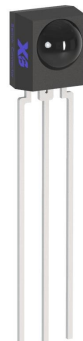


## Infrared Receiver Module IRM-8601M2-X Series

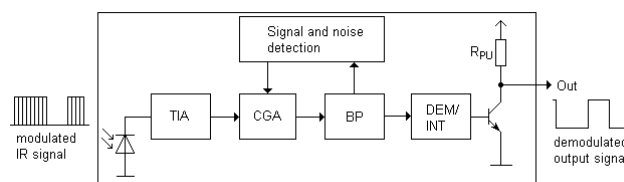


Pin Configuration

1. Vout
2. GND
3. Vcc



Block Diagram



### Features

- High protection ability against EMI
- Ellipsoid 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
- Optimized immunity against TFT backlight interferences
- High immunity against ambient light
- Long reception range
- High sensitivity
- Pb free and RoHS compliant
- Compliance with EU REACH

### Description

The IRM-8601M2-X devices are DIP type infrared receivers which have been developed and designed by using the latest IC technology.

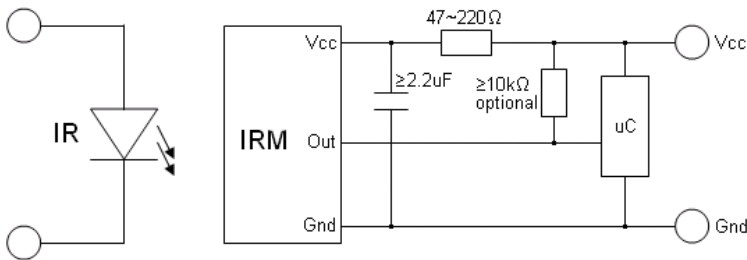
The PIN diode and preamplifier are assembled onto a lead frame and molded into a black epoxy package which operates as an IR filter.

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-8601M2-2	36 kHz
IRM-8601M2	38 kHz
IRM-8601M2-4	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>=3V)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Current consumption	I <sub>cc</sub>	---	0.4	0.6	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>	8	---	---	m	See chapter 'Test method' *3
	L <sub>45</sub>	5	---	---		
Half angle(horizontal)	φ <sub>h</sub>	---	±35	---	deg	
Half angle(vertical)	φ <sub>v</sub>	---	±25	---	deg	
High level pulse width	T <sub>H</sub>	400	---	800	μs	Test signal according to 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 ( $E_v \leq 10\text{Lux}$ ).

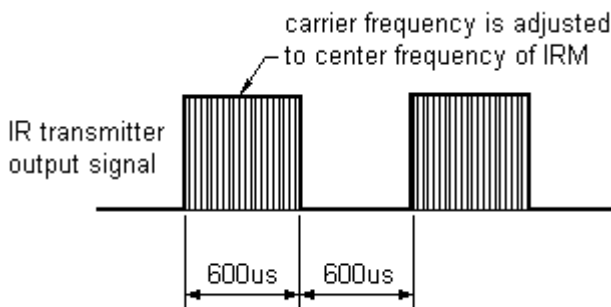
3. Standard transmitter

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

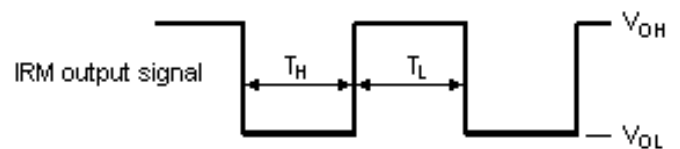


Fig.2 Standard transmitter calibration

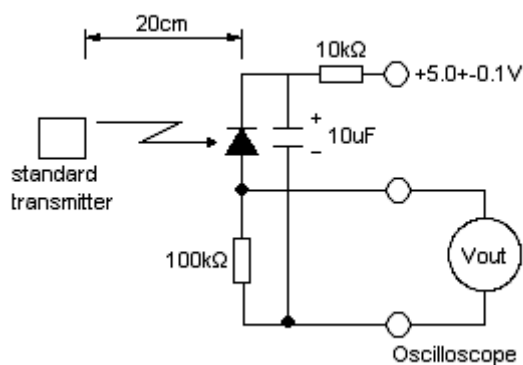
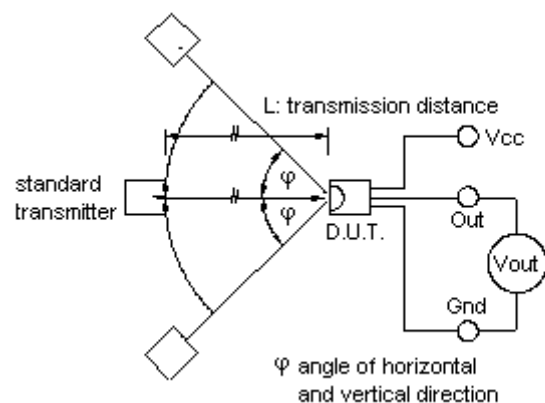


Fig.3 Measuring system



## Typical Electro-Optical Characteristics Curves

Fig.4 Relative Responsibility vs. Wavelength

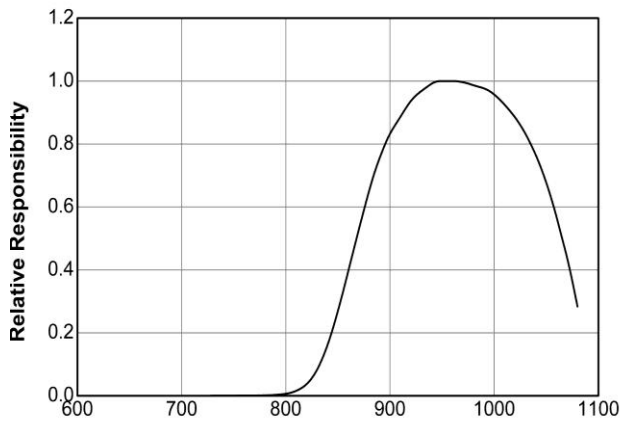


Fig.5 Relative Sensitivity vs. Angle

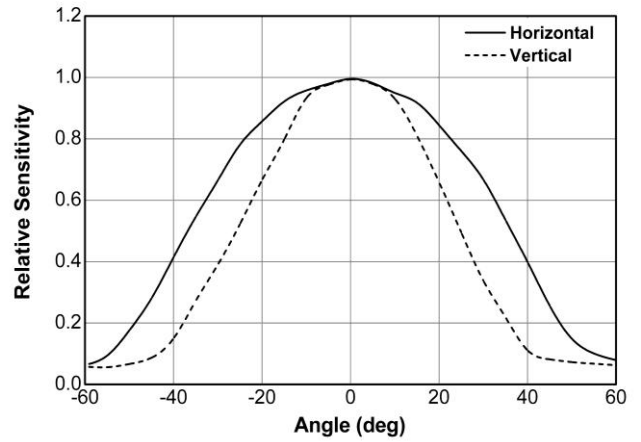


Fig.6 Variation Output Pulse Width vs. Distance

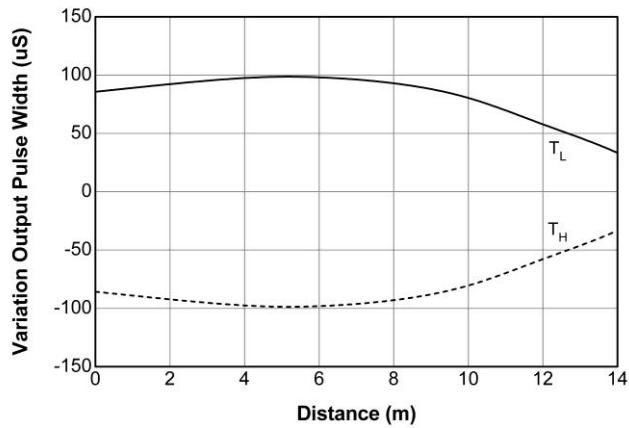


Fig.7 Supply Voltage vs. Distance

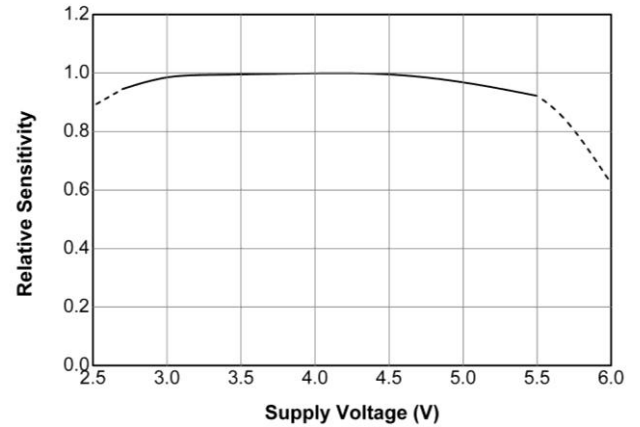
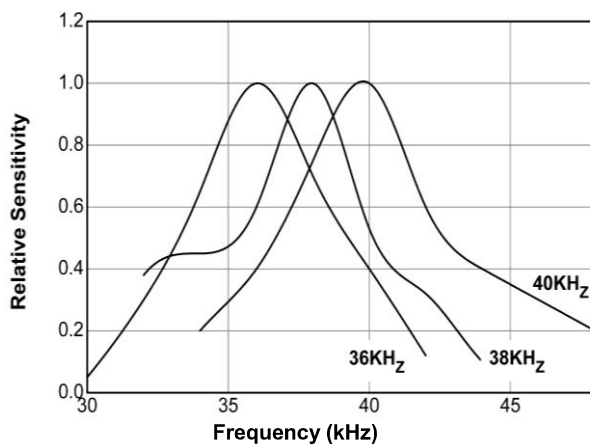
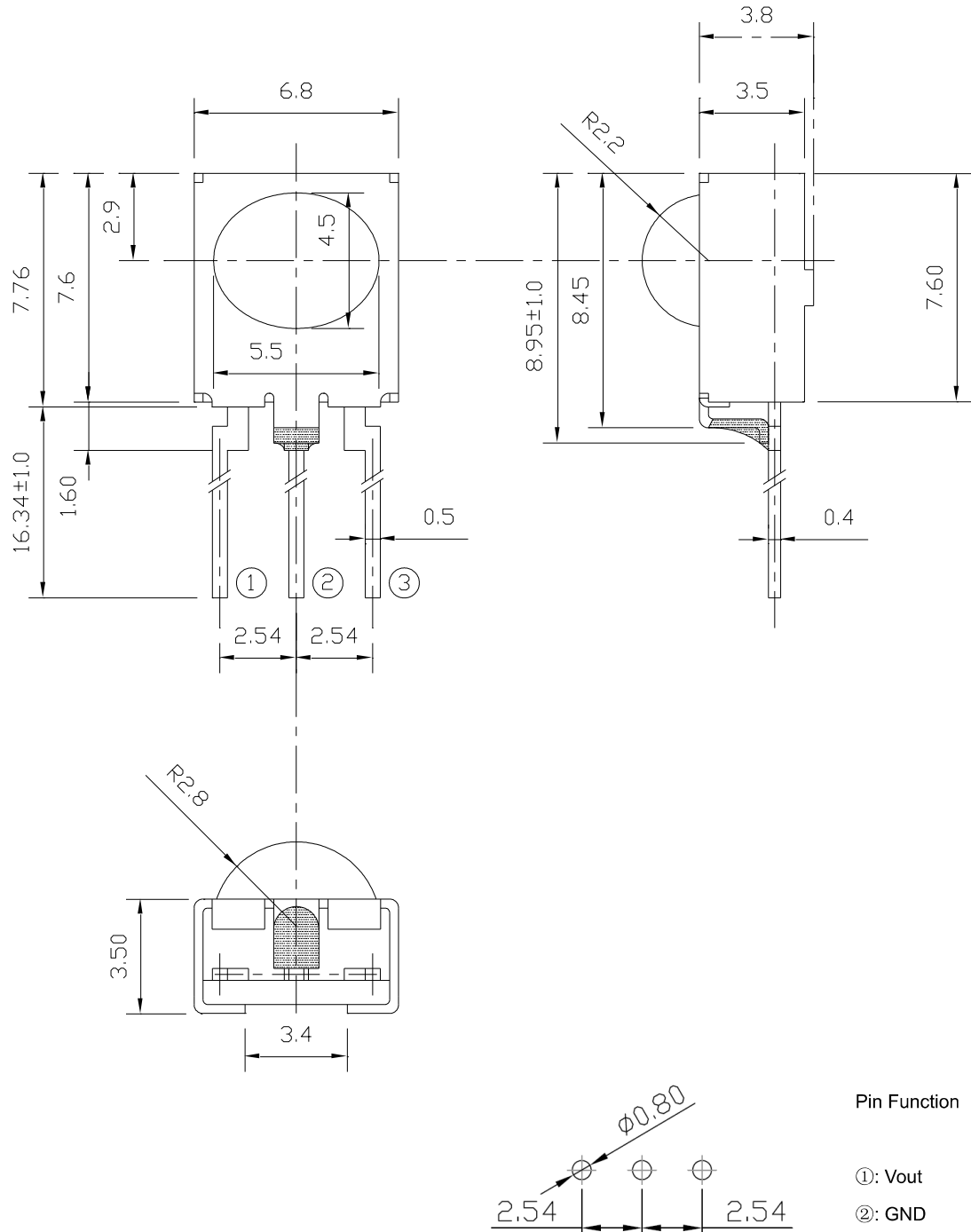


Fig.8 Relative Sensitivity vs. Frequency



### Package Dimensions (Dimensions in mm)



#### Notes:

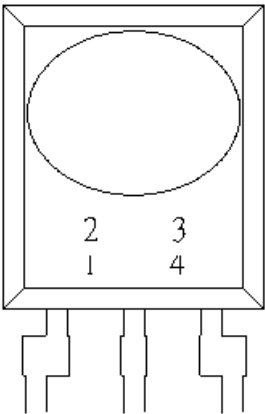
1. All dimensions are in millimeters.
2. Tolerances unless dimensions ±0.5mm.
3. Suggested pad dimension is just for reference only.  
Please modify the pad dimension based on individual need.

Code compatibility

Protocol	Suitable	Protocol	Suitable
JVC	Yes	r-step	No
Mitsubishi	Yes	Sharp	Yes
RCMM	No	Sony 12 bit <sup>2)</sup>	Yes
NEC	Yes	Sony 15 bit	Yes
RC5	Yes	Sony 20 bit	Yes
RC6 <sup>1)</sup>	Yes	Toshiba	Yes
XMP	No		

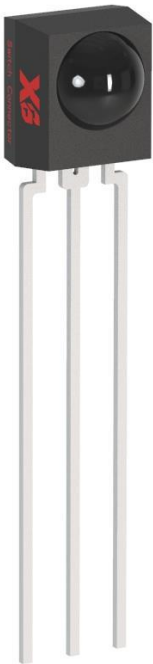
1) Best choice depends on RC6 mode. If data low time is below 22ms, M2 is the best choice, otherwise M3.  
2) If only Sony 12 bit version is used, M3 is recommended otherwise M2 is the best choice.

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

Recommended method of storage

- The following are general recommendations for IRM with metal shell storage and use:
- 1. Do not open package bag before devices are ready to use.
  - 2. Sealed package bag suggested to be stored at 10°C~30°C and ≤ 60%RH.
  - 3. After opening the package, the devices must be stored at 10°C~30°C and ≤ 60%RH, and suggested to be used within 24 hours or as soon as possible. Besides, suggest that the remaining devices seal in the package bag as soon as possible please.

## DISCLAIMER

1. XI BNANG reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets XI BNANG 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. XI BNANG 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.
5. These specification sheets include materials protected under copyright of XI BNANG. Reproduction in any form is prohibited without obtaining XI BNANG's prior consent.
6. This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or life saving applications or any other application which can result in human injury or death. Please contact authorized XI BNANG sales agent for special application request.