Specification

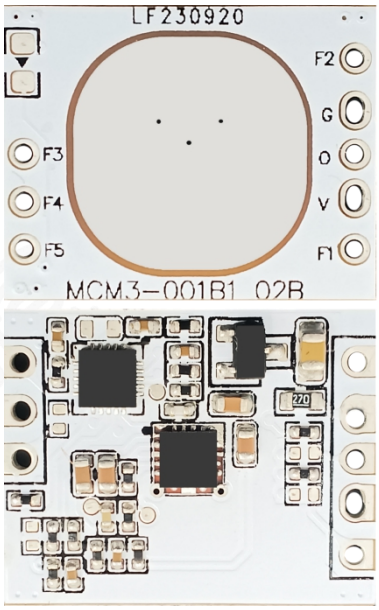
Product Name: **Integrated Circuit Microwave Module**

Product Model: **MIC25-5GH**

Versions	Release / Change Date	Reasons	Publishing
V1.0	2023.10.26		Leun Huang

【Product Feature】

- The product adopts patented low-impedance antenna technology, which has a larger detection range and strong anti-interference ability
- It can resist interference from wireless devices, while not interfering with other wireless devices, stably output high and low level signals
- Integrated circuit solution, suitable for ceiling lamp and T8 lamp applications
- Single lamp detects human body movement signals, the terminal is easy to use
- Multi-function expansion interfaces F1-F5 are available, and the sensing function can be easily expanded without the need for an additional MCU.
- Can pass FCC and RED certification in batches



【Parameter】

Input		
Rated Voltage	8-13Vdc	
Working Current	12±2mA	
Ripple Voltage	<120mVp-p	
Output		
Output Signal	5V high-low level signal	
Sensor Parameter		
Working Frequency	5.8GHz ±75MHz, ISM wave band	
Transmitting Power	1mW Max.	
Detection Area	50% / 100%	
Hold Time	Use external dialing to set scene parameters: 2s/30s/1min/3min/5min/10min/30min/60min (See the dialing function table for details)	
Daylight Sensor	Daylight sensor:	30Lux / Disable
Stand-by Period	N/A	
Stand-by Dim Level	N/A	
Detection Area(Radius)	Ceiling mounting height 3m: Human detection: r≥3.5m@0.3m/s, r≥2.5m@1m/s Test condition: Set the sensitivity to 100%, indoors 60m^2 area	
Mounting Height	3m (6m Max)	
Environment		
Working Environment Temperature	-25~85℃	
Storage Temperature	20℃~30℃, humidity ≤60% (non-condensing)	
Certificate Standard		

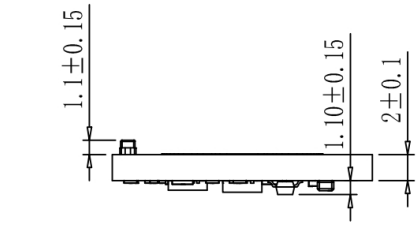
Certificate	RED(Pending), FCC(Pending)
Environmental Requirement	Compliant to RoHS 2.0, Reach
IP Rating	IP00
Other	
Wiring	Customizable Pin Header
Installation	Built-in
Package	Clapboard + Carton(K=A)
Net Weight	3±0.5g
Lifetime	5 years warranty @Ta

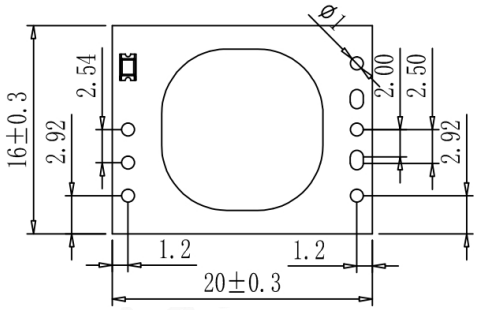
【Function】

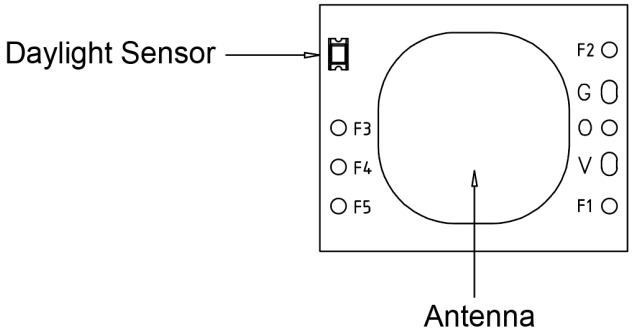
☑ON/OFF function	When the light control control Disable or the external brightness value is lower than the set value, when the microwave sensor detects the movement of an object, the sensor is triggers to enter the light-on state, and after a delay of maintain the light-on state, it enters the light-off state.
☐Two-step dimming function	N/A
☐Three-step dimming function	N/A
☐Daylight harvesting	N/A
☐Daylight priority	N/A

【Product Information】

- Dimension (Unit: mm), Function



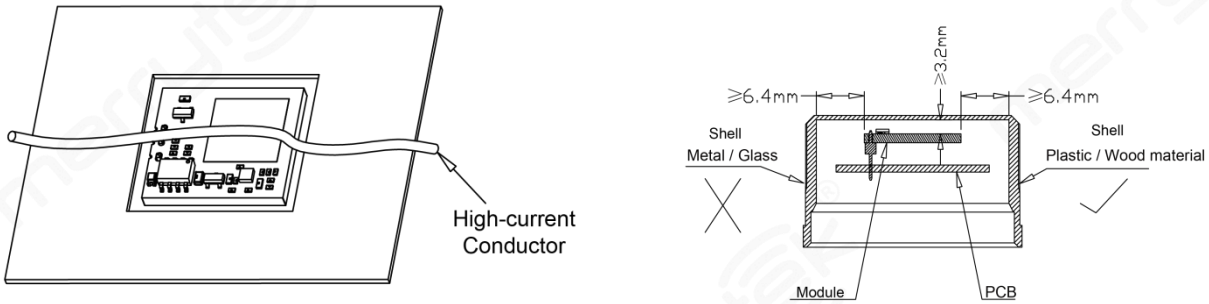




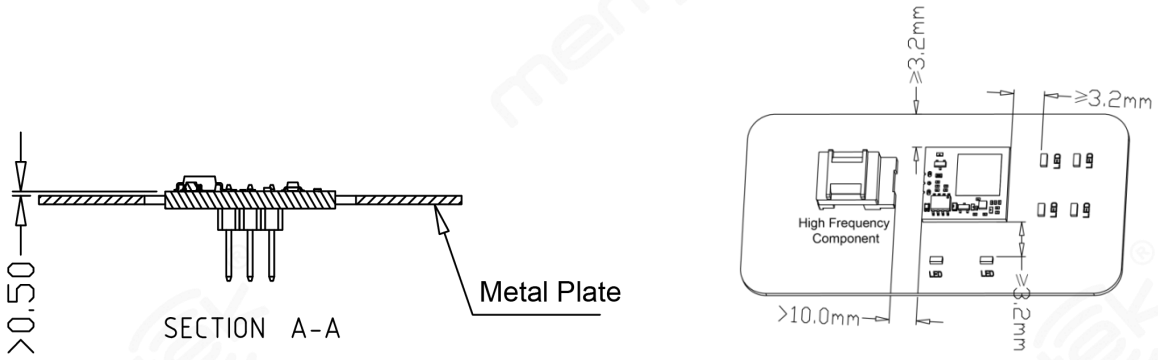
- Functional pin definition

Name	Description	Function and Parameter
VCC	Positive pole of power input	Voltage input range: 8-13Vdc
OUT	High-low level and PWM signal	High-low level signal, high-low level voltage is : 0/5V.
GND	Negative pole of power input	Negative pole of power supply.
Daylight sensor	Photosensitive sensor	Sensor that detects the intensity of external light.
F1		Combined with F2/F3 to form scene mode selection.
F2		Combined with F1/F3 to form scene mode selection.
F3		Combined with F1/F2 to form scene mode selection.
F4		Sensing range selection.
F5		Bright and dark setting selection.

- Installation Instruction



Prohibited (unit: mm)

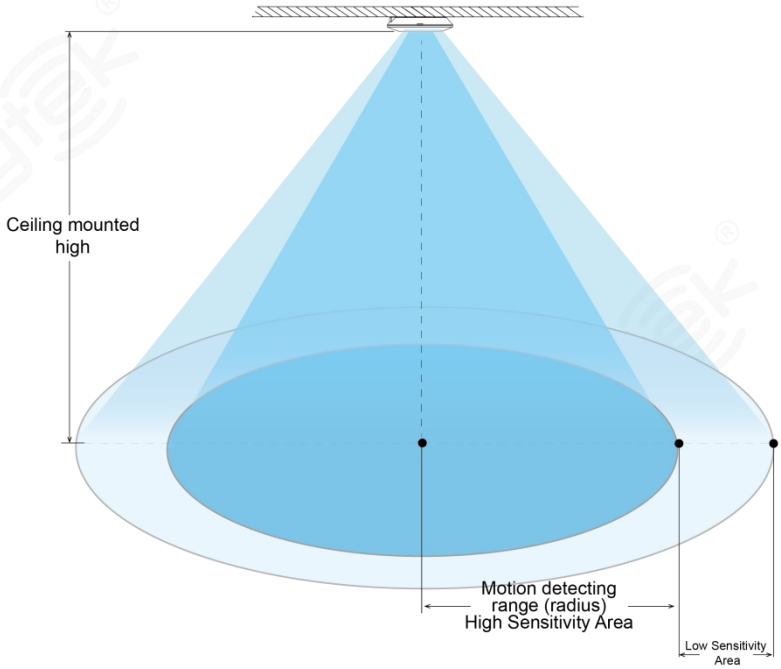


Space item (unit: mm)

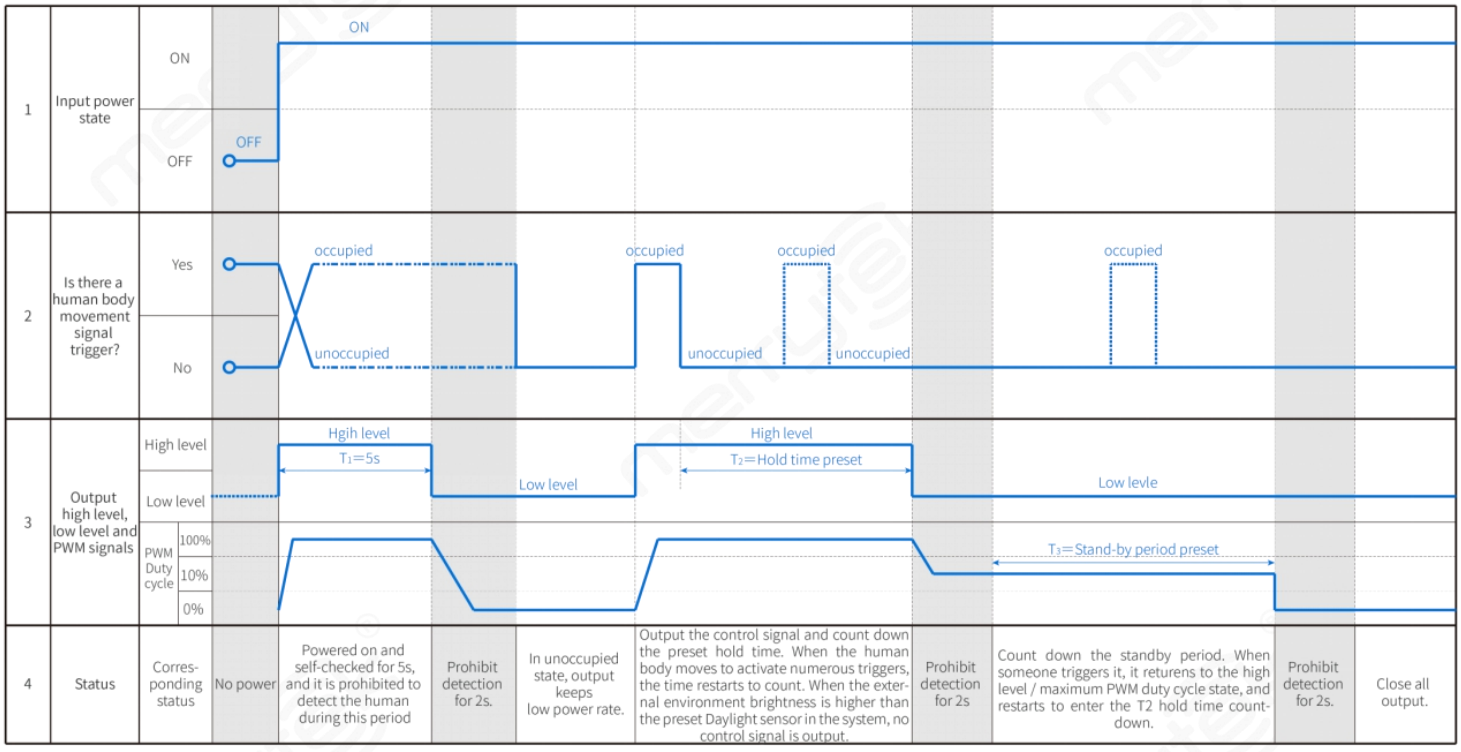
Note:

When installing and designing, please pay attention to the distance between the microwave antenna and the light panel, high-frequency components and high-current wires. See the precautions for details.

【Radiation Pattern】

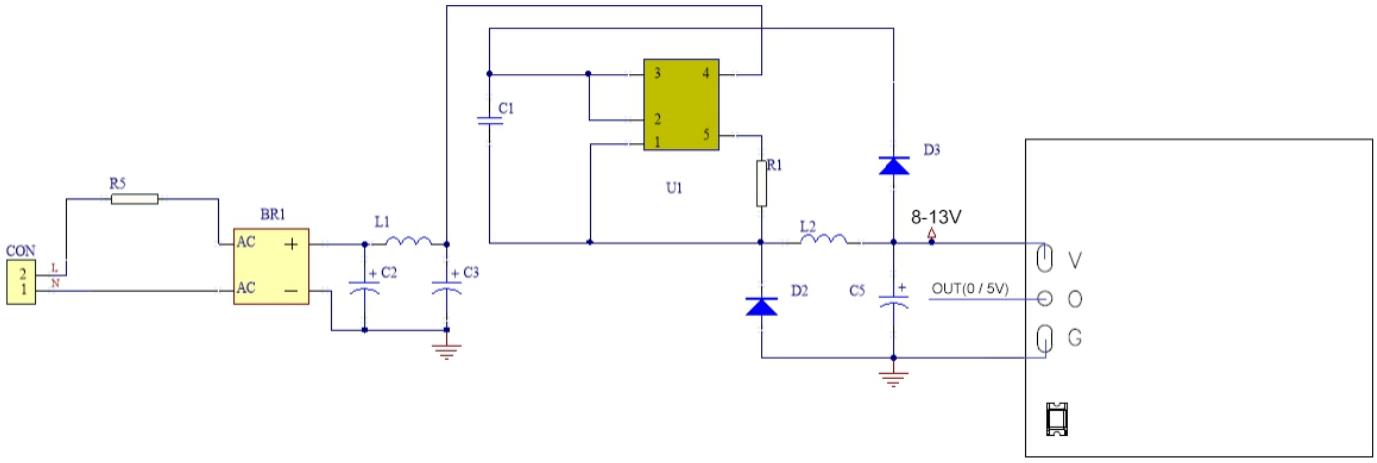


【Functional Sequential Logic】

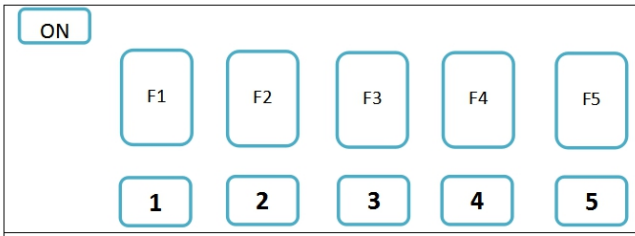


Note: This type module does not have PWM output function, only the O pin outputs high-low levels.

【Typical Application Circuit& Parameters】



【Dial Code Function】



Company standard dip switch function table
2023.10.26

Function description

Serial number	1	2	3	Hold Time	Stand-by period	Stand-by Dim Level	4	Function description	5	Function description
1	ON	ON	ON	60min	N/A	N/A	ON	Detection Area: 50%	ON	30Lux
2	ON	ON	OFF	30min	N/A	N/A	OFF	Detection Area: 100%	OFF	Disable
3	ON	OFF	ON	10min	N/A	N/A	Note: ON-- connected to the GND, low level; OFF-- Circuit suspended, high level			
4	ON	OFF	OFF	5min	N/A	N/A				
5	OFF	ON	ON	3min	N/A	N/A				
6	OFF	ON	OFF	1min	N/A	N/A				
7	OFF	OFF	ON	30s	N/A	N/A				
8	OFF	OFF	OFF	2s	N/A	N/A				

Illustration: F1、F2、F3 set the pin for the hold time, F4 set the pin for detection sensitivity, F5 set the pin for turning on the photosensitivity value. If you only need fixed parameter settings, the DIP switch in the picture above can be replaced by a 0R resistor.

1) Detection sensitivity is the sensitivity of the sensor in detecting human body movement signals. The higher the sensitivity percentage, the farther the sensing distance is. The lower the sensitivity percentage, the closer the sensing distance is.

2) The hold time of the O pin output is the time to output a high level, and the timing can be triggered repeatedly. When the sensor detects no one, it delays the set time and then outputs a low level.

3) The photosensitive opening threshold is when the light sensor detects that the external light intensity is less than the set value and is triggered by human movement before it can output a control level signal.

【Default Setting】

Sensitivity: 100% Hold time: 2s Stand-by period: N/A Stand-by dim level: N/A Daylight sensor: Disable

【Initialization】

The light will be turned on 100% brightness after power on, and will be turned off after 5 seconds. During initialization, no external motion sensing signal will be detected.

【Application Notice】

- Sensor should be installed by a professional electrician. Please turn off power before installing, wiring.
- Microwave sensor has good penetration ability to plastic and wood, but microwaves cannot penetrate metal. Neither metal nor glass is not allowed to cover above the product, otherwise the transmitting and receiving of microwave antennas will be affected.
- Sensitivity area is related to moving speed of objects, size of moving objects, mounting height, mounting angle, working environment, reflecting materials and etc..And the sensing distance in different directions will also have certain differences.
- The daylight thresholds are measured on a sunny day without shadow and in an ambient light diffuse reflection status. Different environment and climate cause different brightness values that daylight sensor measures.
- The installation spacing between sensors is recommended to be greater than 1.5m, and the installation spacing between sensors and routers is recommended to be greater than 2m. So as not to interfere with the normal operation of the microwave.
- The installation plane of the product (for example, aluminum substrate, PCB board) needs to be a certain height different from the antenna plane of the microwave module. The spacing between the sensor antenna and surrounding materials should be greater than 5mm.
- It is recommended to connect with stable AUX power supply with lower current and ripple voltage (ripple voltage< 120mV; the minimum load current > 100mA), and to set an electrolytic capacitor filter of no less than 220uF at the VCC port of the input power supply.
- Vibration signals will be regarded as moving signals to trigger sensor. Installing sensor should be away from the object that vibrates for a long time, such as large metal equipment, pipes, air conditioning outlets, exhaust vents, smoke exhaust machine ports, shaking fans, etc.
- The antenna surface of microwave module should be away from AC drive power supply, rectifier bridge, transformer, switch tube and other high-power devices to avoid high frequency signals affecting the normal operation of microwave sensor’s antenna.
- When design product: The antenna surface of the microwave module and its nearby circuit should avoid large current flow, and it also should avoid transformers or high-frequency components nearby, the distance should be greater than 10mm.
- When wiring, the antenna surface and the component surface on the back of the product should not be shielded by wires or large current flow, avoid to influence the normal operation of the sensor.

- There should be no metal or glass barrier directly in front of or near the product, avoid to influence the normal operation of the sensor. Meanwhile, the height between the antenna surface and plastic should be greater than 3.2mm. The thickness of the plastic should be less than 2mm. If it is too thick, it will affect the detection effect and orientation of the microwave module. Please refer to the spacing item description in the installation diagram.

- The height between the antenna surface and metal plane(aluminum substrate, iron shell) is recommended greater than 0.5mm.

- When the product structure, power supply mode/circuit, sensor antenna front shield changes, should notice the sensor manufacturer for confirmation, so as not to cause the product to work abnormally. If the change is not notified to the manufacture, the manufacturer will not take responsibility to the abnormal.

- The input and output pins are not welded by default.

- For the new installation environment, it is recommended to install and test 5pcs of prototypes before batch installation.