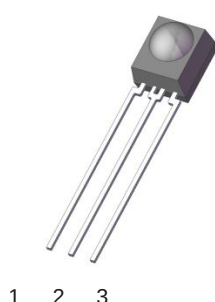


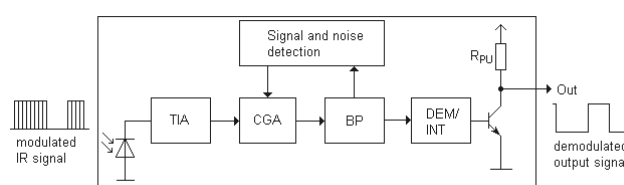
### Infrared Receiver Module IRM-36XXN3 Series



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
- 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

### Descriptions

The IRM-36XXN3 device is miniature type infrared remote control system receiver which has been developed and designed by utilizing the most updated IC technology.

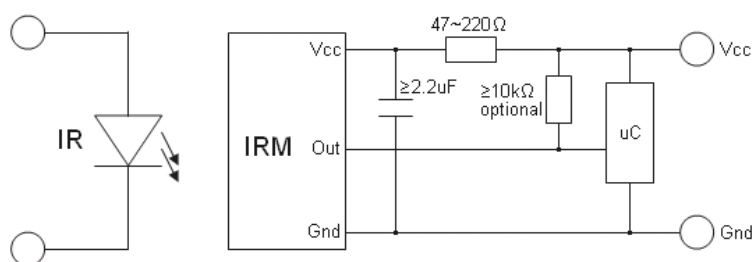
The PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as an IR filter.

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

## Applications

- Light detecting portion of remote control
- AV instruments such as Audio, TV, VCR, CD, MD, etc.
- Home appliances such as Air-conditioner, Fan, etc.
- The other equipments with wireless remote control.
- CATV set top boxes
- Multi-media Equipment

## 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-3636N3 | 36 kHz            |
| IRM-3638N3 | 38 kHz            |
| IRM-3640N3 | 40 kHz            |
| IRM-3656N3 | 56 kHz            |

## Absolute Maximum Ratings (Ta=25°C) <sup>\*1</sup>

| 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 <sup>*2</sup> | T <sub>sol</sub> | 260       | °C   |

<sup>\*1</sup> 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.

<sup>\*2</sup> 4mm from mold body for less than 5 seconds

## Electro-Optical Characteristics (T<sub>a</sub>=25°C, V<sub>cc</sub>=3V)

| Parameter                 | Symbol          | MIN.                 | TYP. | MAX. | Unit | Condition                                          |
|---------------------------|-----------------|----------------------|------|------|------|----------------------------------------------------|
| Current consumption       | I <sub>cc</sub> | ---                  | 1.0  | 2.0  | 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' <sup>*3</sup>         |
|                           | 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 <sup>*4</sup> |
| 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                            |

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

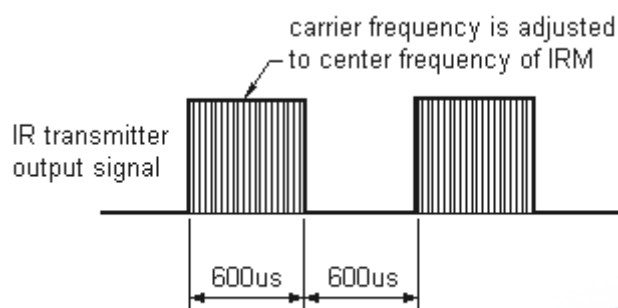
<sup>\*4</sup> A range from 30cm to the arrival distance. Average value of 50 pulses.

## 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

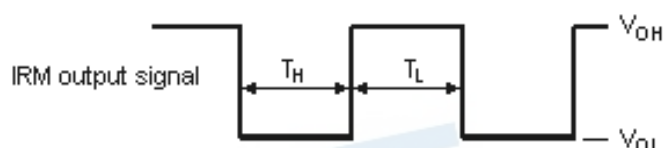


Fig.2 Standard transmitter calibration

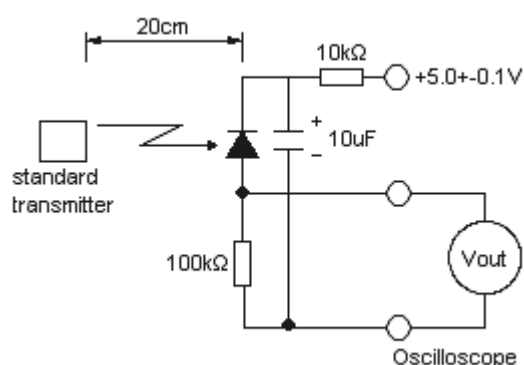
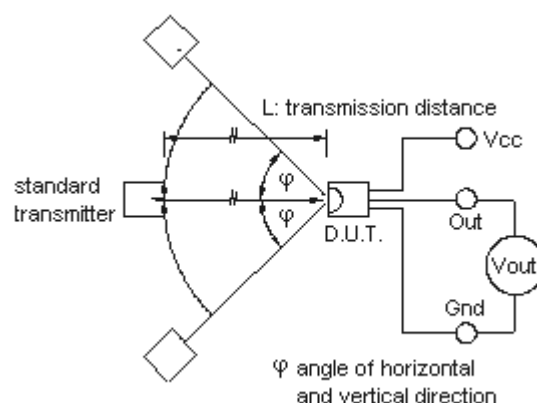


Fig.3 Measuring system



## Typical Electro-Optical Characteristics Curves

Fig.-4 Relative Spectral Sensitivity vs. Wavelength

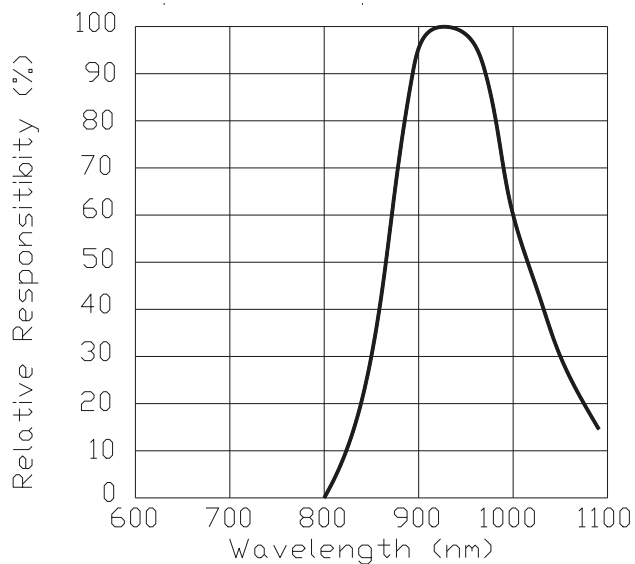


Fig.5 Relative Sensitivity vs. Angle

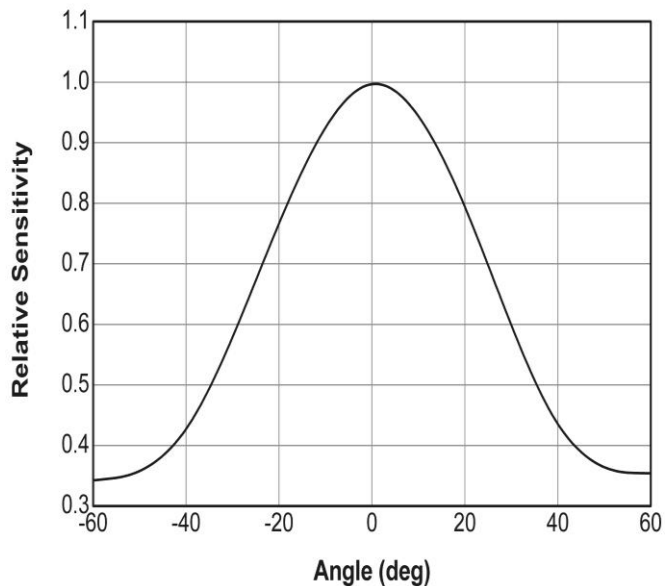


Fig.-6 Output Pulse Length vs. Arrival Distance

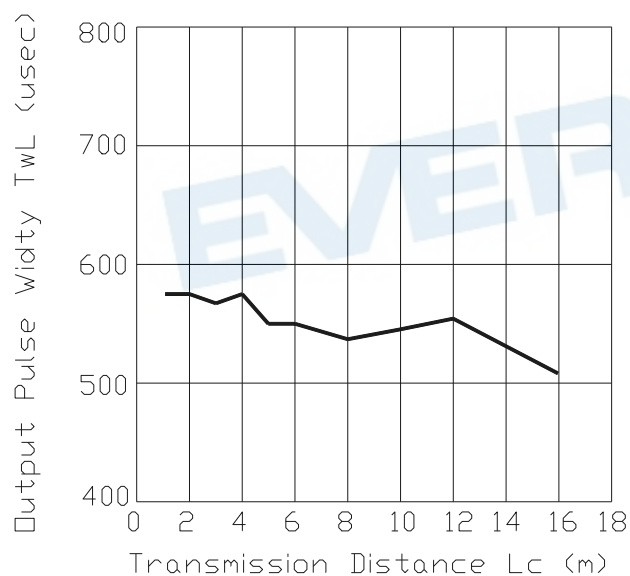


Fig.-7 Arrival Distance vs. Supply Voltage

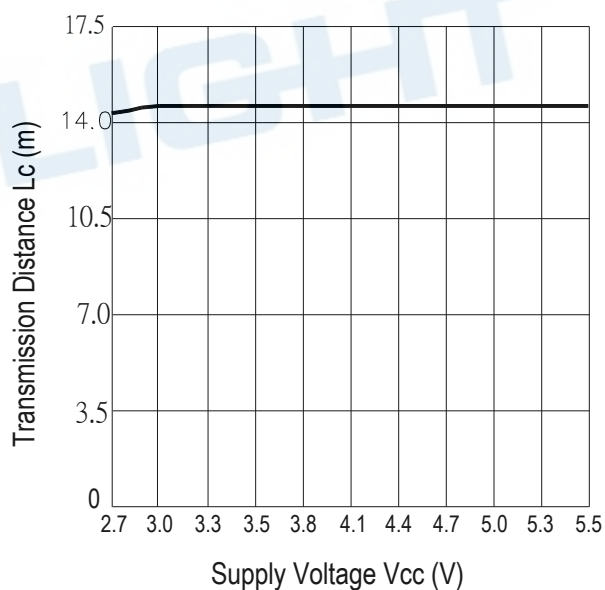


Fig.-8 Relative Transmission Distance vs. Center Carrier Frequency 36KHz

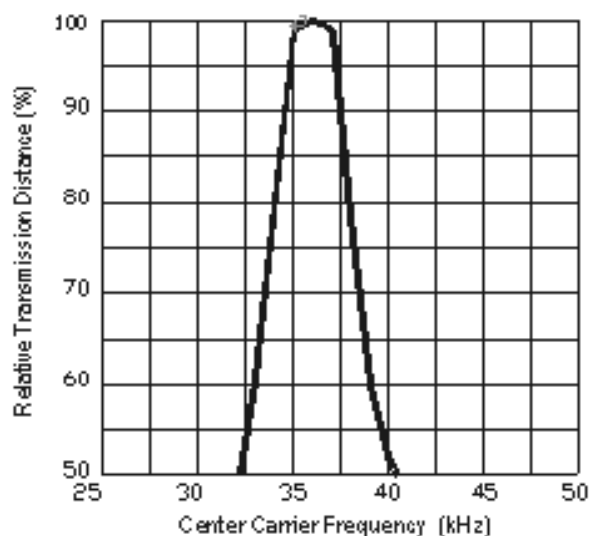


Fig.-9 Relative Transmission Distance vs. Center Carrier Frequency 38KHz

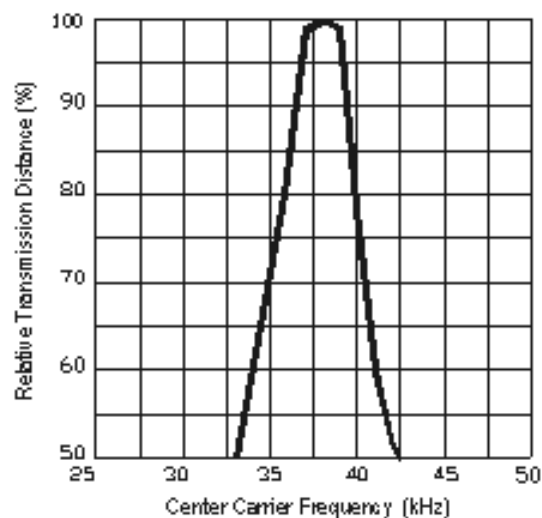


Fig.-10 Relative Transmission Distance vs. Center Carrier Frequency 40KHz

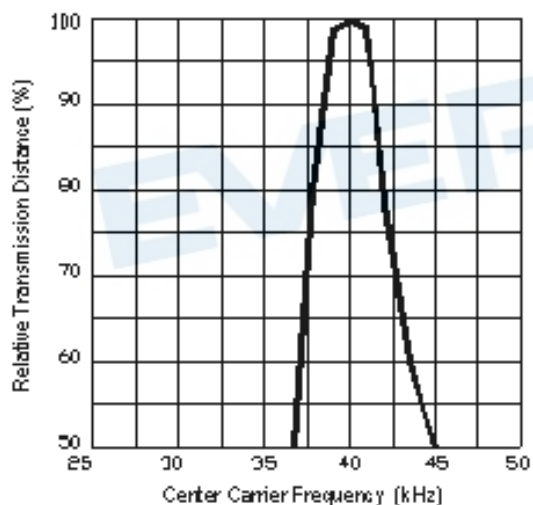
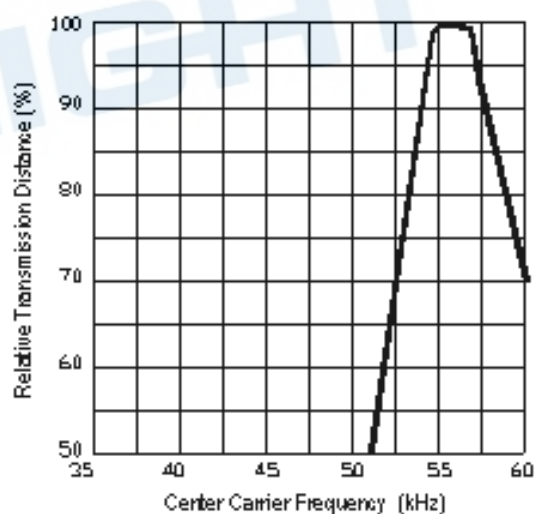
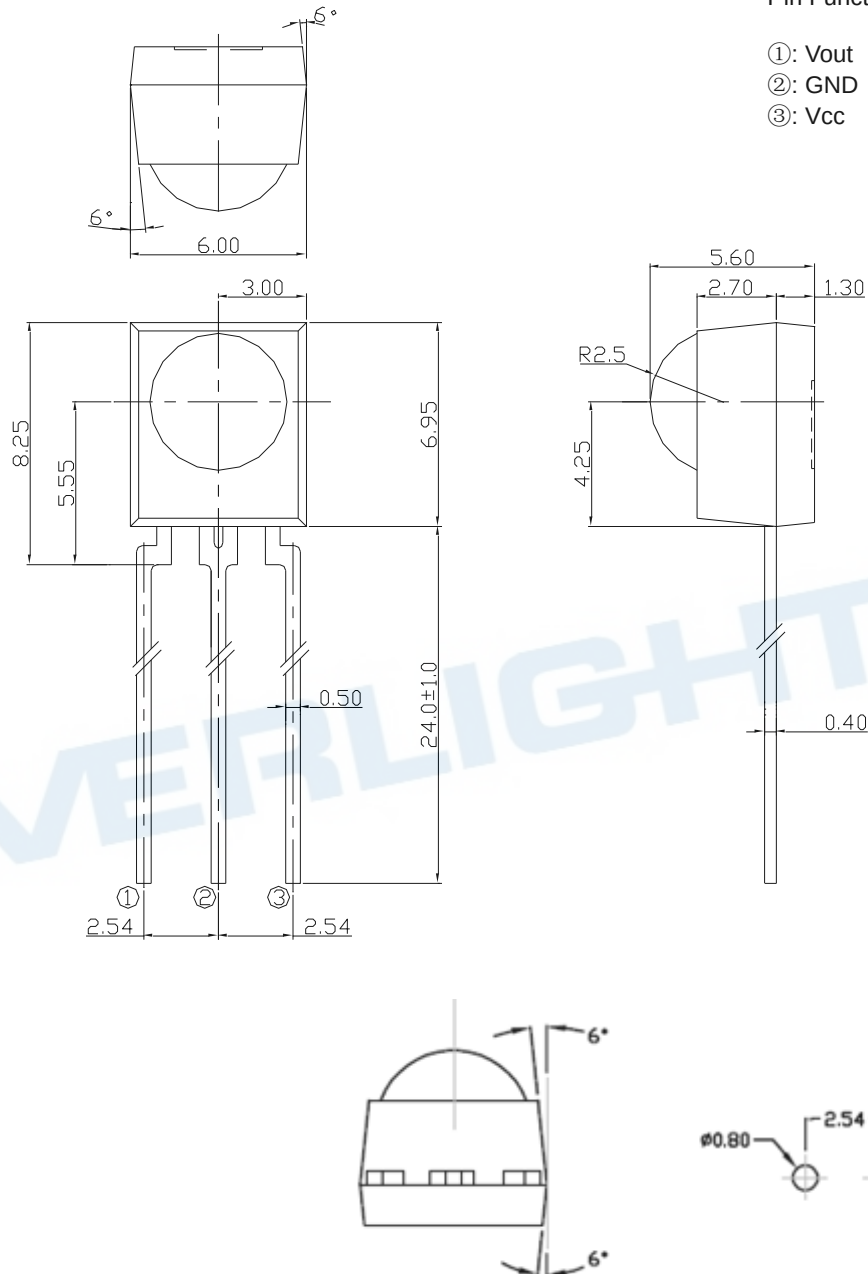


Fig.-11 Relative Transmission Distance vs. Center Carrier Frequency 56KHz



**Package Dimensions**  
(Dimensions in mm)



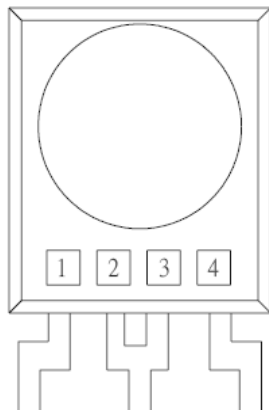
**Pin Function**

- ①: Vout
- ②: GND
- ③: Vcc

**Notes:**

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

## 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.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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