

# SPECIFICATION

## FOR APPROVAL

|                     |                    |
|---------------------|--------------------|
| <b>CUSTOMER</b>     |                    |
| <b>DESCRIPTION</b>  | IR RECEIVER MODULE |
| <b>MODEL NO.</b>    | MIR-3 Series       |
| <b>ISSUED DATA</b>  | 26-JAN-2026        |
| <b>DOCUMENT NO.</b> | MJQC-MIR3S-260303  |

### [ MJ-CHIP CO.,LIMITED.]

| ISSUE DEPT. |        |     |        |
|-------------|--------|-----|--------|
| ISSUE       | REVIEW | Q/A | APPR'L |
|             |        |     |        |

### [ CUSTOMER APPROVAL ]

| ISSUE DEPT. |        |  |  |  |  |
|-------------|--------|--|--|--|--|
| ISSUE       | REVIEW |  |  |  |  |
|             |        |  |  |  |  |

## IR Receiver Module for Remote Control System



### Description

The MIR-3 Series consist of a PIN Photodiode of high speed and a preamplifier IC in the package as an receiver for Infrared remote control systems

### Features

- 2.7~5.5 Volt supply voltage, low power consumption
- Shielded against electrical field disturbance
- High immunity against ambient light
- Easy interface with the main board
- TTL and CMOS compatibility
- RoHS Compliance

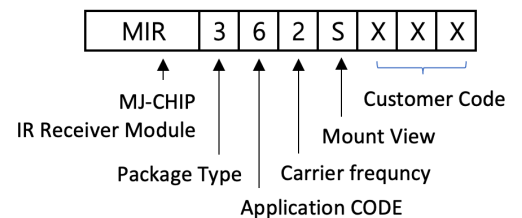
### Applications

- Televisions and set-top boxes
- Audio and home entertainment systems
- Air conditioners and home appliances
- Smart home devices
- Consumer electronic products requiring infrared remote control functionality

### Product Ordering Table

| NO. | ITEM                             | Selection options                    | Unique Product ID |
|-----|----------------------------------|--------------------------------------|-------------------|
| 1   | MIR (MJ-CHIP IR Receiver module) |                                      | MIR               |
| 2   | Package Type                     | SMD Type Dual PD Type                | 3                 |
| 3   | Application Code                 | Normal CODE (Toshiba , NEC, RC5 ...) | 3                 |
|     |                                  | RCMM, XMP                            | 4                 |
|     |                                  | Continuous CODE                      | 6                 |
| 4   | Carrier frequency                | 36.7KHz                              | 1                 |
|     |                                  | 37.9KHz                              | 2                 |
|     |                                  | 40.1KHz                              | 3                 |
| 5   | Mount View                       | SMD Side View                        | S                 |
|     |                                  | SMD Top View                         | T                 |
|     |                                  | DIP Type (Through-Hole Package)      | D                 |
|     |                                  | SMD Type (Surface Mount Package)     | M                 |
|     |                                  |                                      |                   |
| 6   | Factory Management number        |                                      | XXX               |

"The following part number format is for reference only."

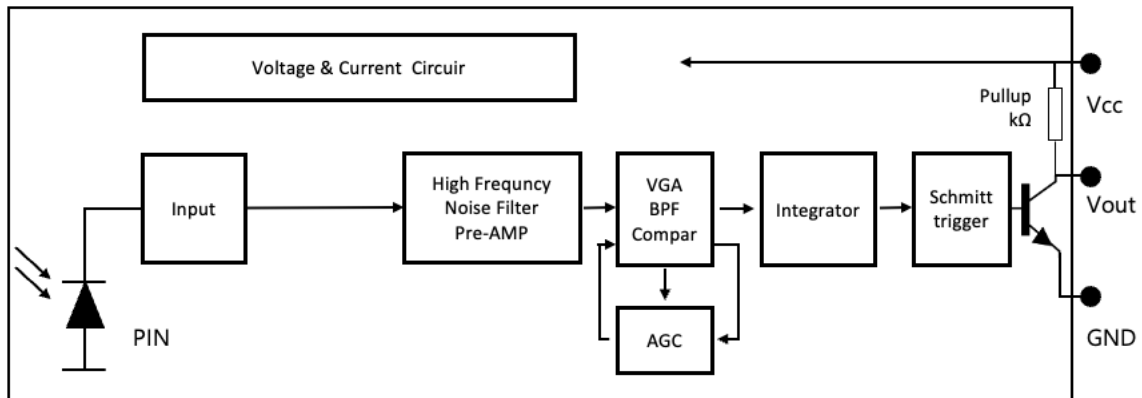


## ■ IR Receiver Module Selection Options

| Data format                                                  | Product CODE Select |                  |
|--------------------------------------------------------------|---------------------|------------------|
|                                                              | Normal              | Continuous       |
| Toshiba                                                      | +                   | +                |
| NEC                                                          | +                   | +                |
| RC5 Philips                                                  | +                   | +                |
| RCA Thompson                                                 |                     | +                |
| Sharp                                                        |                     | +                |
| Sony 12bit                                                   |                     | +                |
| Sony 16 bit                                                  |                     | +                |
| Sony 20 bit                                                  |                     | +                |
| Matsushita                                                   |                     | +                |
| Mitsubishi                                                   |                     | +                |
| Zenith                                                       |                     | +                |
| JVC                                                          |                     | +                |
| Continuous code                                              |                     | +                |
|                                                              | Number of pulses    | Number of pulses |
| Minimum burst length tburst<br>(number of pulses per burst)  | 8 pulses            | 12               |
| Minimum burst gap tburst_gap<br>(number of pulses per burst) | 12 pulses           | 16               |
| Minimum data pause time<br>(for full frame repeat code)      | 25mSec              |                  |

In general, IR Preamp chips apply a separate code for each application.  
This product specification is divided into two types: regular code and continuous code.

## ■ Functional Block Description



## ■ Absolute Maximum Ratings

The following ratings represent the absolute maximum limits of the device. Exceeding these limits may cause permanent damage to the device. Operation beyond the recommended operating conditions is not guaranteed.

| Parameter                   | Symbol    | Rating         | Unit |
|-----------------------------|-----------|----------------|------|
| Supply voltage              | $V_{CC}$  | 7              | V    |
| Supply current              | $I_{out}$ | 2.5            | mA   |
| Operating temperature range | $T_{opr}$ | -20°C ~ 80°C   | °C   |
| Storage temperature range   | $T_{stg}$ | -25°C ~ 85°C   | °C   |
| Soldering temp.*1           | $T_{sol}$ | 260(Max 5 sec) | °C   |

\*1. For Max. 5 seconds at the position of 2mm from the package

## ■ Reliability Test

| Parameter                           | Rating                                                                                            |
|-------------------------------------|---------------------------------------------------------------------------------------------------|
| High Temperature *2                 | Ta= + 80℃, Vcc=5V t=240H                                                                          |
| High Temperature / High Humidity *2 | Ta= + 85℃, 85%RH, Vcc=5V t=240H                                                                   |
| Low Temperature *2                  | Ta= - 30℃, Vcc=5V t=240H                                                                          |
| Heat Cycle *2                       | -25℃(0.5H) ~ + 85℃(0.5H) 20cycle                                                                  |
| Dropping *3                         | Test devices shall be dropped 3 time naturally onto hard wooden board from a 75cm height position |

\*2. Electro-optical Characteristics shall be satisfied after leaving 2hours in the normal temperature

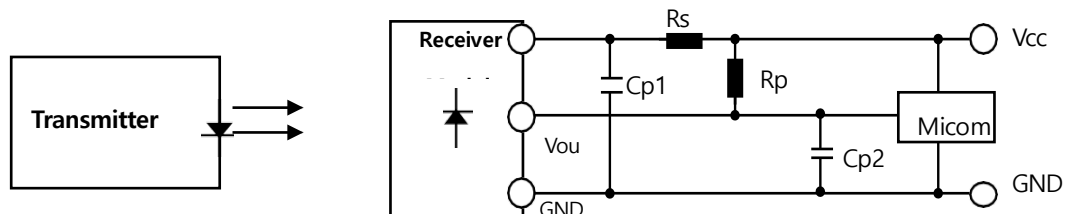
\*3. Electro-optical Characteristics shall be satisfied and no deforms and destructions of appearance.

## ■ Electro-optical Characteristics

| Parameter                        | Symbol          | Conditions                            | Min.                 | Typ.                 | Max. | Unit |
|----------------------------------|-----------------|---------------------------------------|----------------------|----------------------|------|------|
| Supply Voltage Range             | V <sub>CC</sub> |                                       | 2.7                  | –                    | 5.5  | V    |
| Current Consumption              | I <sub>CC</sub> | No Input Signal                       |                      |                      |      |      |
|                                  |                 | V <sub>CC</sub> =5V                   |                      | 0.30                 |      |      |
|                                  |                 | V <sub>CC</sub> =3V                   | 0.15                 | 0.28                 | 0.55 | mA   |
| Peak Wavelength *4               | λ <sub>D</sub>  |                                       | –                    | 940                  | –    | nm   |
| B.P.F Center Frequency           | f <sub>o</sub>  |                                       | –                    | 37.9                 | –    | kHz  |
| Arrival Distance *4              | L               | 200Lux                                |                      |                      |      |      |
|                                  |                 | 0 °                                   | 30                   | –                    | –    | m    |
|                                  |                 | ±30 °                                 | 22                   | –                    | –    | m    |
| High Level Output Voltage *4     | V <sub>OH</sub> | measured at 30 cm on the optical axis | V <sub>CC</sub> -0.5 | V <sub>CC</sub> -0.3 | –    | V    |
| Low Level Output Voltage *4      | V <sub>OL</sub> | measured at 30 cm on the optical axis | –                    | –                    | 0.1  | V    |
| High Level Output Pulse Width *4 | T <sub>WH</sub> | Burst Wave = 600μs<br>Period = 1.2ms  | 400                  | –                    | 800  | μs   |
| Low Level Output Pulse Width *4  | T <sub>WL</sub> | Burst Wave = 600μs<br>Period = 1.2ms  | 400                  | –                    | 800  | μs   |
| Output Form                      |                 | Active Low Output                     |                      |                      |      |      |

\*4. It specifies the maximum distance between emitter and detector that the output waveform satisfies the standard(FIG-1,2,3)

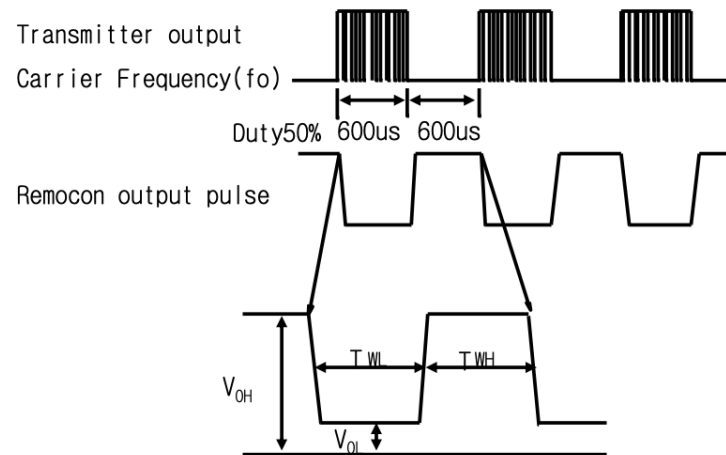
- Measuring place : Indoor without extreme reflection of light
- Ambient light source : Detecting surface illumination shall be irradiate 200±50Lux under ordinary white fluorescence lamp without high frequency lightning
- Standard transmitter : Burst wave indicated in drawing(8-1) of standard transmitter shall be arranged to 1.6Vp-p under the measuring circuit specified in drawing(8-2,3)
- Application Circuit : Recommend to design a circuit without using Rp & Cp2.



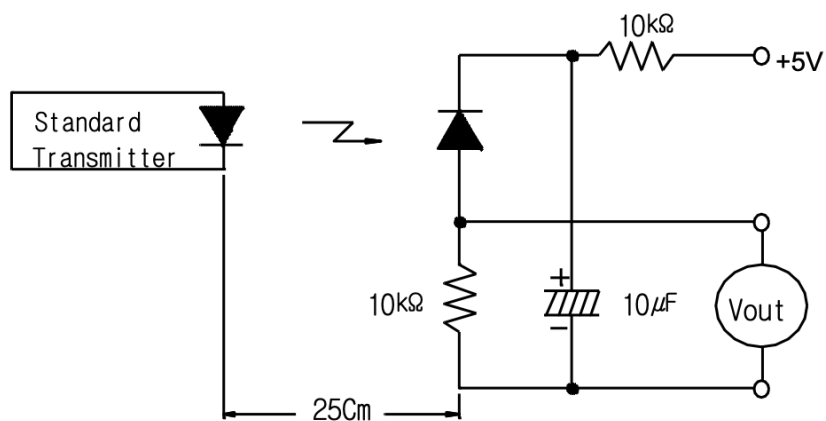
- Rs (Vcc input series resistor) : Typ. 100Ω (47Ω ~ 470Ω)
- Cp1(Vcc-GND terminal series Condenser) : Typ. 100μF (47μF ~ 470μF)
- Rp (Vcc-Vout terminal Pullup resistor) : Optional (when using 1kΩ or more ) When Rp is lower than 1kΩ, Micom can't reply by a VoL rise.
- Cp2(Vout-GND terminal parallel Condenser) : Optional (when using 1nF~2nF)

## ■ Measure Method

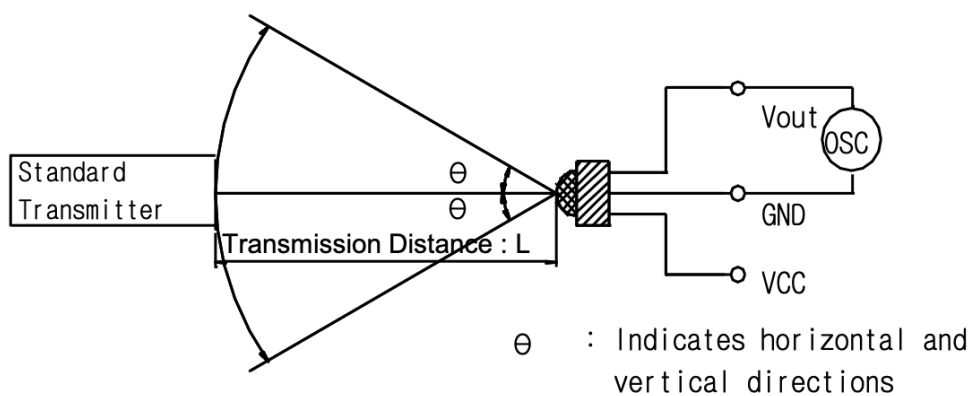
### Output Pulse Width



### Standard Transmitter



### Test Condition of Transmission Distance



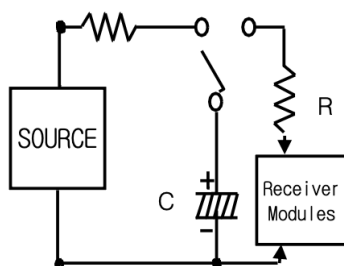
## ■ Inspection Criteria

In electro-optical characteristics, total quantity shall be inspected as below.

- Front distance between emitter and detector
- Current consumption
- High level output voltage
- Low level output voltage

## ■ Caution(When use and storage of this device)

- Store and use where there is no force causing transformation or change in quality
- Store and use when there is no extreme humidity  
Do not wash this device. Wipe off any stains on the diode side with a soft cloth.  
Only solvents, ethyl alcohol, methyl alcohol, or isopropyl alcohol can be used.
- The shield case shall be grounded on the PCB pattern. There are two cases, one is that shield case and GND pin are connected in the shield case, the other is not connected in it.  
If the receiver modules of shield case is not becoming ground connection, there is a possibility of being weak in the EMI(Electro Magnetic interference) condition.
- Soldering pad within grade conditions. No external force will be added after soldering.
- Soldering pad within grade conditions. No external force will be added after soldering.
- Install the decoupling unit between the Vcc and the GND to reduce noise in the power supply line.  
Vcc-GND 47  $\mu$ F and Vcc-100  $\omega$  are recommended. The decoupling unit should be near the receiving module.
- Distance reduction, output noise, malfunction, etc. may occur due to the surrounding electromagnetic environment.
- To prevent static damage to the pre-AMP, the ground must be connected to the human body before using the soldering iron
- This device must control static electricity



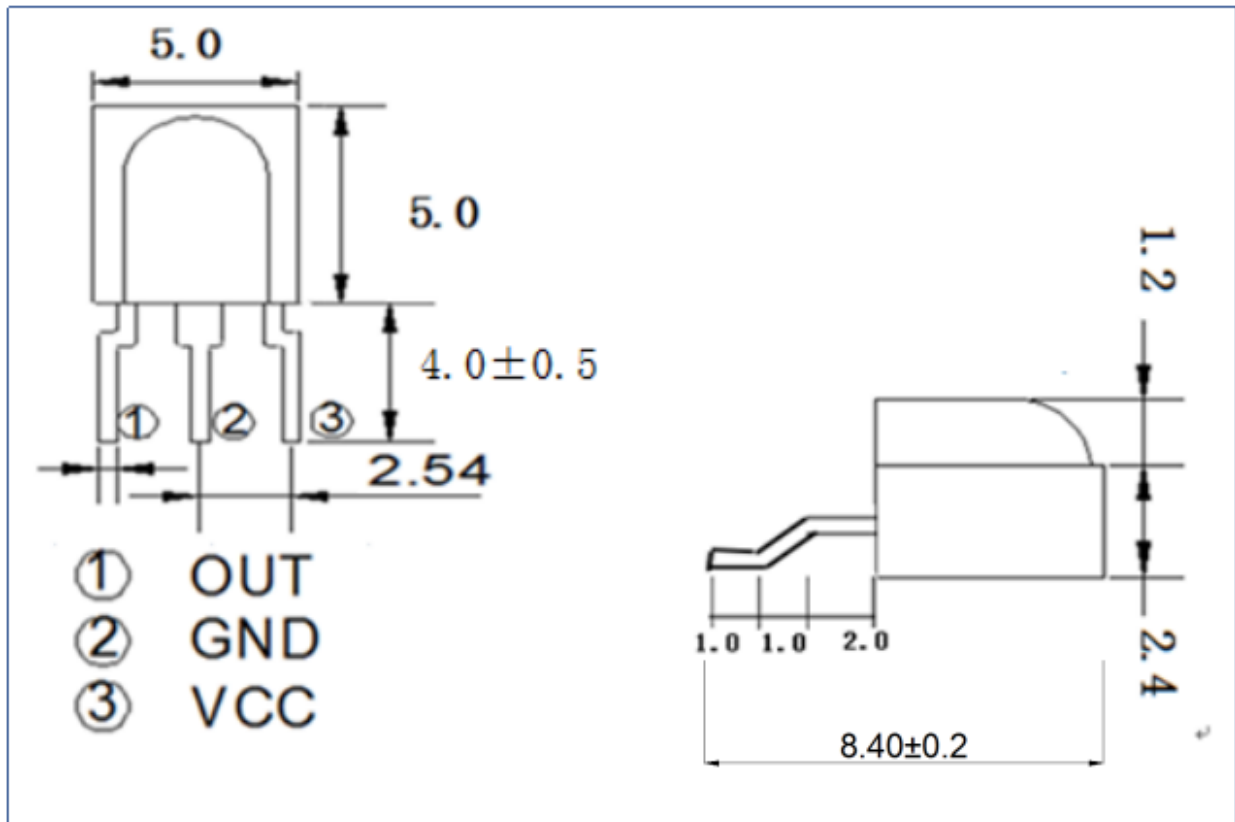
M.M = MACHINE MODEL(Resistance: 0K $\Omega$  Capacitor: 200pF)  
HBM = HUMAN BODY MODEL( Resistance: 1.5k $\Omega$  Capacitor: 100pF)

- This device is not design to endure radiate rays and heavily charged particles.

## ■ Manual Soldering

- Use a soldering iron of 25W or less. Adjust the temperature of the soldering iron below 350°C.
- Finish soldering within three seconds.
- Handle products only after the temperature has cooled off.
- To avoid the product is transformed and breakdown, it needs to take care that the power should not join to the product at soldering or immediately after soldering.

■ PACKAGE DIMENSIONS in millimeters



Not indicated to tolerances ± 0.2

## REVISION

[illegible]