

## Description

The MIM-5xx3H8 is miniaturized infrared receivers for remote control and other applications requiring improved ambient light rejection. The separate PIN diode and preamplifier IC are assembled on a single leadframe. The epoxy package contains a special IR filter. This module has excellent performance even in disturbed ambient light applications and provides protection against uncontrolled output pulses.



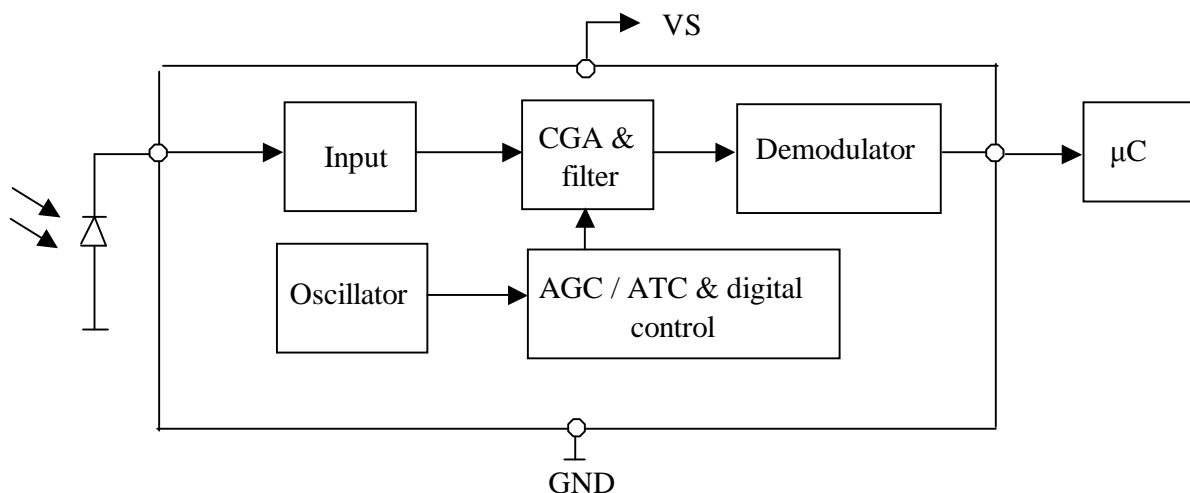
## Features

- | Photo detector and preamplifier in one package
- | Internal filter for PCM frequency
- | High immunity against ambient light
- | Improved shielding against electric field disturbance
- | 5.0-Volt supply voltage; low power consumption
- | TTL and CMOS compatibility

## MIM-5xx3H8 Series Models

- |                    |                    |
|--------------------|--------------------|
| MIM-5303H8 30.0KHz | MIM-5383H8 38.0KHz |
| MIM-5333H8 33.0KHz | MIM-5403H8 40.0KHz |
| MIM-5363H8 36.0KHz | MIM-5443H8 44.0KHz |
| MIM-5373H8 36.7KHz | MIM-5563H8 56.0KHz |

## BLOCK DIAGRAM



## Absolute Maximum Ratings

@ Ta=25°C

| Item                         | Symbol           | Ratings    | Unit | Remark                 |
|------------------------------|------------------|------------|------|------------------------|
| Supply voltage               | V <sub>CC</sub>  | -0.3 ~ 6.0 | V    |                        |
| Supply Current               | I <sub>s</sub>   | 5.0        | mA   |                        |
| Operating temperature        | T <sub>opr</sub> | -25 ~ + 85 | °C   |                        |
| Storage temperature          | T <sub>stg</sub> | -25 ~ + 85 | °C   |                        |
| Soldering temperature        | T <sub>sd</sub>  | 260        | °C   | t ≤ 5 s, 1mm from case |
| Power dissipation at Ta=25oC | P <sub>tot</sub> | 30         | mW   |                        |

## Electro-optical characteristics (V<sub>CC</sub>=5.0V)

| Parameter                           | Symbol                        | Min. | Typ. | Max. | Unit | Remarks              |
|-------------------------------------|-------------------------------|------|------|------|------|----------------------|
| Supply Voltage                      | V <sub>s</sub>                | 4.5  | 5.0  | 5.5  | V    |                      |
| Current consumption                 | I <sub>cc</sub>               |      | 1.4  | 2.0  | mA   | Under no signal      |
| Response wavelength                 | λ <sub>p</sub>                |      | 940  |      | nm   |                      |
| Output form                         | ----- active low output ----- |      |      |      |      |                      |
| H level output voltage              | V <sub>0h</sub>               | 4.2  |      |      | V    |                      |
| L level output voltage              | V <sub>0l</sub>               |      |      | 0.5  | V    |                      |
| H level output pulse width          | T <sub>wh</sub>               | 400  |      | 800  | μs   |                      |
| L level output pulse width          | T <sub>wl</sub>               | 400  |      | 800  | μs   |                      |
| Distance between emitter & detector | L <sub>1</sub>                | 10.0 |      |      | m    | Note 1               |
| Half angle                          | Δθ                            |      | ±45  |      | deg  | Horizontal direction |

## Test Method

### A. Standard Transmitter

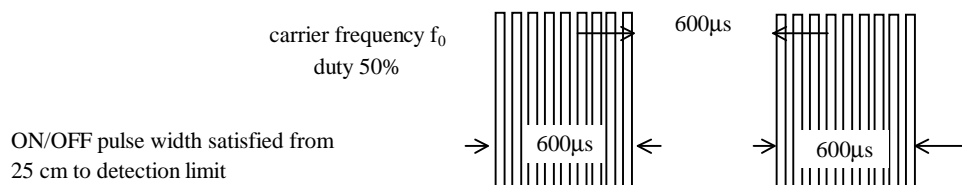


Fig 1. Burst Wave

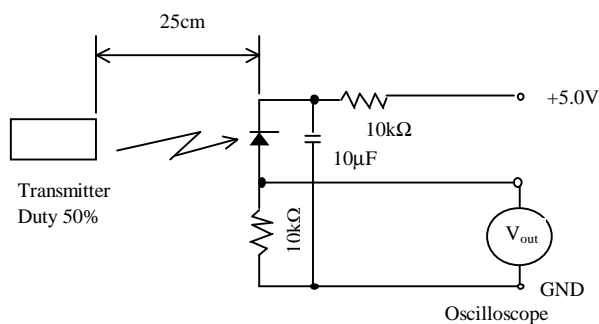
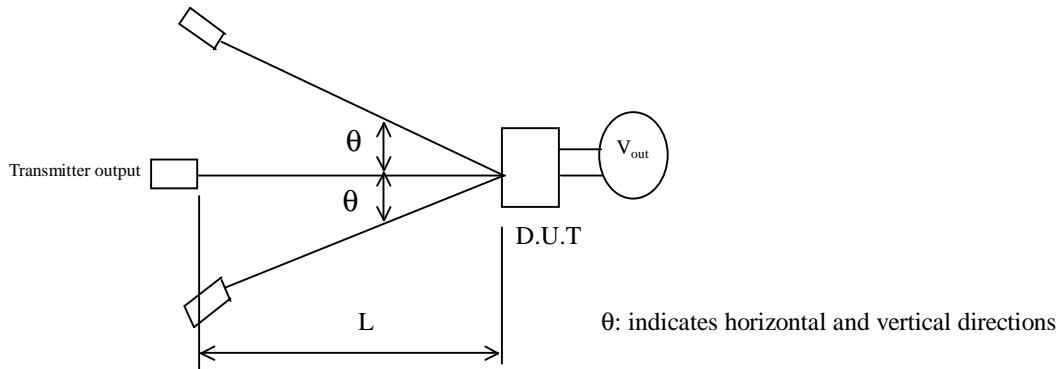
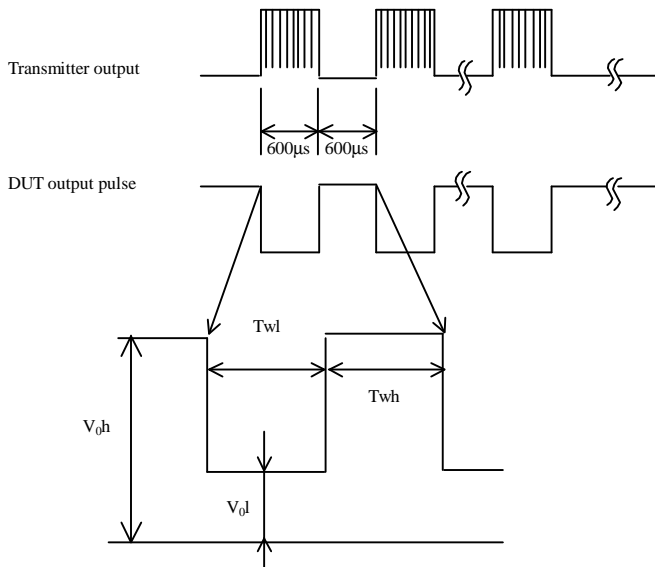


Fig 2. Standard Transmitter Measurement circuit

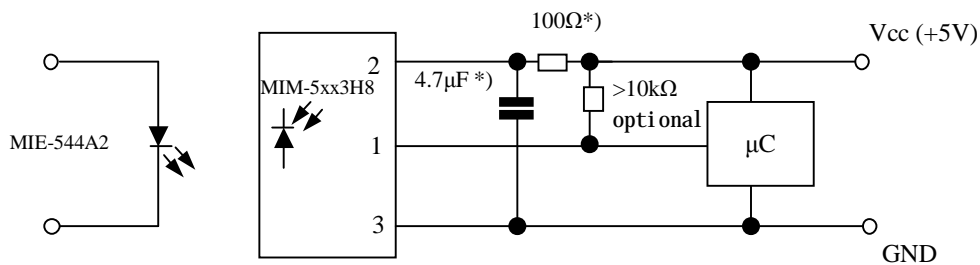
**B. Detection Length Test**



**C . Pulse Width Test**

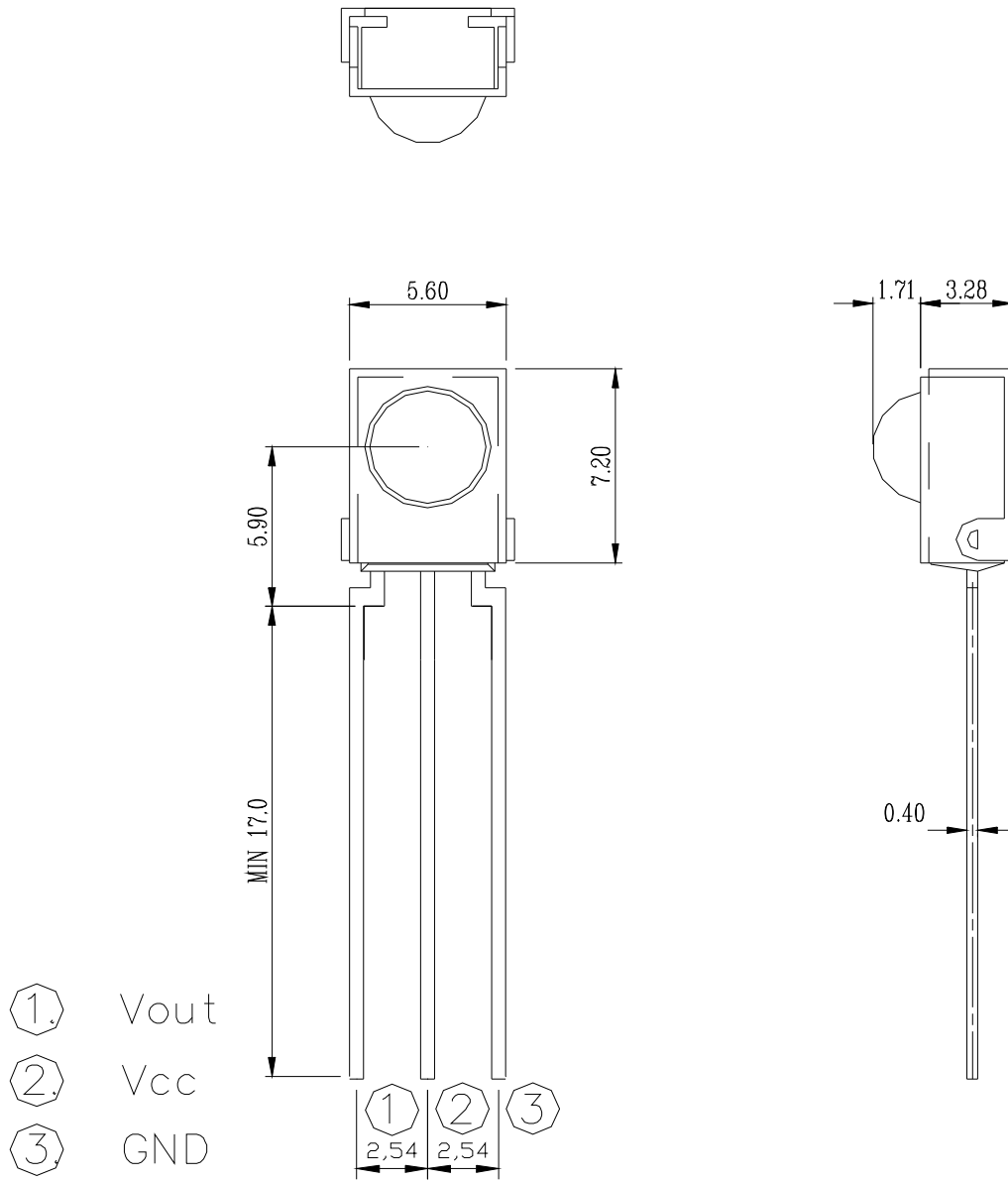


**Application Circuit**



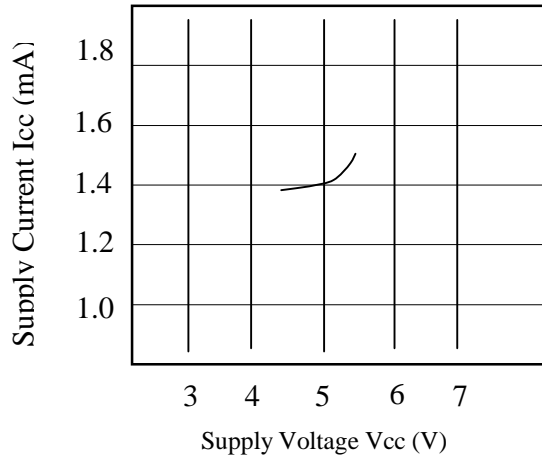
\*) recommended to suppress power supply disturbances

**Dimensions in mm**

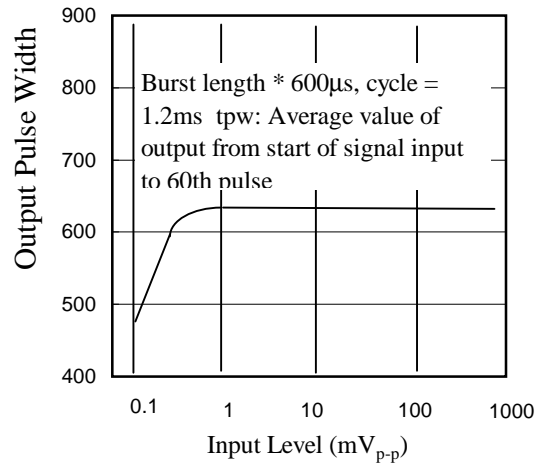


Ps TOLERANCE : ±0.30 UNLESS OTHERWISE SPECIFIED

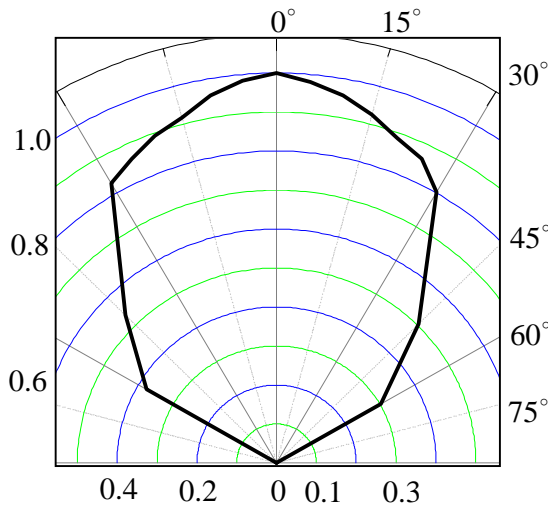
**CHARACTERISTIC CURVES ( $T_A=25^{\circ}\text{C}$ )**



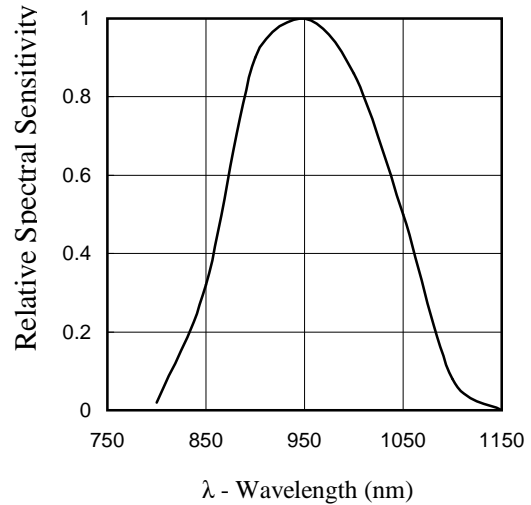
**SUPPLY VOLTAGE vs. SUPPLY CURRENT**



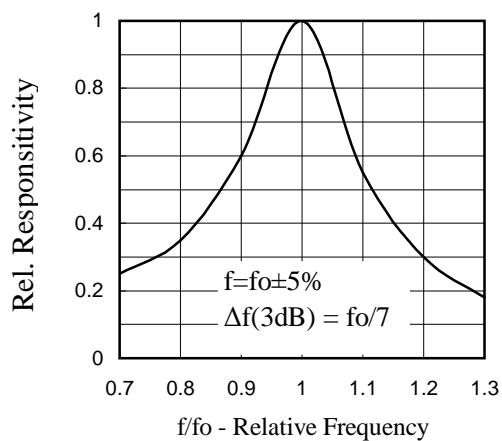
**INPUT LEVEL vs. OUTPUT PULSE WIDTH**



**RELATIVE TRANSMISSION**



**RELATIVE SPECTRAL SENSITIVITY vs WAVELENGTH**



**FREQUENCY DEPENDENCE OF RESPONSIVITY**

## Reliability

| Test item               | Test condition  | Standard |
|-------------------------|---|----------|
| High temperature        | Ta=+80°C t=240H   | Note 2.  |
| High temp. & high humi. | Ta=+40°C 90%RH t=240H   | Note 2.  |
| Low temperature         | Ta= -30°C t=240H  | Note 2.  |
| Temperature cycle       | -30°C(0.5H) ~ +80°C(0.5H) 20cycle   | Note 2.  |
| Dropping                | Test devices shall be dropped 3 times naturally onto hard wooden board from a 75cm height position. | Note 3.  |

NOTE 1. Distance between emitter & detector specifies maximum distance that output wave form satisfies the standard under the conditions below against the standard transmitter.

- (1) Measuring place .....Indoor without extreme reflection of light.
- (2) Ambient light source... Detecting surface illumination shall be 200±50Lux under ordinary hite fluorescense lamp of no high frequency lighting.
- (3) Standard transmitter ... Burst wave indicated in Fig 1. of standard transmitter shall be arranged to 50mVp-p under the measuring circuit specified in Fig 2.

NOTE 2. (electro-optical characteristics) shall be satisfied after leaving 2 hours in the normal temperature .

NOTE 3. (electro-optical characteristics) shall be satisfied and no conoid deforms and destructions of appearance .(excepting deforms of terminals)

## Inspection standard

1. Among electrical characteristics , total number shall be inspected on items blow.
  - 1-1 front distance between emitter & detector
  - 1-2 Current consumption
  - 1-3 H level output voltage
  - 1-4 L level output voltage
2. Items except above mentioned are not inspected particularly , but shall fully satisfy

## CAUTION ( When use and storage of this device )

1. Store and use where there is no force causing transformation or change in quality .
2. Store and use where there is no corrosive gas or sea(salt) breeze .
3. Store and use where there is no extreme humidity .
4. Solder the lead-pin within the condition of ratings. After soldering do not add extra force .
5. Do not wash this device . Wipe the stains of diode side with a soft cloth. You can use the solvent , ethylalcohol or methylalcohol or isopropylene only .
6. To prevent static electricity damage to the Pre-AMP make sure that the human body , the soldering iron is connected to ground before using .
7. Put decoupling device between Vcc and GND for reduce the noise from power supply line .
8. The performance of remote-control system depends on environments condition and ability of periferal parts. Customer should evaluate the performance as total system in those conditions after system up with components such as commander , micon and this receiver module .

## Others

1. This device is not design to endure radiative rays and heavily charged particles .
2. In case where any trouble or questions arise, both parties agree to make full discussion covering the said problem .