



MS24-3515J58M4-LDO-B-6J-NLS-MCU-FMCW-LP

24GHz Millimeter Wave Radar Sensor Module

Data Sheet

MS24-3515J58M4-LDO-B-6J-NLS-MCU-FMCW-

LP is a miniaturized, ultra low-power 24GHz millimeter-wave radar sensor module that can be used in the fields of smart home, security camera linkage, and smart home appliance.

Revision History

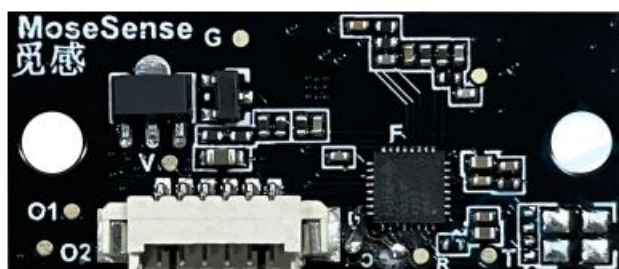
Version	Description	Release Date
V1.0	Initial Version	2024-05-27

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1 Product Description

The MS24-3515J58M4-LDO-B-6J-NLS-MCU-FMCW-LP is an ultra low-power 24GHz millimeter wave motion detection radar module based on the FMCW principle. Using the FMCW principle, the module detects the distance to the target and the corresponding status information.



2 Product Feature

- ★Working Frequency: 24G frequency band;
- ★Based on FMCW algorithm,support motion,distance measuring;
- ★Can penetrate thin non-metallic materials such as acrylic and glass;
- ★ Unaffected by environmental humidity, airflow, dust, noise, brightness and darkness.

3 Application

This module is used for sensor lights, intelligent security, home appliances, smart home and other products which is applied in many places such as corridors, hotels, offices, restrooms, smart lock that need automatic sensor control.



Smart Human Presence Sensor



Indoor Light



Intelligent Toilet



Office Lighting



Smart Hotel Parking Space Detection

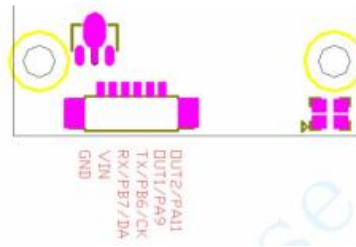


Smart Home

4 Module Parameter

Type	Parameter	Value
RF Parameter	Frequency Range	24.000GHz~24.250GHz
	Transmit Power	3dBm
	Antenna	Built-in;Flat Antenna
Hardware Parameter	Data Interface	GPIO/UART
	Operating Voltage	DC5- 12V(LDO version as default); Optional DC3.3V.
	Operating Current	35uA
	Operating Temperature	-40°C- 85°C
	Storage Temperature	-40°C- 85°C
	Humidity	<85%
	Dimension	35mmx15mm
	FOV	90°
Default Parameter	Power-On Self-Test Time	2s
	Sensing Output Level	3.3V
	Silent Output Level	0V
	Sensing Output Time	10s
	Customizing the Largest Sensing Distance FOR Motion/Movement	About 5m
	Setting Parameter Method	IIC

5 Pin Definition

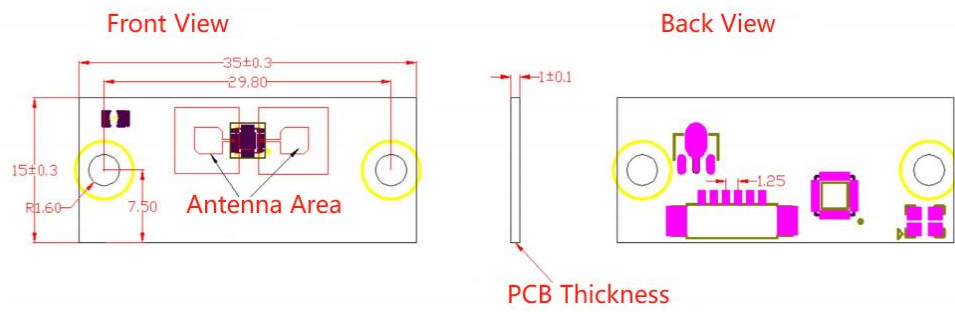


**Table 1. MS24-3515J58M4-LDO-B-6J-NLS-MCU-FMCW-LP
Pin Function Definition**

Pin	Name	Type	Description
1	GND		Ground
2	VIN		Power Supply
3	DA		IIC SDA
4	CK		IIC SCK
5	OUT1/PA9	O	One segment sensing distance output
6	OUT2/PA11	O	Two segment sensing distance output

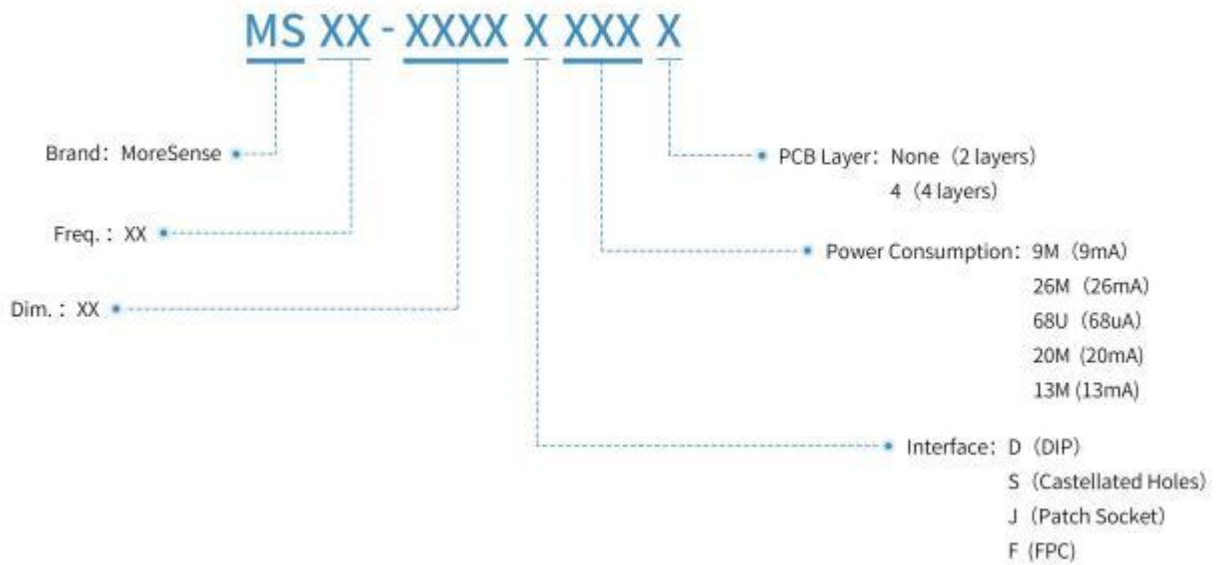
Note: I:Input O:Output

6 Module Dimension



Unit: Millimeter (mm)

7 Name Rule



④ Interface



8 Precautions



※The radar should be operated without metal or other media obstructing the transmission of electromagnetic waves in front of the antenna.

※By different housing materials and distances of the module from the inner surface of the housing, the returned spectral energy and parameter settings will be different. The parameter need to be fine-tuned according to actual conditions. Generally, it is recommended that the module should be 5-6mm away from the housing, which can be adjusted according to the actual conditions.

※We recommend users to test the module according to the default settings of MoreSense firstly. If the result is still not as expected after doing parameter by customers, customer can send the structural parts of the housing to MoreSense who will test and adjust a reference setting.

※When multiple modules are installed at the same time, the distance between modules should be more than 0.5 meters, and avoid the antennas of different modules facing each other.

※The sensitivity can be adjusted according to the user's scenario. Users can adjust the sensitivity according to their actual application scenarios.

※It is recommended to use plastic as the housing, because radar is a very sensitive module. If it is made of high attenuation material, it may affect the detection.

※Avoid air conditioning vents, fans and other objects.

9 Power Supply Requirement

※Isolated power supply must be used. At the same time, the AC rectifier bridge and transformer should avoid direct contact with the module and try not to make the transformer and rectifier face the module, and try not to place the transformer and rectifier directly in front of the module. They can be placed in a staggered position or increase the shielding.

※The ripple of the power supply should be less than 100mV as far as possible to avoid spikes and burrs in the power supply.

※Do not add anti-reverse diodes or other devices in the DC supply link. Adding any device to the DC supply link will increase the power supply noise and lead to the possibility of false alarms.

※The power supply drive current should not be less than 100mA.