

Description

The MIM-5xx5K5F 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.



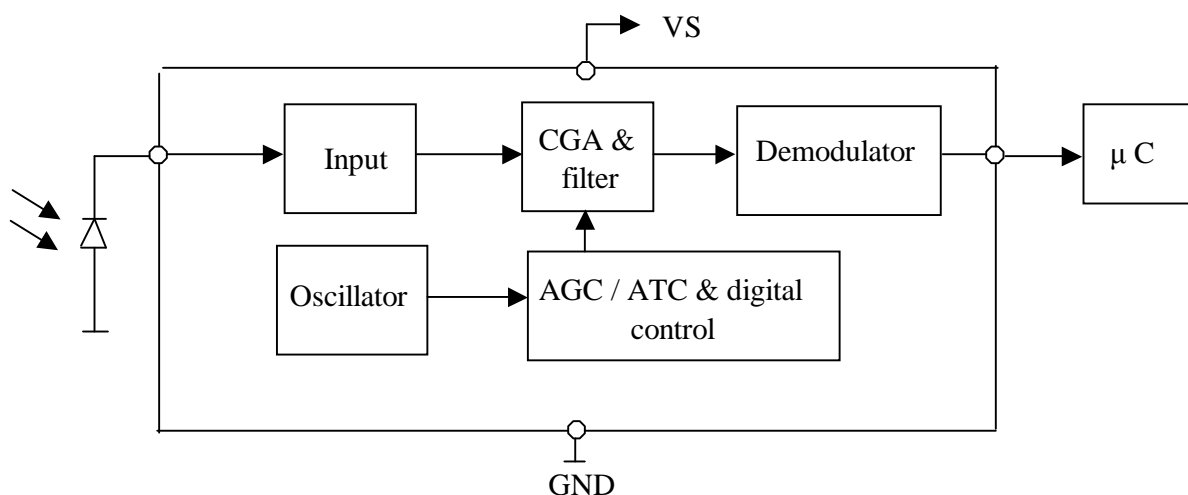
Features

- | 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-5xx5K5F Series Models

- | MIM-5335K5F 33.0KHz
- | MIM-5365K5F 36.0KHz
- | MIM-5375K5F 36.7KHz
- | MIM-5385K5F 38.0KHz
- | MIM-5565K5F 56.7KHz

BLOCK DIAGRAM



Absolute Maximum Ratings

@ Ta=25°C

| Item | Symbol | Ratings | Unit | Remark |
|-----------------------|------------------|------------|------|------------------------|
| Supply voltage | V _s | -0.3 ~ 5.5 | V | |
| Supply Current | I _s | 2.5 | mA | |
| Operating temperature | T _{opr} | -25 ~ + 85 | °C | |
| Storage temperature | T _{stg} | -25 ~ + 85 | °C | |
| Soldering temperature | T _{sd} | 260 | °C | t ≤ 5 s, 1mm from case |

Electro-optical characteristics (V_{cc}=5.0V)

(T_a=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Remarks |
|-------------------------------------|-------------------------------|------|------|------|------|----------------------|
| Supply Voltage | V _s | 4.5 | 5.0 | 5.5 | V | |
| Current consumption | I _{cc} | | 1.6 | 2.0 | mA | Under no signal |
| Response wavelength | λ _p | | 940 | | nm | |
| Output form | ----- active low output ----- | | | | | |
| H level output voltage | V _{oh} | 4.2 | | | V | |
| L level output voltage | V _{ol} | | | 0.5 | V | |
| H level output pulse width | T _{wh} | 400 | | 800 | μs | |
| L level output pulse width | T _{wl} | 400 | | 800 | μs | |
| Distance between emitter & detector | L | 10.0 | | | m | NOTE 1 |
| Half angle | Δθ | | ±45 | | deg | Horizontal direction |

Test Method

A. Standard Transmitter

ON/OFF pulse width satisfied from 25 cm to detection limit

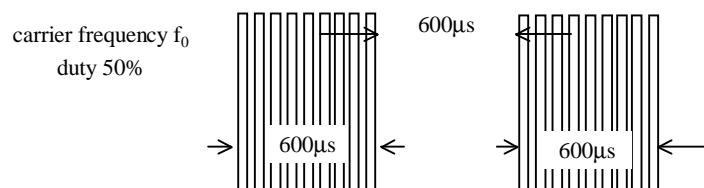


Fig 1. Burst Wave

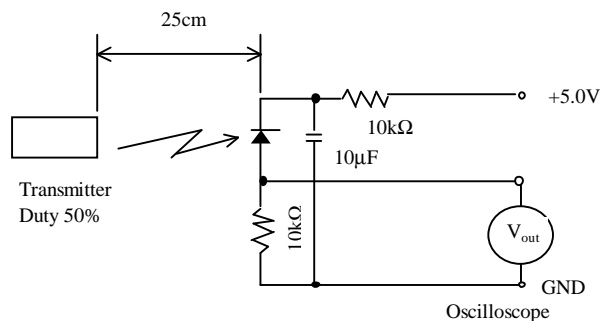
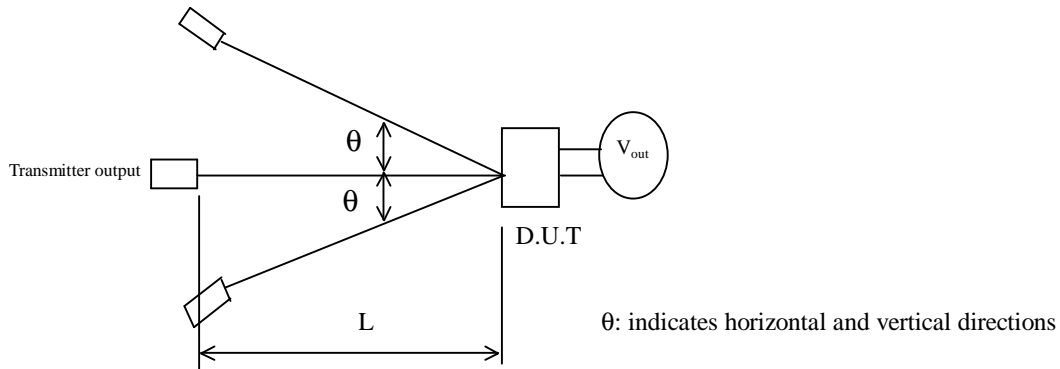
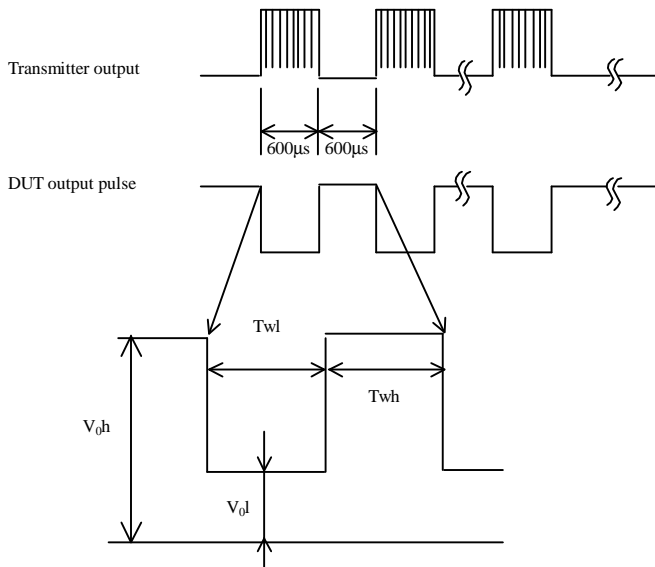


Fig 2. Standard Transmitter Measurement circuit

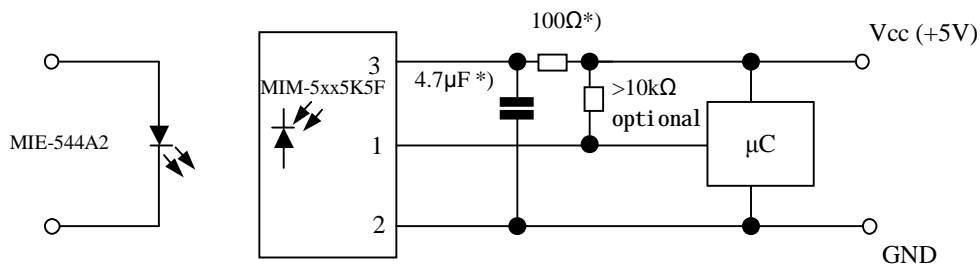
B. Detection Length Test



C . Pulse Width Test

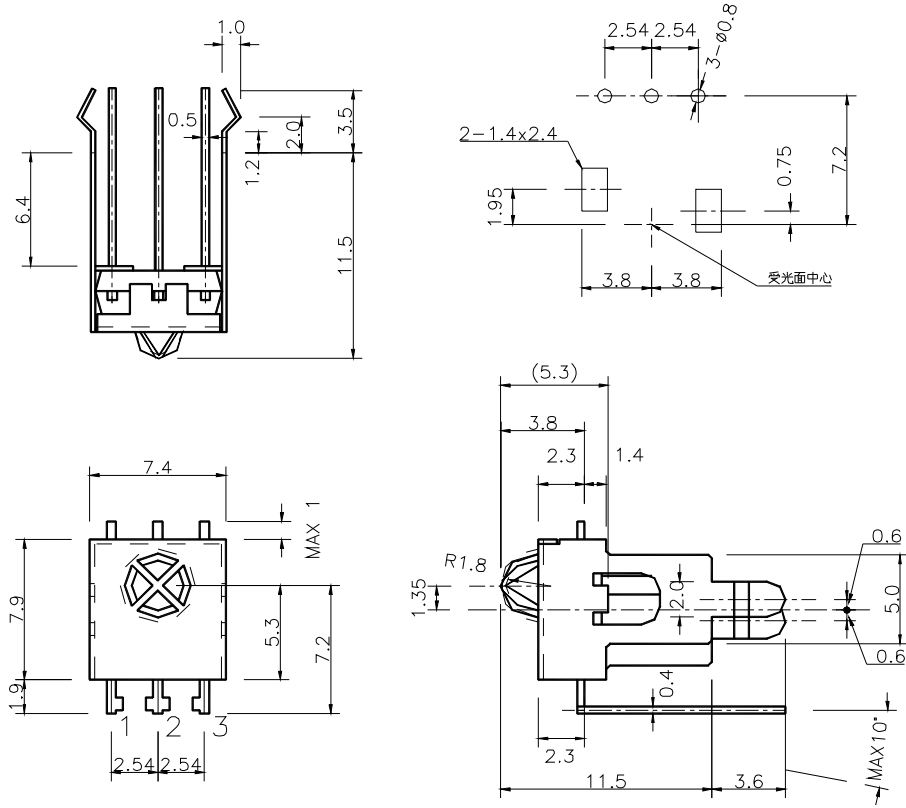


Application Circuit



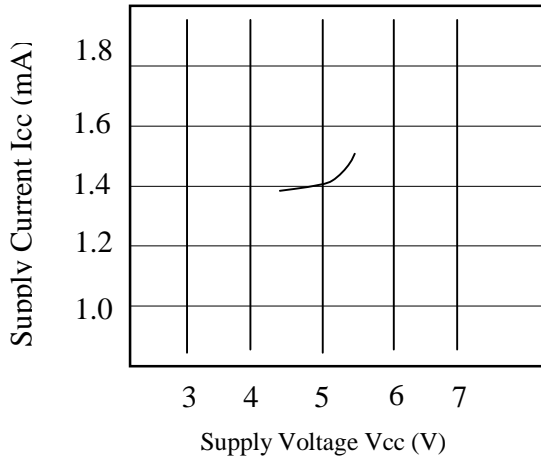
**) recommended to suppress power supply disturbances*

Dimensions in mm

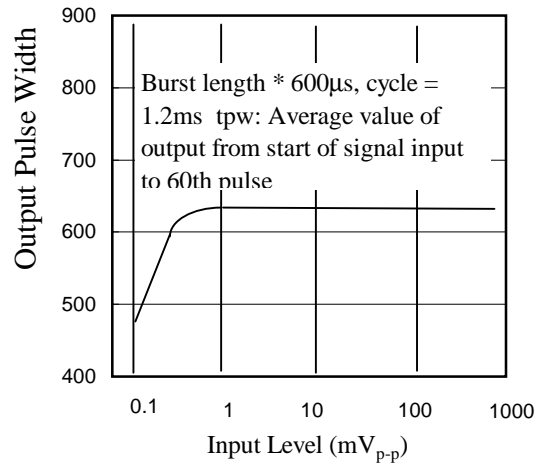


1. Vout
2. GND
3. Vcc

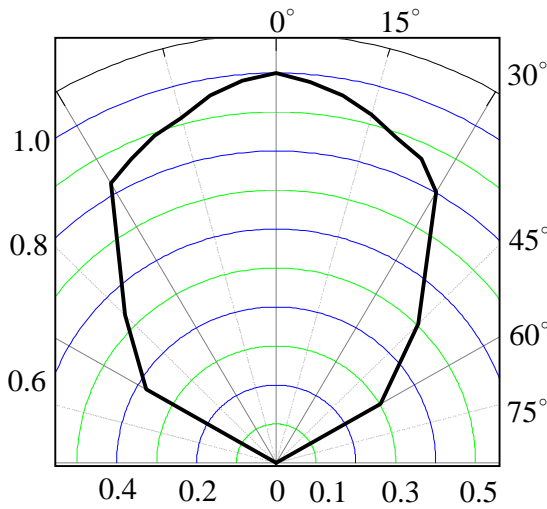
CHARACTERISTIC CURVES ($T_A=25^{\circ}\text{C}$)



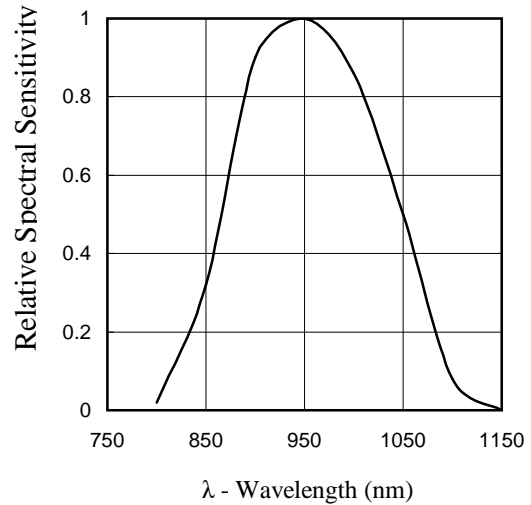
SUPPLY VOLTAGE vs. SUPPLY CURRENT



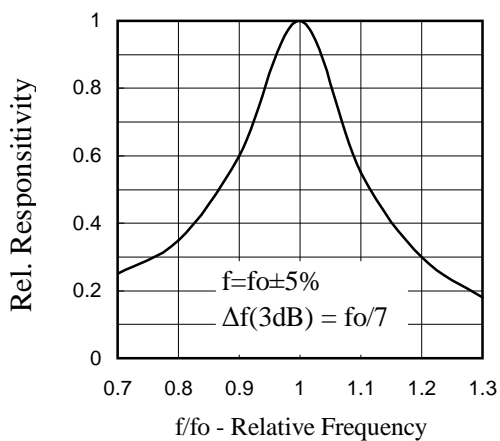
INPUT LEVEL vs. OUTPUT PULSE WIDTH



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= -25°C t=240H | Note 2. |
| Heat cycle | -25°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 placeIndoor 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 isupropylene 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 .