

DJ-IWR6843ISK-ODS-M

39mm*50mm	TI IWR6843	60~64GHz 45nm RFCMOS	ARM-Cortex R4F 200MHz	C674x DSP 600MHz	Radar hardware accelerator
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## Introduction

DJ-IWR6843ISK-ODS-M sensor module is based on TI's latest IWR6843 single chip 60GHz millimeter wave sensor. The module size is only 39mm × 50mm. The core module is integrated with IWR6843 chip, PMIC, flash, EEPROM, temperature sensor, user led and crystal oscillator. A group of double row 30pin pins on the board lead out the functional signal interfaces required by JTAG, UART, SPI, I2C, sync, power supply and other applications, and PCB antenna on board. DJ-IWR6843 sensor module has the characteristics of high integration and professional design, which is suitable for any millimeter wave radar products.

### Debug board(optional)

DJ-IWR6843 sensor module can be installed on the simulation debugging board, which supports IWR6843 sensor modules. It can be used for the evaluation of sensor module, software development and program burning. The size of debugging board is 39mm × 68mm.

## IWR6843 chip introduction

### DJ-IWR6843ISK-ODS-M sensor module only provides IWR6843 one configuration

IWR6843 is an integrated monolithic millimeter wave sensor based on FMCW radar technology, which can work in the frequency band between 60GHz and 64ghz. Based on TI's low-power 45 nm RFCMOS process, the product achieves unprecedented integration in a very small size.

IWR6843 is an ideal solution for power, self-monitoring and ultra precision radar systems in the industrial field.

Industrial mmWave radar(IWR) 6843:High precision industrial radar sensor. It is used for people counting, building safety, safety protection, liquid level transmitter, robot and traffic monitoring, etc. It can meet your needs of high precision range speed and angle information.

## Application

### IWR6843

- Measurement range temperature and speed in industry
- Automation
- Displacement sensing
- Gesture recognition
- Robotic
- Traffic monitoring
- Location awareness of adjacent targets
- Safety protection of factory automation
- People count
- Motion detection
- Occupancy detection

### Differences between DJ-IWR6843ISK-ODS-M and DJ-xWR6843ISK-M modules:

	DJ-IWR6843ISK-ODS-M	DJ-xWR6843ISK-M
<b>support</b>	IWR6843	AWR6843, IWR6843
<b>Antenna form</b>	With wide field antenna, ODS antenna	With long distance antenna, ISK standard antenna

## IWR6843 Features

60GHz to 64GHz single chip intelligent millimeter wave sensor with integrated processing function

### FMCW 收发器

- Integrated PLL, Transmitter, Receiver, Baseband, and A2D
- 60 to 64 GHz coverage with 4 GHz available bandwidth
- Four receive channels
- Three transmit channels
- Supports 6-bit phase shifter
- Ultra-accurate chirp engine based on fractional-N PLL
- TX power: 12dBm(10dBm)
- RX noise figure:
  - ◆ 12 dB (14dB)
- Phase noise at 1 MHz:
  - ◆ -93 dBc/Hz (92dBc/Hz)

### Built-in calibration and self-test

- ARM® Cortex®-R4F-based radio control system
- Built-in firmware (ROM)
- Self-calibrating system across frequency and temperature

### C674x DSP for advanced signal processing

### Hardware accelerator for FFT, filtering, and CFAR processing

### ARM-R4F microcontroller for object detection, and interface control

- Supports autonomous mode (loading user application from QSPI flash memory)

### Internal memory with ECC

- IWR6843: 1.75 MB, divided into MSS program RAM (512 KB), MSS data RAM (192 KB), DSP L1 RAM (64KB) and L2 RAM (256 KB), and L3 radar data cube RAM (768 KB)
- Technical reference manual includes allowed size modifications

### Other interfaces available to user application

- Up to 6 ADC channels (low sample rate monitoring)
- Up to 2 SPI ports
- Up to 2 UARTs
- 1 CAN-FD interface
- I²C
- GPIO
- 2 lane LVDS interface for raw ADC data and debug instrumentation

### Hardware integrity up to SIL-2 targeted

### Power management

- Built-in LDO network for enhanced PSRR
- I/Os support dual voltage 3.3 V/1.8 V

### Clock source

- 40.0 MHz crystal with internal oscillator
- Supports external oscillator at 40 MHz
- Supports externally driven clock (square/sine) at 40 MHz

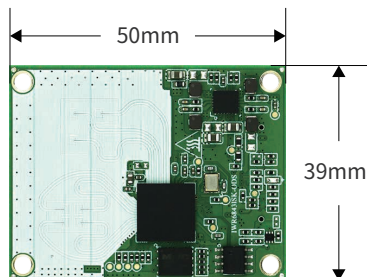
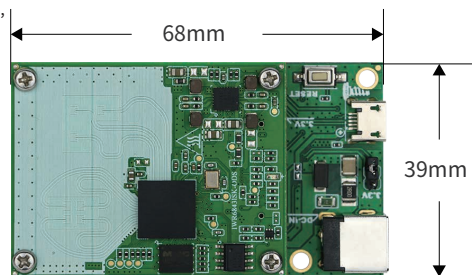
### Supports automotive temperature operating range

- Junction temperature range of -40°C to 105°C

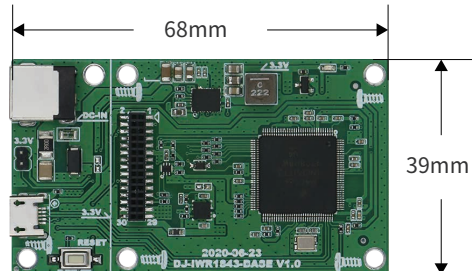
## IWR6843 parameters

	IWR1843
Specifications	Industrial
Frequency	60 - 64GHz
CPU	ARM-Cortex R4F 200MHz
DSP	C674x DSP @ 600MHz
RAM	1792
Number of receiving antennas	4
Number of transmitting antennas	3
ADC sampling rate (Max)	25 MSPS
Internal bus	I²C, QSPI, UART, GPIO
Interface	Micro USB
Hardware accelerators	Radar hardware accelerator
Connector	30Pin, Connect emulator xds110
Power Supply	DC 12V
Operating temperature range	-40 to 105 °C
Size	Module board:39mm*50mm Debug board:39mm*68mm
TI functional safety category	Functional Safety-Compliant

## Appearance&Size



【Module board】



【 Debug board】