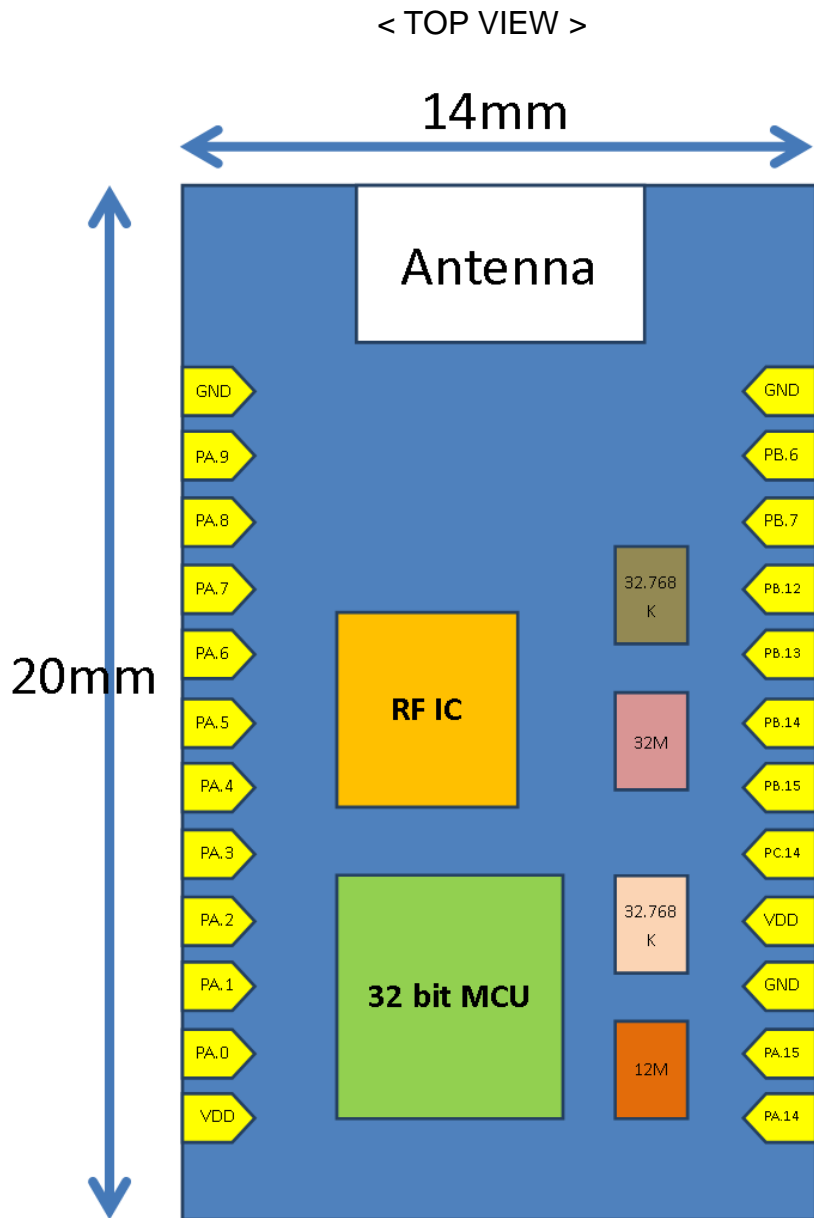
Test conditions: At operating temperature 0°C ~ 70°C				
Symbol	Min.	Typ.	Max.	Unit
VDD	4.5	5.0	5.5	V



# 4. Pin Assignments

## 4.1 PCB Pin Outline

ITM-MV8 (20mmx14mm)





## 4.2 Pin Definition

### ITM-MV8

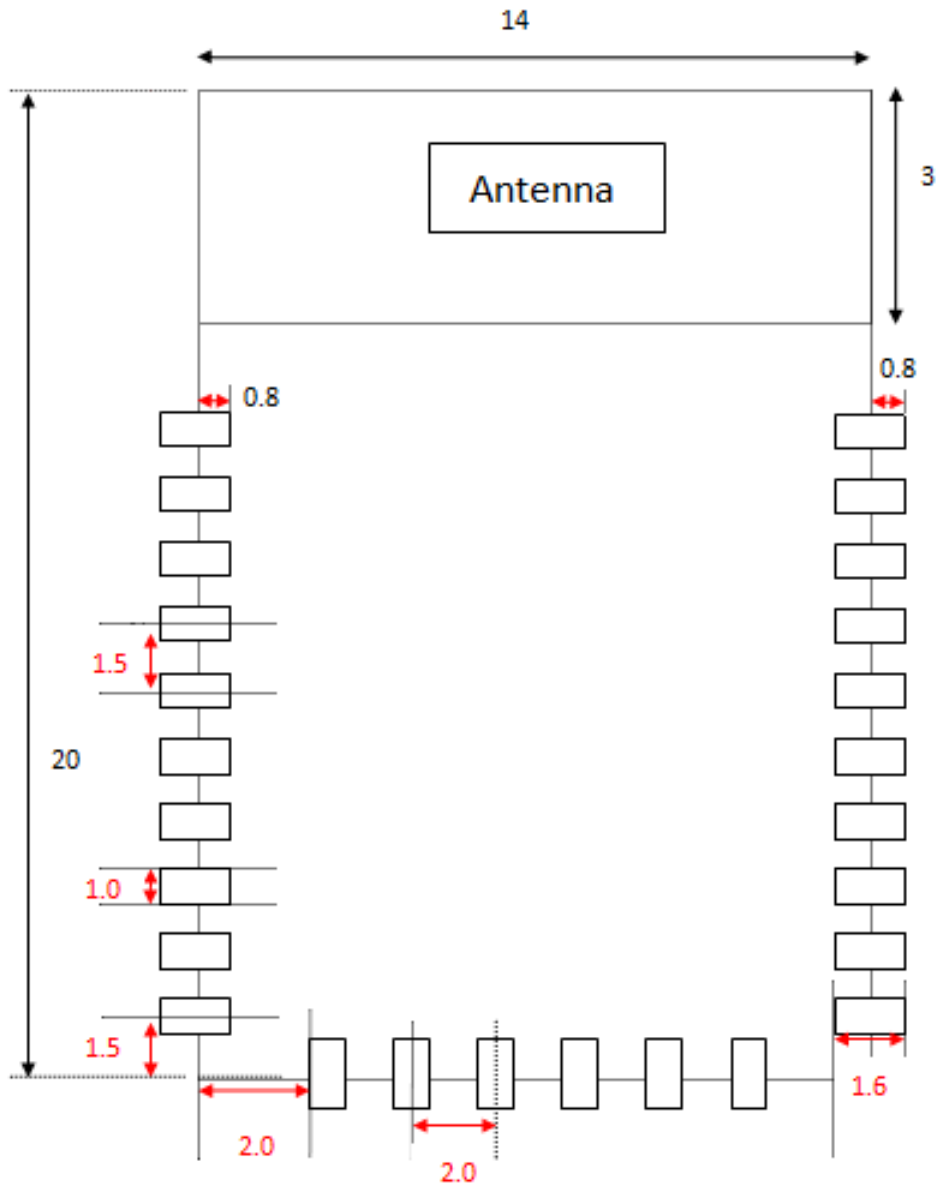
Pin No.	Pin-Define	Type	Description
1	GND	G	Ground
2	PA.9	DIO	Multi-functional I/O pin.
3	PA.8	DIO	Multi-functional I/O pin
4	PA.7	DIO	Multi-functional I/O pin
5	PA.6	DIO	Multi-functional I/O pin
6	PA.5	DIO	Multi-functional I/O pin
7	PA.4	DIO	Multi-functional I/O pin
8	PA.3	DIO	Multi-functional I/O pin (ROLLER_B)
9	PA.2	DIO	Multi-functional I/O pin (ROLLER_A)
10	PA.1	DIO	Multi-functional I/O pin (BNT_R)
11	PA.0	DIO	Multi-functional I/O pin (BNT_L)
12	VDD	P	3.3V Power supply
13	PF.0	DIO	Multi-functional I/O pin (ICE_DAT)
14	PF.1	DIO	Multi-functional I/O pin (ICE_CLK)
15	PC.2	DIO	Multi-functional I/O pin (RT_SHUTDOWN)
16	PC.1	DIO	Multi-functional I/O pin (BNT_ROLLER)
17	PA.12	DIO	Multi-functional I/O pin (SPI2_SS)
18	PA.13	DIO	Multi-functional I/O pin (SPI2_CLK)
19	PA.14	DIO	Multi-functional I/O pin (SPI2_MISO)
20	PA.15	DIO	Multi-functional I/O pin (SPI2_MOSI)
21	GND	G	Ground pin.
22	VDD	P	3.3V Power supply
23	PC.14	DIO	Multi-functional I/O pin
24	PB.15	DIO	Multi-functional I/O pin
25	PB.14	DIO	Multi-functional I/O pin
26	PB.13	DIO	Multi-functional I/O pin
27	PB.12	DIO	Multi-functional I/O pin
28	PB.7	DIO	Multi-functional I/O pin
29	PB.6	DIO	Multi-functional I/O pin
30	GND	G	Ground pin.

# 5. Dimensions

## 5.1 Layout Recommendation

ITM-MV8

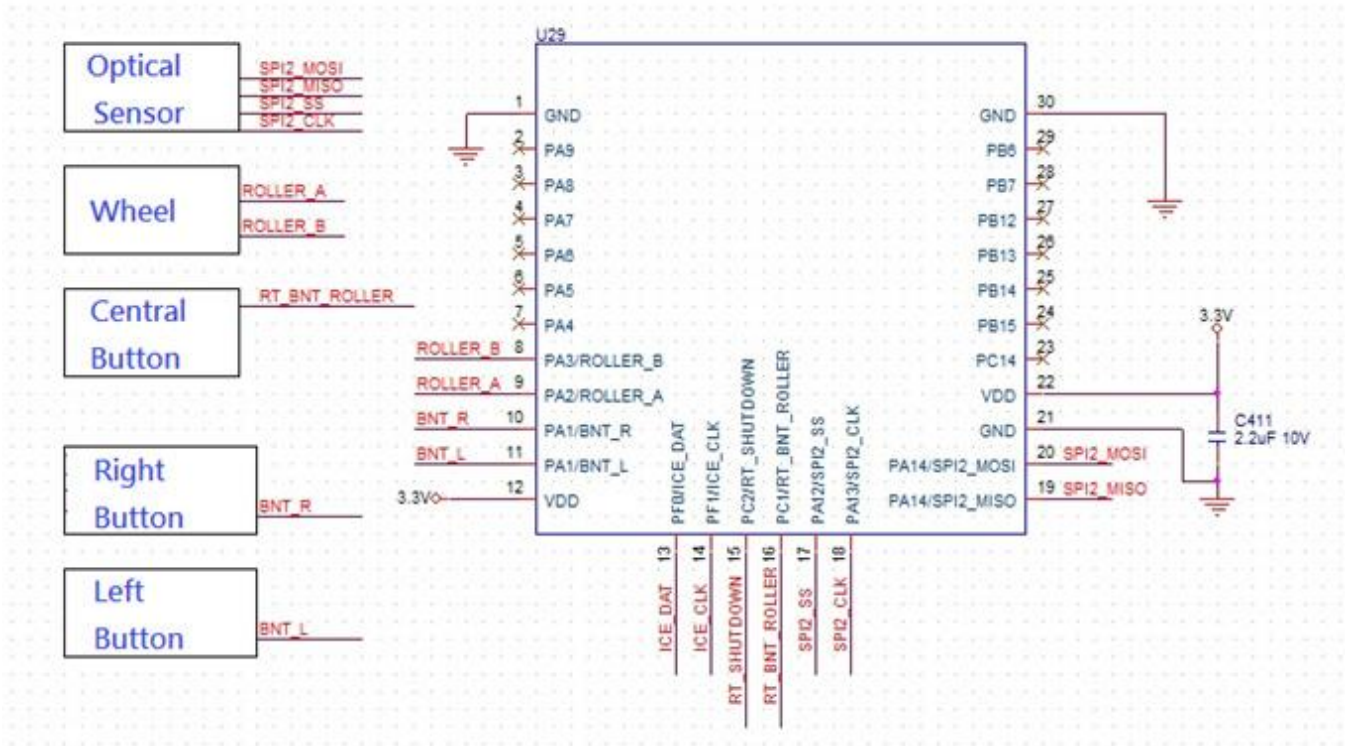
< TOP VIEW >



(Unit: mm)

# 6. Reference Design

## ITM-MV8



# 7. Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : <250°C

Number of Times : ≤2 times

