Batman BM502

BATMAN BM502 mmWAVE SENSOR MODULE

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Joybien Batman BM502 mmWave Sensor Module is a Texas Instruments (TI) IWR6843AOP ASIC based millimeter-wave (mmWave) Module with Frequency-Modulated Continuous Wave (FMCW) radar technology capable of operation in the 60GHz to 64GHz band with up to 4 GHz continuous chirp, using 3 Transmission Antennas and 4 Receiving Antennas, for sensing target object's range, velocity, and angle parameters. Batman BM502 mmWave Sensor Module is an extremely light and compact mmWave Module with low-power, self-monitored, ultra-accurate, and lighting condition independent versatilities for various applications including: Education, Engineering, Science, Industrial, Medical, and Business & Consumer.

Applications

- Education's Practical Radar Introduction
- Engineering & Science's Motion Detection, Displacement, etc.
- Industrial sensor for Displacement & Safe Guard, Factory Automation, Robotics, etc.
- Building Automation sensor for Occupancy Detection, Proximity & Position sensing, People Counting, People Density, Security and Surveillance,
- Healthcare's Vital Signs Detection, People Fall Detection, etc.
- Business' Traffic Monitoring, Parking Space occupancy and Proximity Advertisement
- Consumer's Gesture Recognition, Obstacle Avoidance, etc.

Features

- Operating Frequency: 60GHz ~ 64GHz coverage
  with 4GHz continuous bandwidth
- Antenna: 3 Tx and 4 Rx Antenna on Package (AOP), with:
  TX Power: 15 dBm
  RX Noise Figure: 9 dB
- Processors: ARM R4F based MCU, and C674x DSP
  for advanced signal processing
- On-Chip Memory: 1.75MB
- Internal Memories With ECC
- Integrated Peripherals
- Extremely light and compact Module design.
- Supplied Voltage: 5VDC & 1.5A

Joybien Technologies Co., Ltd. TEL:02-8227-3098 http://www.joybien.com
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Specifications

mmWave Sensor Evaluation Module

mmWave ASIC	TI IWR6843AOP Single Chip mmWave Sensor
FMCW Transceiver	● Integrated PLL, Transmitter, Receiver, Baseband, and A2D ● 60GHz to 64GHz Coverage With 4GHz Continuous Bandwidth ● Four Receive Channels ● Three Transmit Channels ● Ultra-Accurate Chirp Engine Based on Fractional-N PLL ● TX Power: 15 dBm ● RX Noise Figure: 14 dB ● Phase Noise at 1 MHz: –92 dBc/Hz ● Antenna Type : Antenna On Package(AOP)
Built-in Calibration and Self-Test (Monitoring)	● ARM® Cortex® -R4F-Based Radio Control System ● Built-in Firmware (ROM) ● Self-calibrating System Across Frequency and Temperature
DSP	● C674x DSP for Advanced Signal Processing
On-Chip Memory	● 1.75MB
MCU	● ARM R4F Microcontroller for Object Detection, and Interface Control ● Joybien mmWave Protocol (Per configuration)
I/O	● UART x 2 ● GPIO x 2(GPIO_31,GPIO_32)
Power Management	● Built-in LDO Network for Enhanced PSRR ● I/Os Support Dual Voltage 3.3 V
Clock Source	40MHz
Antenna Orientation	4 receive(RX) 3 transmit (TX) antenna with 120° azimuth field of view (FoV) and 120° elevation FoV
Input Power	5VDC, 1.5A source
Operating Temperature & Humidity	0°C ~ 40°C 10% ~ 85% Non-Condensing
Dimensions & Weight	37.4mm x 16mm x 3.1mm ; 3 grams net

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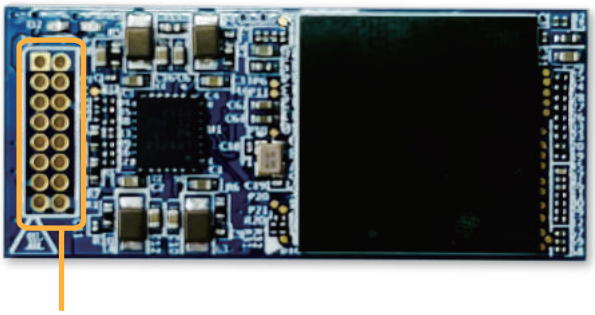
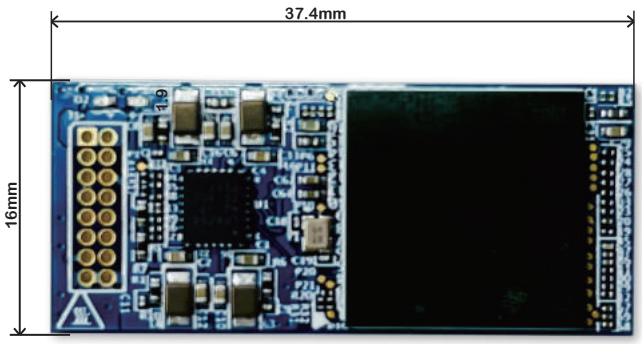
mmWave Pin Assignment

J1 J1 Pin Assignment



Pin#	Name		Name	Pin#
J1.1	5VDC_IN		5VDC_IN	J1.2
J1.3	RS232_RX0		GPIO_1	J1.4
J1.5	RS232_TX0		GPIO_2	J1.6
J1.7	nRST		GPIO_32	J1.8
J1.9	PMIC_CLKOUT_SOP2		GPIO_31	J1.10
J1.11	MSS_Logger_JB_TX1		SDA	J1.12
J1.13	GPIO_0		SCL	J1.14
J1.15	GND		GND	J1.16

Product Dimensions



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J1 Pin Assignment

Pin No	Name	Pin Type	Function Description
J1.1	5VDC_IN	I	POWER 5VDC Input
J1.2	5VDC_IN	I	POWER 5VDC Input
J1.3	RS232 RX0	I	UART A Receive
J1.4	GPIO_1	I	Reserved
J1.5	RS232 TX0	O	UART A Transmit
J1.6	GPIO_2	O	LED Indicator
J1.7	nRST	I	Power on reset for chip. Active low
J1.8	GPIO_32	IO	GPIO Pin
J1.9	SOP2	I	SOP2
J1.10	GPIO_31	IO	GPIO Pin
J1.11	MSS_LOGGER_JB_TX1	O	UART B Transmit
J1.12	SDA	IO	GPIO Pin
J1.13	GPIO_0	I	Select KeyData or RawData
J1.14	SCL	IO	GPIO Pin
J1.15	GND	GROUND	Digital ground
J1.16	GND	GROUND	Digital ground

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www.joybien.com

Note:
Please contact us at Joybien in advance for BM502 commercial application for mass production.