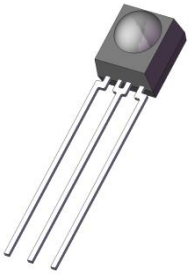
DATASHEET

# Infrared Receiver Module
# IRM-36xxT Series

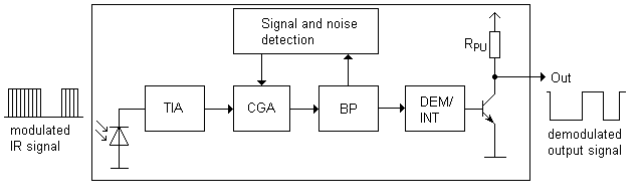


1 2 3

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: 10 cycles
- min gap length: 14 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

## Description

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

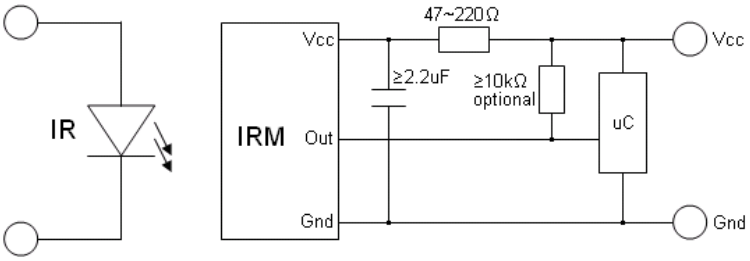
The PIN diode and preamplifier are assembled onto a lead frame and molded into a black epoxy package which operates as an IR filter.

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℃)

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Supply Voltage | $V_{cc}$ | 6 | V |
| Operating Temperature | $T_{opr}$ | -20 ~ +80 | ℃ |
| Storage Temperature | $T_{stg}$ | -40 ~ +85 | ℃ |
| Soldering Temperature *1 | $T_{sol}$ | 260 | ℃ |

*1 4mm from mold body for less than 5 seconds

## Electro-Optical Characteristics ($T_a$=25℃, $V_{cc}$=5V)

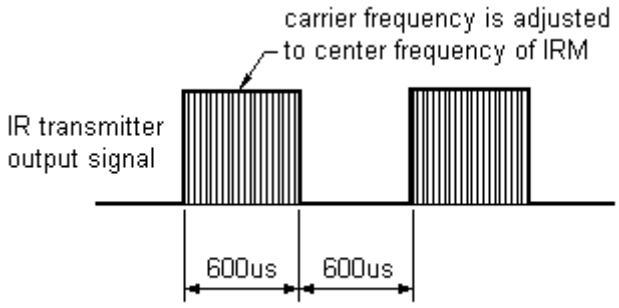
| Parameter | Symbol | MIN. | TYP. | MAX. | Unit | Condition |
|---|---|---|---|---|---|---|
| Current consumption | Icc | --- | 0.45 | 0.7 | mA | No input signal |
| Supply voltage | $V_{CC}$ | 2.7 | - | 5.5 | V | |
| Peak wavelength | $\lambda_p$ | --- | 940 | --- | nm | |
| Reception range | $L_0$ | 14 | --- | --- | m | See chapter ‚Test method' |
| | $L_{45}$ | 6 | --- | --- | | |
| Half angle(horizontal) | $\varphi_h$ | --- | ±35 | --- | deg | |
| Half angle(vertical) | $\varphi_v$ | --- | ±35 | --- | deg | |
| High level pulse width | $T_H$ | 400 | --- | 800 | μs | Test signal according to figure 1 |
| Low level pulse width | $T_L$ | 400 | --- | 800 | μs | |
| High level output voltage | $V_{OH}$ | Vcc-0.4 | --- | --- | V | $I_{SOURCE} \leqq 1\mu A$ |
| Low level output voltage | $V_{OL}$ | --- | 0.2 | 0.5 | V | $I_{SINK} \leqq 2mA$ |

## 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 ($E_v \leqq 10$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 **Vo=400mVp-p.** Both, the test transmitter and the photo diode, have a peak wavelength of 940nm. The photo diode for calibration is PD438B (λp=940nm, Vr=5V).
4. The measurement system is shown in Fig.-3

Fig.1 Transmitter Wave Form




D.U.T output Pulse

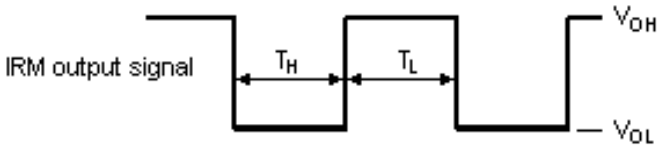



Fig.2 standard transmitter calibration

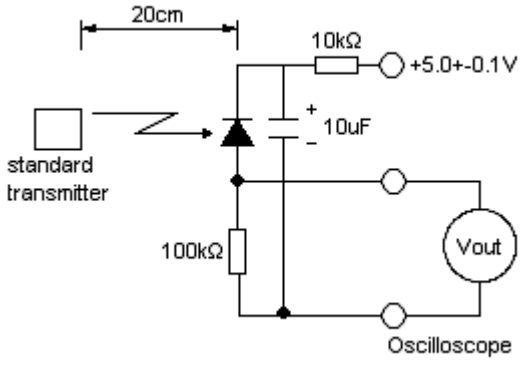
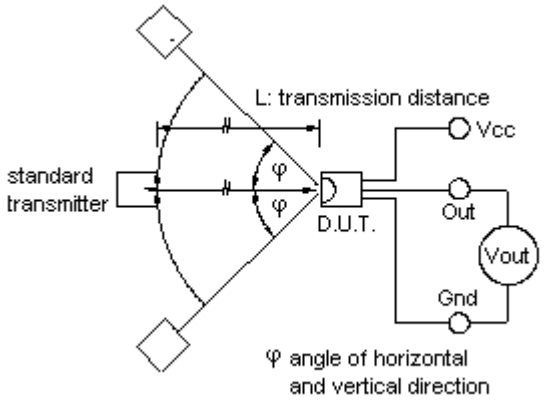



Fig.3 Measuring system



## Typical Electro-Optical Characteristics Curves

Fig.4 Relative Responsibility vs. Wavelength

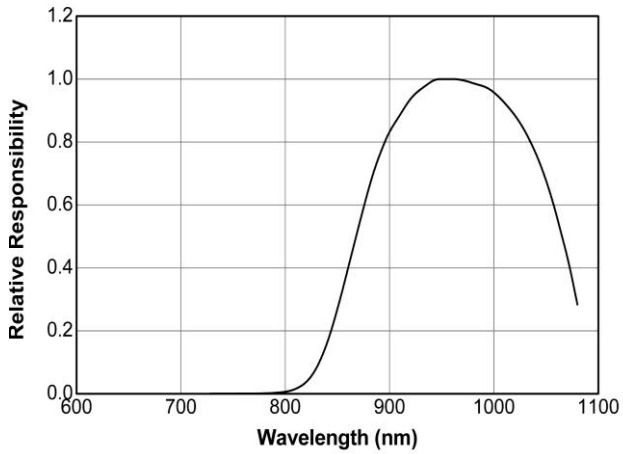



Fig.5 Relative Sensitivity vs. Angle

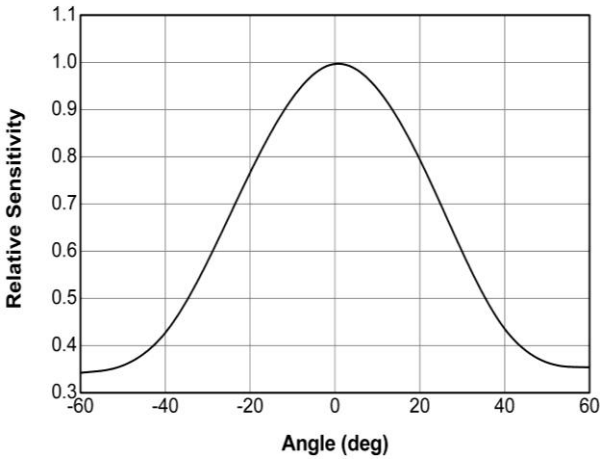



Fig.6 Variation Output Pulse Width vs. Distance

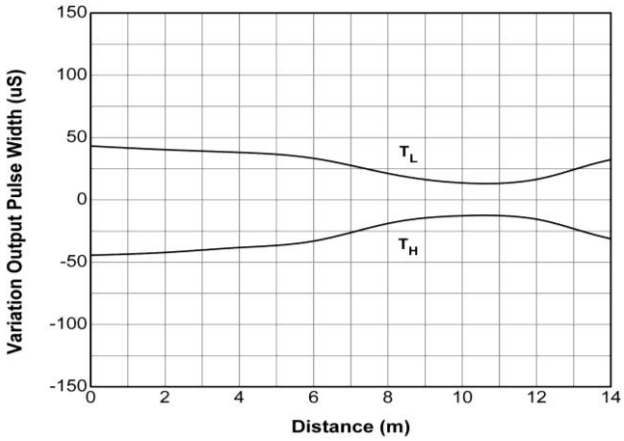



Fig.7 Relative Sensitivity vs. Supply Voltage

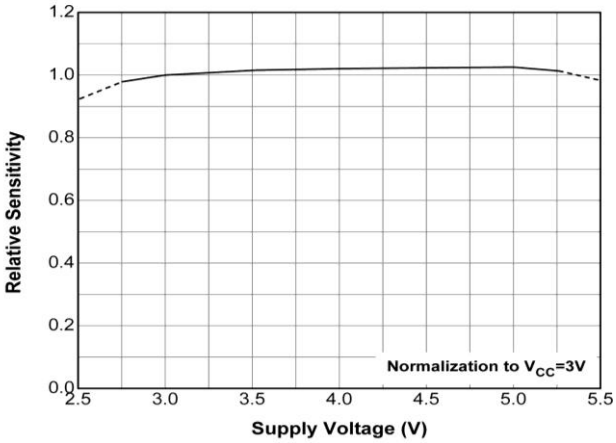


**Fig.-8 Relative Transmission Distance vs. Center Carrier Frequency -IRM-3636T**

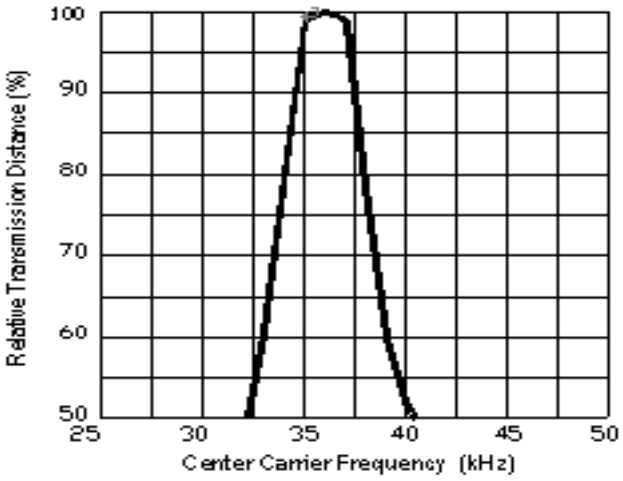



**Fig.-9 Relative Transmission Distance vs. Center Carrier Frequency -IRM-3638T**

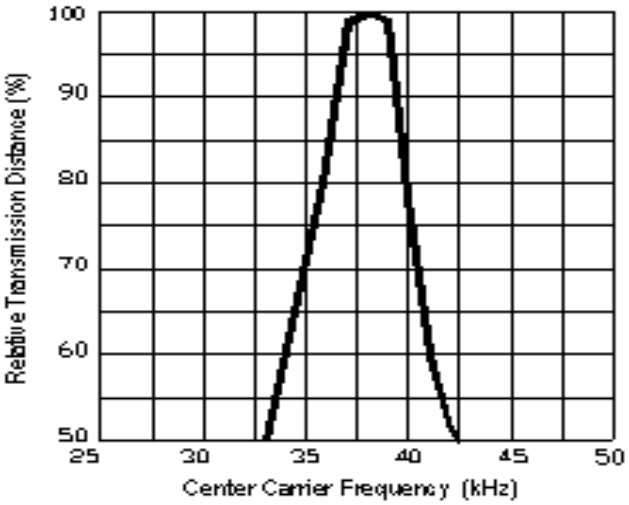
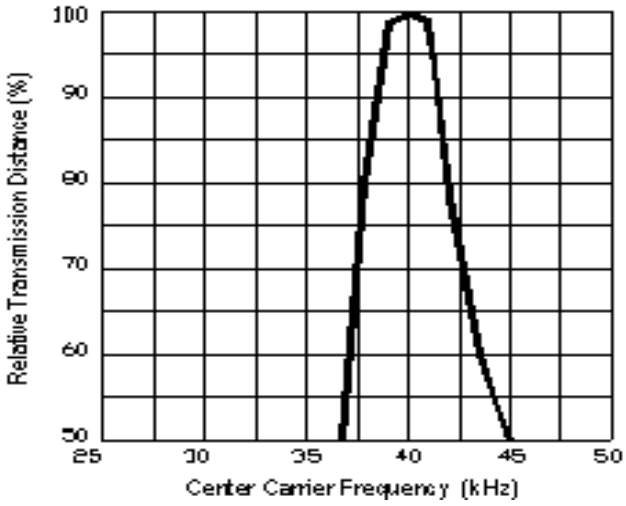
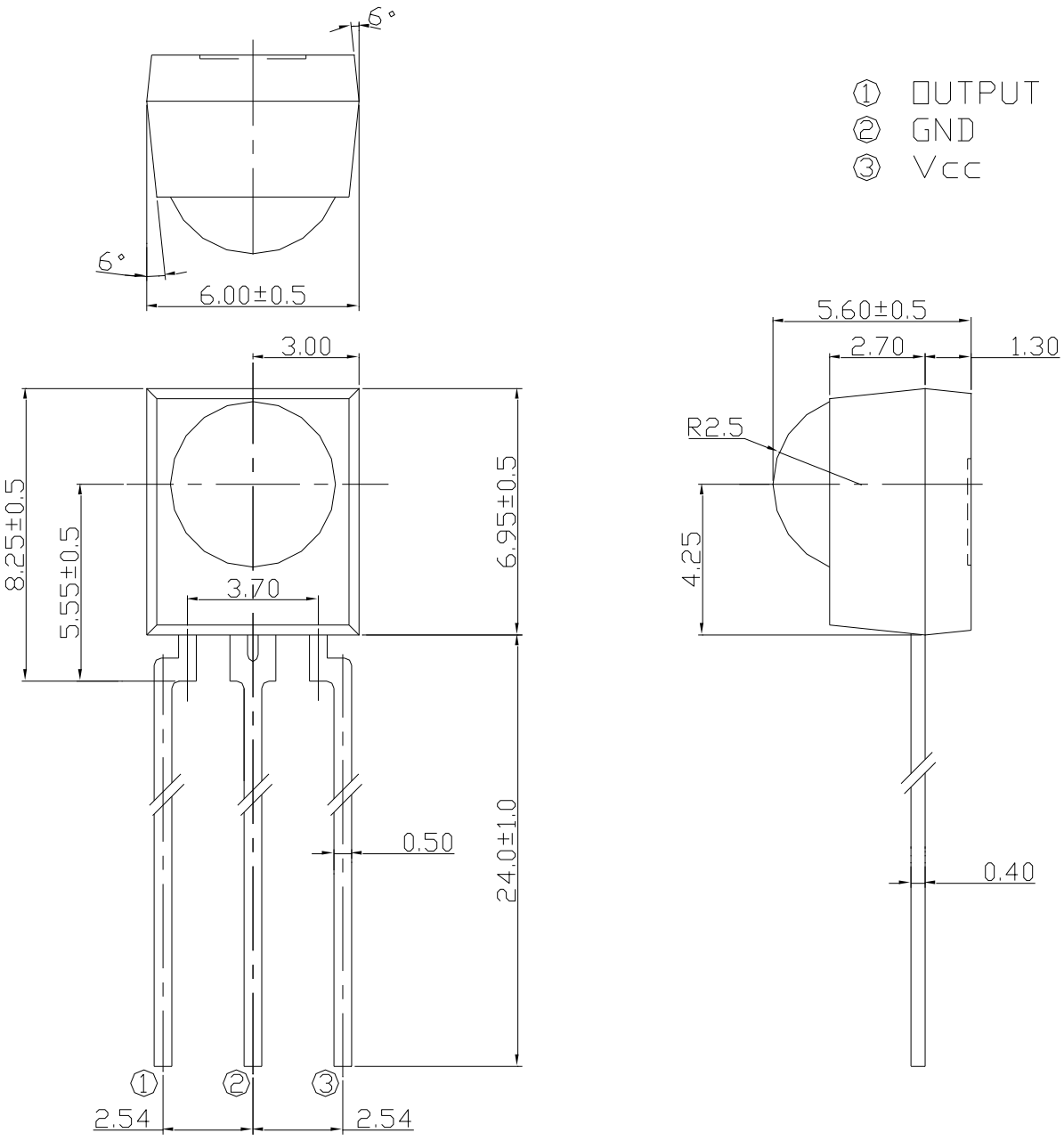



**Fig.-10 Relative Transmission Distance vs. Center Carrier Frequency -IRM-3640T**



## Package Dimensions
**(Dimensions in mm)**



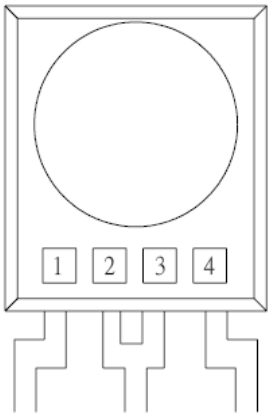

Notes:
1. All dimensions are in millimeters.
2. Tolerances unless dimensions ±0.3mm.

## 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[1)] | 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

## Disclaimer

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
3. When using this product, please observe the absolute maximum ratings and the instructions for use outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from 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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