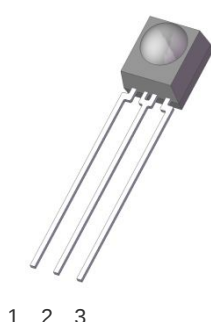


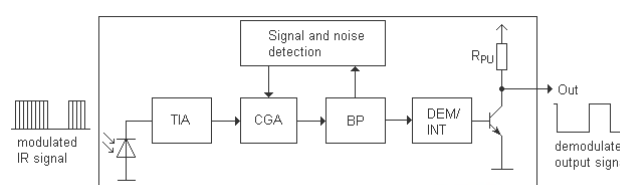
### Infrared Receiver Module IRM-36XXT Series



Pin Configuration

1. OUT
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 and PDP backlight
- Long reception range
- High sensitivity
- Pb free and RoHS compliant
- Compliance with EU REACH

### Description

The IRM-36XXT devices are DIP type infrared receivers which have been developed and designed by using the latest IC technology.

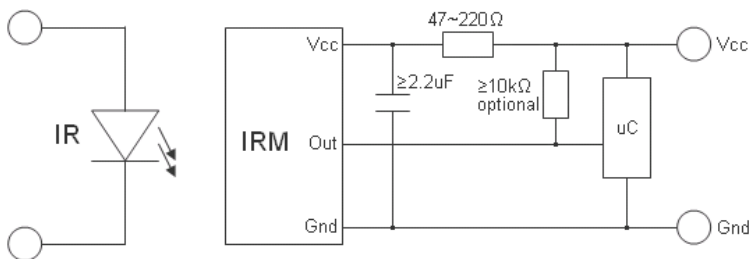
The PIN diode and preamplifier are assembled onto a lead frame and molded into a black epoxy package which operates as an IR filter.

The demodulated output signal can directly be decoded by a microprocessor.

## Applications

- AV equipment such as TV, VCR, DVD, CD, MD, etc.
- Toy applications
- 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.

## Part number table

| Model No. | Carrier Frequency |
|-----------|-------------------|
| IRM-3636T | 36 kHz            |
| IRM-3638T | 38 kHz            |
| IRM-3640T | 40 kHz            |

### Absolute Maximum Ratings (Ta=25°C) \*1

| Parameter                | Symbol           | Rating    | Unit |
|--------------------------|------------------|-----------|------|
| Supply Voltage           | V <sub>cc</sub>  | 6         | V    |
| Operating Temperature    | T <sub>opr</sub> | -20 ~ +80 | °C   |
| Storage Temperature      | T <sub>stg</sub> | -40 ~ +85 | °C   |
| Soldering Temperature *2 | T <sub>sol</sub> | 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 (T<sub>a</sub>=25°C, V<sub>cc</sub>=5V)

| Parameter                 | Symbol          | MIN.                 | TYP. | MAX. | Unit | Condition                               |
|---------------------------|-----------------|----------------------|------|------|------|-----------------------------------------|
| Current consumption       | I <sub>cc</sub> | ---                  | 0.45 | 0.70 | mA   | No input signal                         |
| Supply voltage            | V <sub>cc</sub> | 2.7                  | ---  | 5.5  | V    |                                         |
| Peak wavelength           | λ <sub>p</sub>  | ---                  | 940  | ---  | nm   |                                         |
| Reception range           | L <sub>0</sub>  | 14                   | ---  | ---  | m    | See chapter<br>'Test method' *3         |
|                           | L <sub>45</sub> | 6                    | ---  | ---  |      |                                         |
| Half angle(horizontal)    | φ <sub>h</sub>  | ---                  | ±35  | ---  | deg  |                                         |
| Half angle(vertical)      | φ <sub>v</sub>  | ---                  | ±35  | ---  | deg  |                                         |
| High level pulse width    | T <sub>H</sub>  | 400                  | ---  | 800  | μs   | Test signal according to<br>figure 1 *4 |
| Low level pulse width     | T <sub>L</sub>  | 400                  | ---  | 800  | μs   |                                         |
| High level output voltage | V <sub>OH</sub> | V <sub>cc</sub> -0.4 | ---  | ---  | V    | I <sub>SOURCE</sub> ≤ 1μA               |
| Low level output voltage  | V <sub>OL</sub> | ---                  | 0.2  | 0.5  | V    | I <sub>SINK</sub> ≤ 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

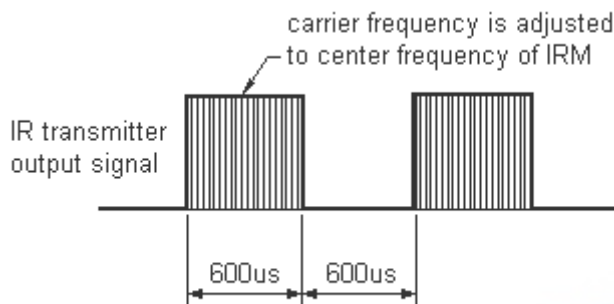
The environment contains an ordinary, white fluorescent lamp without high frequency modulation. The color temperature is 2856K and the illumination at the IR receiver is less than 10 Lux ( $E_v \leq 10\text{Lux}$ ).

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 the 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

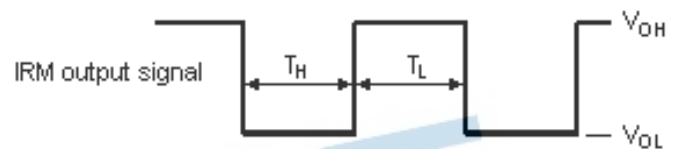


Fig.2 Standard transmitter calibration

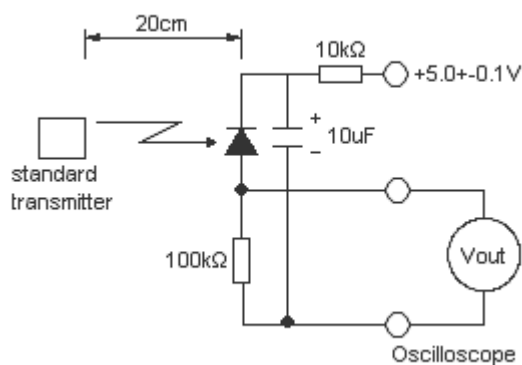
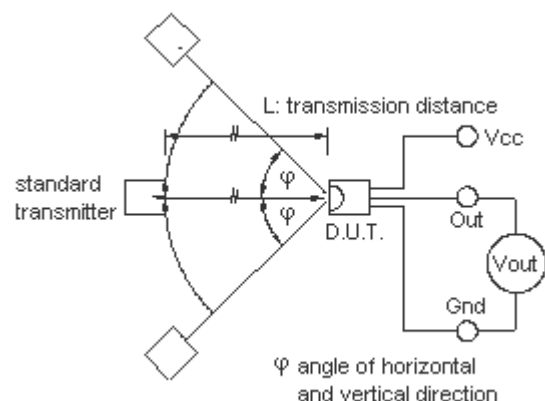


Fig.3 Measuring system



## Typical Electro-Optical Characteristics Curves

Fig.4 Relative Responsibility vs. Wavelength

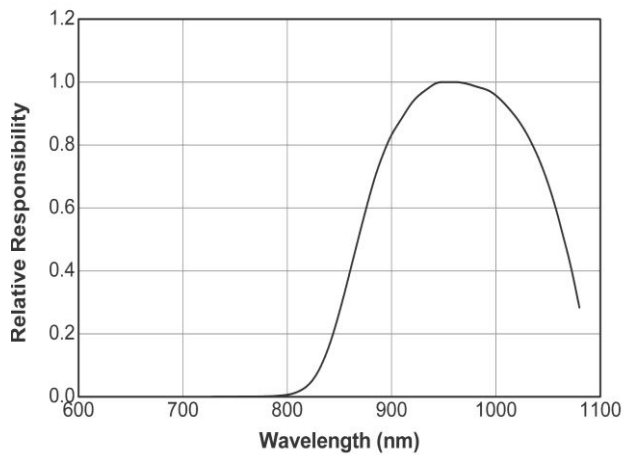


Fig.5 Relative Sensitivity vs. Angle

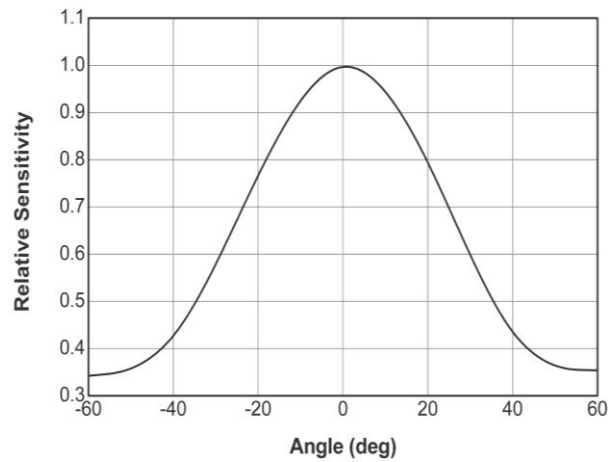


Fig.6 Variation Output Pulse Width vs. Distance

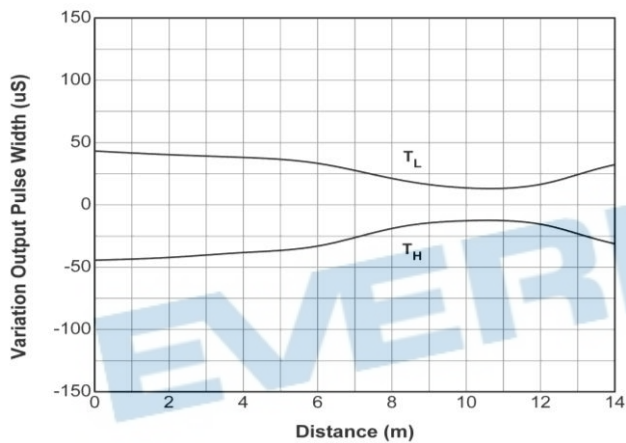


Fig.7 Relative Sensitivity vs. Supply Voltage

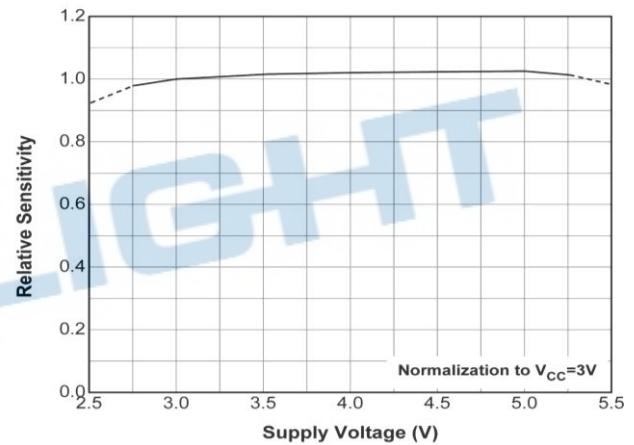


Fig.-8 Relative Transmission Distance vs.  
Center Carrier Frequency -IRM-3636T

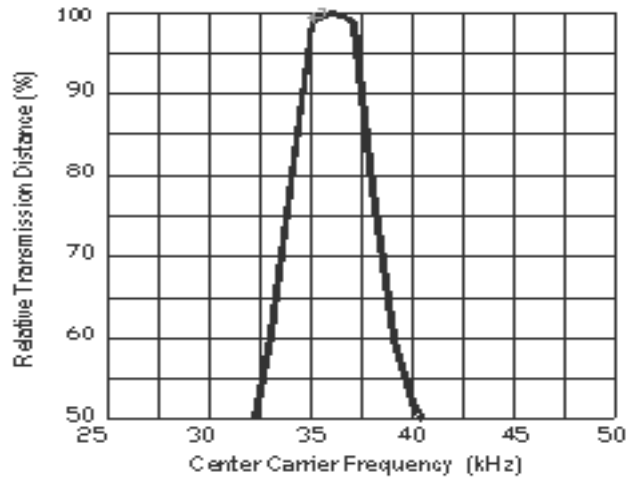


Fig.-9 Relative Transmission Distance vs.  
Center Carrier Frequency -IRM-3638T

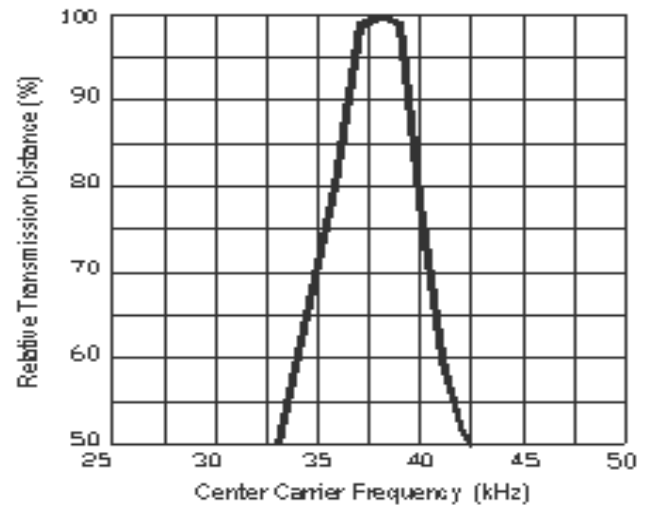
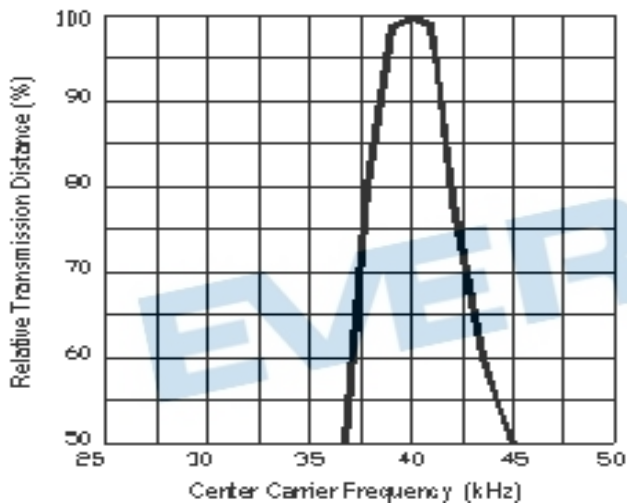
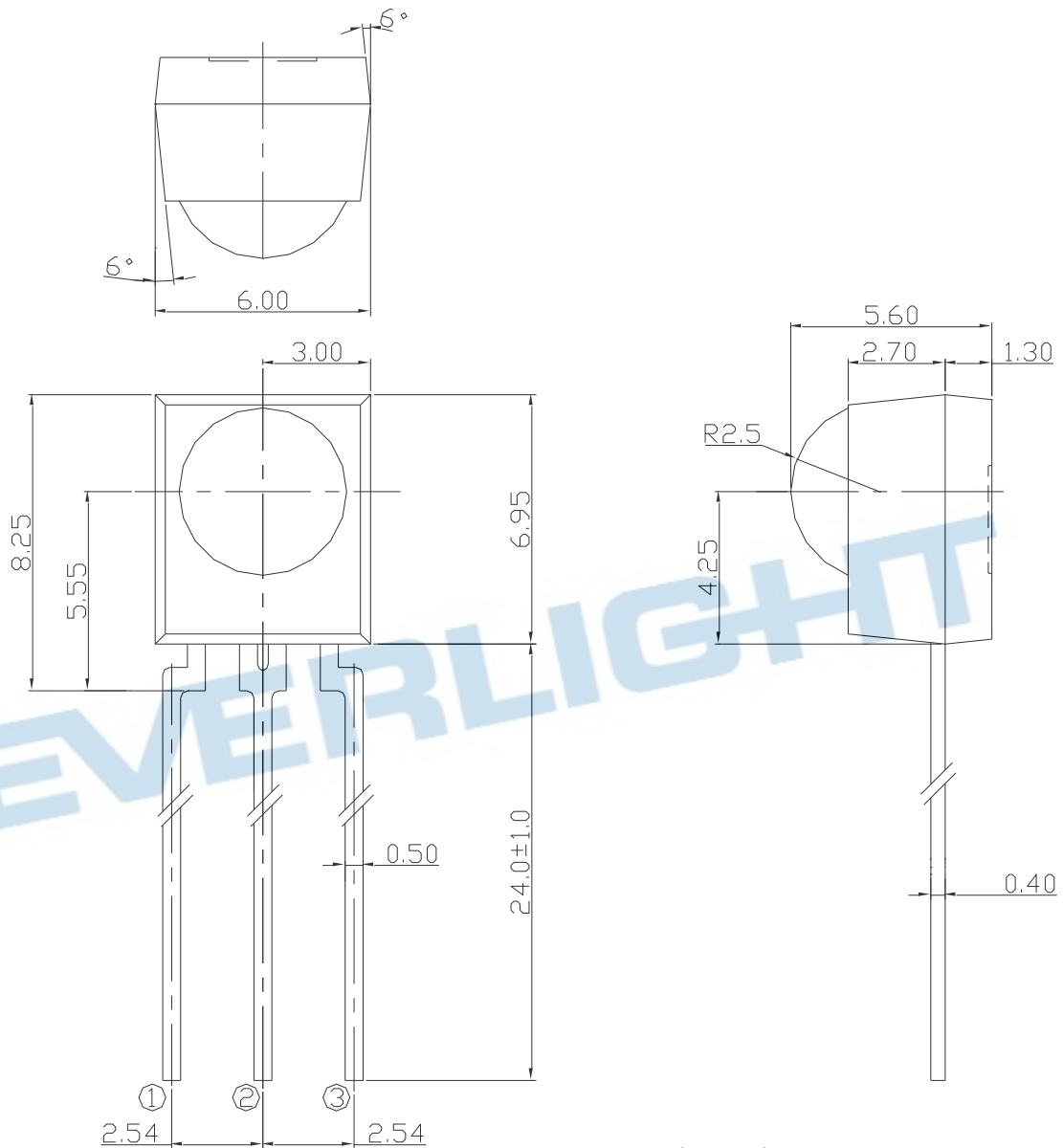


Fig.-10 Relative Transmission Distance vs.  
Center Carrier Frequency -IRM-3640T



Package Dimensions  
(Dimensions in mm)



Pin Function

- ①: Vout
- ②: GND
- ③: Vcc

Notes:

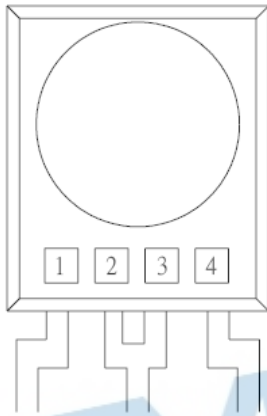
- 1. All dimensions are in millimeters.
- 2. Tolerances unless dimensions ±0.5mm.

## Code compatibility

| Protocol          | Suitable | Protocol        | Suitable |
|-------------------|----------|-----------------|----------|
| Matsushita        | Yes      | Sony 12 bit     | Yes      |
| NEC               | Yes      | Sony 15 bit     | No       |
| RC5               | Yes      | Sony 20 bit     | No       |
| RC6 <sup>1)</sup> | Yes      | Sharp           | Yes      |
| Toshiba           | Yes      | Zenith          | Yes      |
| RCA               | No       | Continuous Code | No       |

1) RC6 is only compatible if the data low time is 25ms or more.

## 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

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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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