

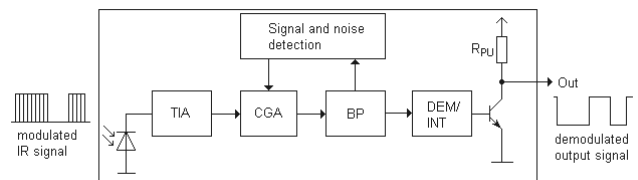
Infrared Receiver Module IRM-66XXM3 Series



Pin Configuration

- 1: Vout
- 2: GND
- 3: Vcc

Block Diagram



Features

- High protection ability against EMI
- Circular lens for improved reception characteristics
- Available for various carrier frequencies
- min burst length: 12 cycles
- min gap length: 16 cycles
- Low operating voltage and low power consumption
- High immunity against ambient light
- High immunity against TFT backlight
- Long reception range
- High sensitivity
- Pb free and RoHS compliant
- Compliance with EU REACH

Description

The IRM-66XXM3 Series devices are DIP type infrared receivers which have been developed and designed by using the latest IC technology.

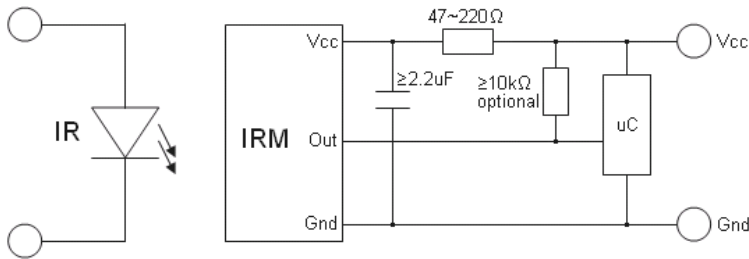
The PIN diode and preamplifier are assembled onto a lead frame and molded into a black epoxy package which operates as an IR filter.

The demodulated output signal can directly be decoded by a microprocesso

Applications

- AV equipment such as TV, VCR, DVD, CD, MD, etc.
- CATV set top boxes
- Multi-media Equipment
- Other devices using IR remote control

Application circuit



The RC Filter must be connected as close as possible to Vcc and GND pins.

Parts number table

| Model No. | Carrier Frequency |
|------------|-------------------|
| IRM-6636M3 | 36 kHz |
| IRM-6638M3 | 38 kHz |

Absolute Maximum Ratings (Ta=25°C) *1

| Parameter | Symbol | Rating | Unit |
|--------------------------|------------------|-----------|------|
| Supply Voltage | V _{cc} | 6 | V |
| Operating Temperature | T _{opr} | -20 ~ +80 | °C |
| Storage Temperature | T _{stg} | -40 ~ +85 | °C |
| Soldering Temperature *2 | T _{sol} | 260 | °C |

*1 Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute maximum ratings for extended periods of the time can adversely affect reliability.

*2 4mm from mold body for less than 5 seconds

Electro-Optical Characteristics (Ta=25°C, V_{cc}=3V)

| Parameter | Symbol | MIN. | TYP. | MAX. | Unit | Condition |
|---------------------------|-----------------|----------------------|------|------|------|---|
| Current consumption | I _{cc} | --- | 0.4 | 0.6 | mA | No input signal |
| Supply voltage | V _{CC} | 2.7 | --- | 5.5 | V | |
| Peak wavelength | λ _p | --- | 940 | --- | nm | |
| Reception range | L ₀ | 14 | --- | --- | m | See chapter 'Test method' *3 |
| | L ₄₅ | 6 | --- | --- | | |
| Half angle(horizontal) | φ _h | --- | ±50 | --- | deg | |
| Half angle(vertical) | φ _v | --- | ±50 | --- | deg | |
| High level pulse width | T _H | 400 | --- | 800 | μs | Test signal according to figure 1 *4 |
| Low level pulse width | T _L | 400 | --- | 800 | μs | |
| High level output voltage | V _{OH} | V _{cc} -0.4 | --- | --- | V | I _{SOURCE} ≤ 1μA |
| Low level output voltage | V _{OL} | --- | 0.2 | 0.5 | V | I _{SINK} ≤ 2mA |

*3 The ray receiving surface at a vertex and relation to the ray axis in the range of θ=0° and θ=45°.

*4 A range from 30cm to the arrival distance. Average value of 50 pulses.

Test method

The specified electro-optical characteristics are valid under the following conditions.

1. Measurement environment

A place without extreme light reflections.

2. External light

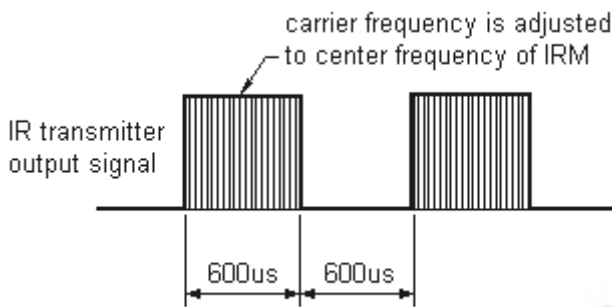
The environment contains an ordinary, white fluorescent lamp without high frequency modulation. The color temperature is 2856K and the illumination at the IR receiver is less than 10 Lux ($E_v \leq 10\text{Lux}$).

3. Standard transmitter

The test transmitter is calibrated by using the circuit shown in figure 2. The radiation intensity of the transmitter is adjusted until $V_o=400\text{mVp-p}$. Both, the test transmitter and the photo diode, have a peak wavelength of 940nm. The photo diode for calibration is PD438B ($\lambda_p=940\text{nm}$, $V_r=5\text{V}$).

4. The measurement system is shown in Fig.-3

Fig.1 Transmitter Wave Form



D.U.T output Pulse

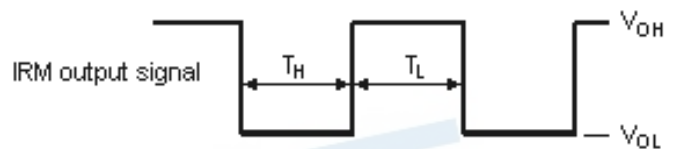


Fig.2 Standard transmitter calibration

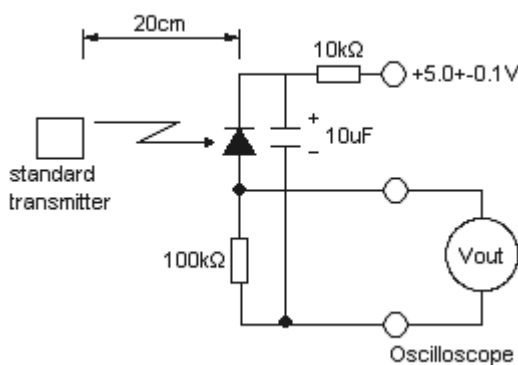
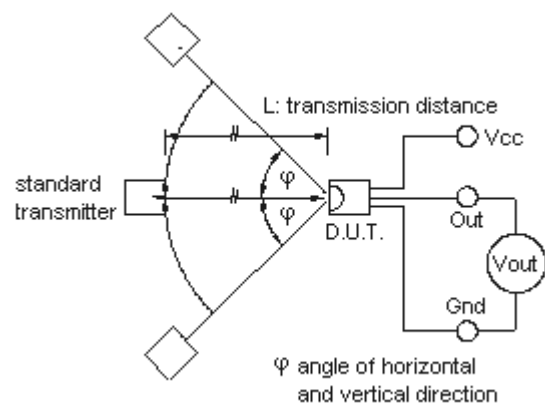


Fig.3 Measuring system



Typical Electro-Optical Characteristics Curves

Fig.4 Relative Responsibility vs. Wavelength

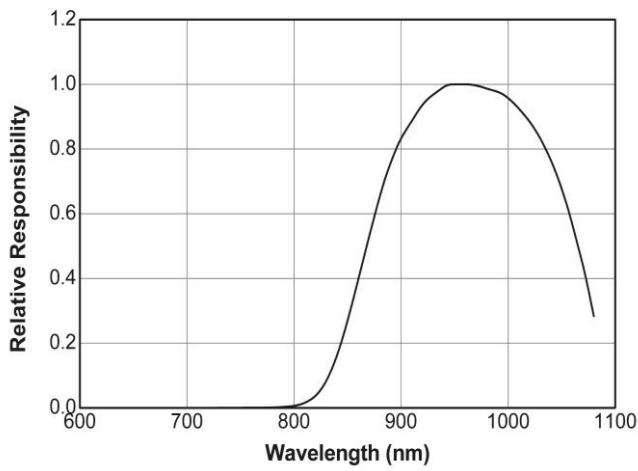


Fig.5 Relative Transmission Distance vs. Direction

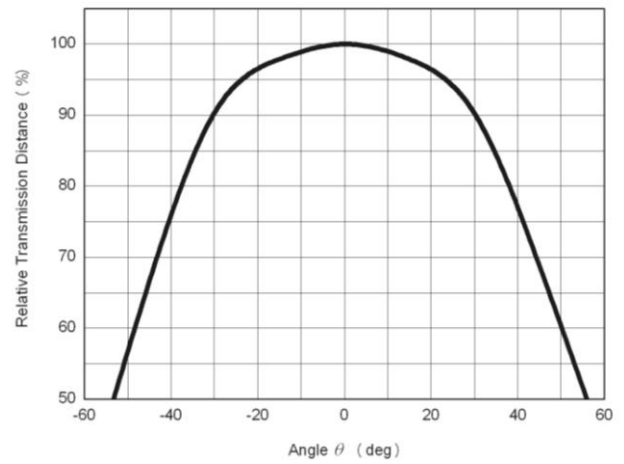


Fig.6 Variation Output Pulse Width vs. Distance

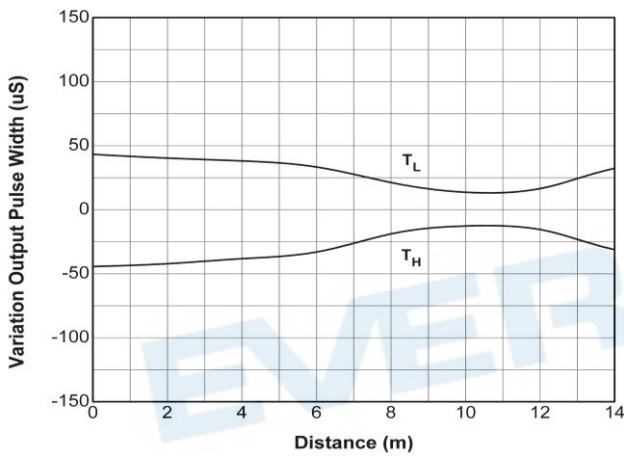


Fig.7 Relative Sensitivity vs. Supply Voltage

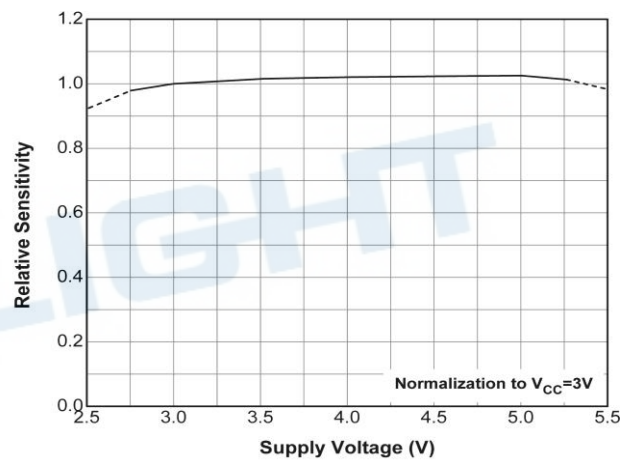
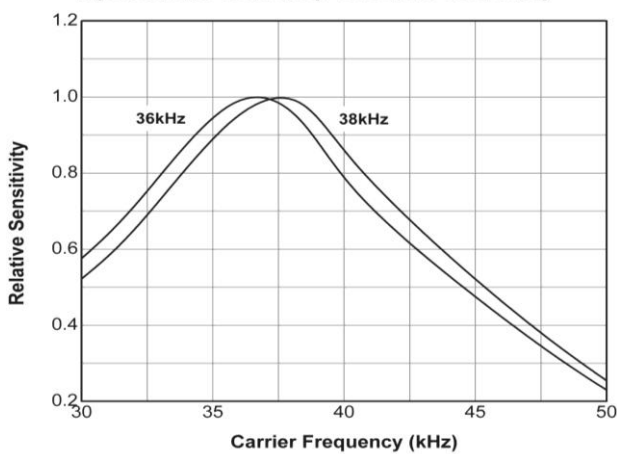
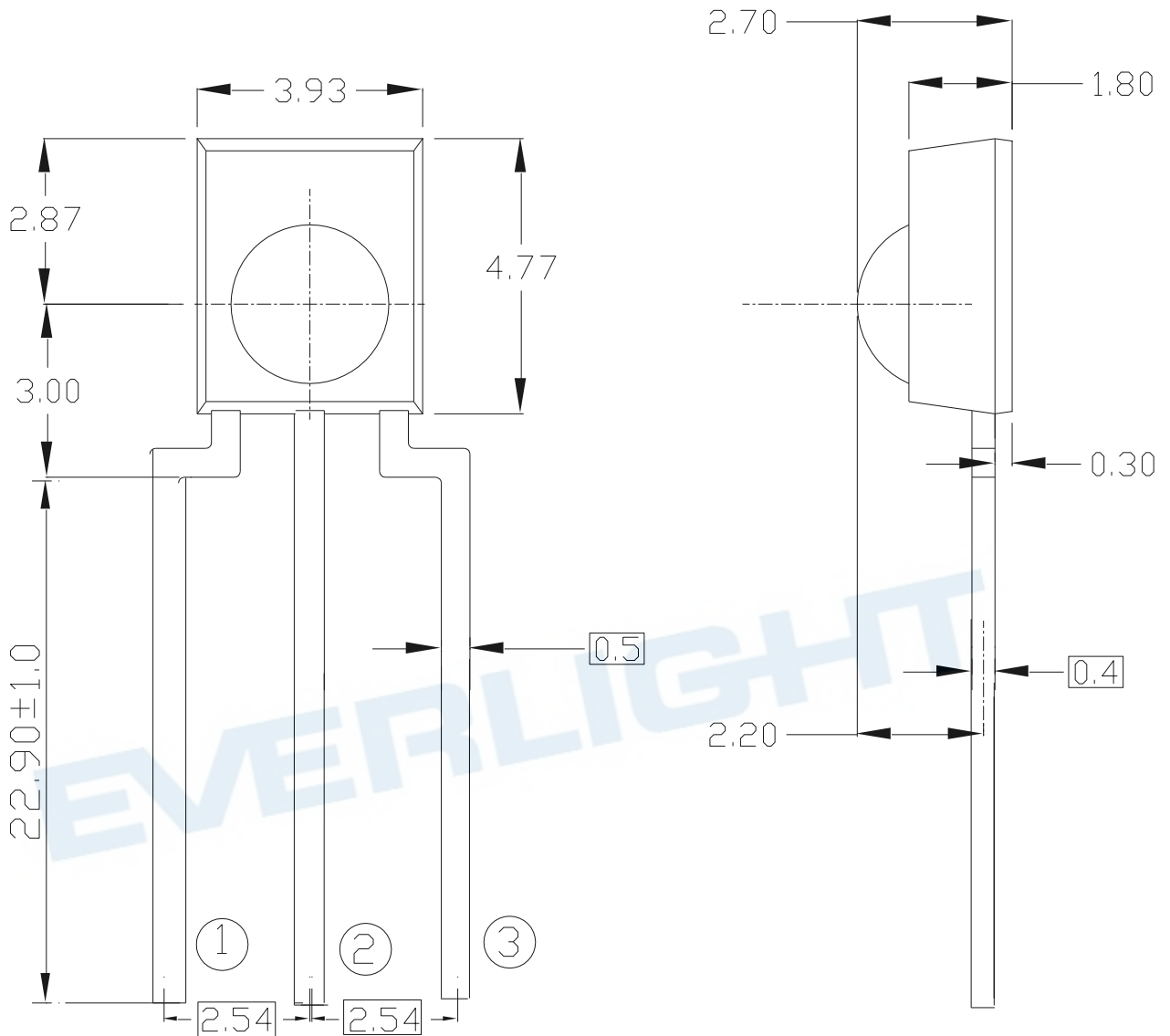


Fig.8 Relative Sensitivity vs. Carrier Frequency



Package Dimensions
(Dimensions in mm)



Pin Function

- ①: Vout
- ②: GND
- ③: Vcc

Notes:

1. All dimensions are in millimeters.
2. Tolerance unless otherwise mentioned is $\pm 0.5\text{mm}$
3. Suggested pad dimension is just for reference only.
Please modify the pad dimension based on individual need.

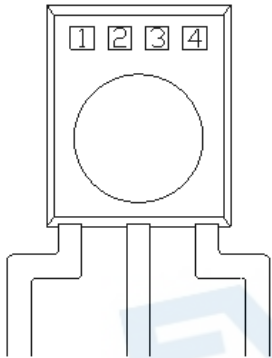
Code information

| Protocol | Suitable | Protocol | Suitable |
|-------------------|----------|---------------------------|----------|
| JVC | Yes | Sharp | Yes |
| Matsushita | Yes | Sony 12 bit ²⁾ | Yes |
| Mitsubishi | No | Sony 15 bit | No |
| NEC | Yes | Sony 20 bit | No |
| RC5 | Yes | Toshiba | Yes |
| RC6 ¹⁾ | Yes | Continuous Code | No |
| RCA | No | | |

1) Best choice depends on RC6 mode. If data low time is below 22ms, M2 is the best choice, otherwise M3.

2) If only Sony 12 bit version is used, M3 is recommended otherwise M2 is the best choice.

Device Marking



Notes:

- 1 denotes Year code
- 2 denotes Month code
- 3 denotes Device number
- 4 denotes Carrier frequency

Packing Quantity

1500 pcs / Box
10 Boxes / Carton

DISCLAIMER

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
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