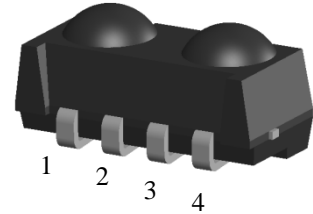


## Infrared Remote Control Receiver Module

## IRM-H8xxM3/TR2 series

### Features

- High protection ability against EMI
- Available for various carrier frequencies
- Min burst length: 8 cycles
- Min gap length: 12 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



### Pin Configuration

1. GND
2. Vcc
3. Out
4. GND

### Descriptions

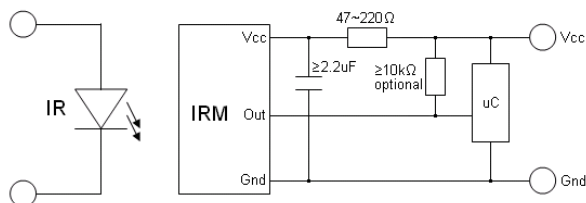
The device is miniature SMD type infrared receiver that has been developed and designed by utilizing the latest IC technology.

The PIN diode and preamplifier are assembled onto a lead frame and molded into an epoxy package which operated an IR filter. The demodulated output signal can directly be decoded by a microprocessor.

### Applications

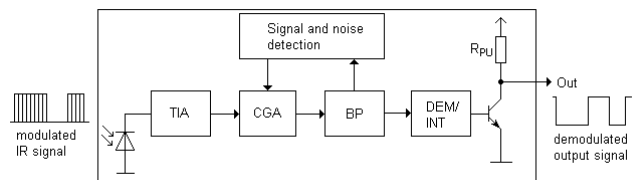
- Light detecting portion of remote control
- AV instruments such as Audio, TV, VCR, CD, MD, etc
- Home appliances such as Air-conditioner, Fan, etc
- Other devices using IR remote control
- CATV set top boxes
- Multi-media Equipment

### Application Circuit



The RC Filter should be connected closely between Vcc pin and GND p

### Block Diagram



**Infrared Remote Control  
Receiver Module**

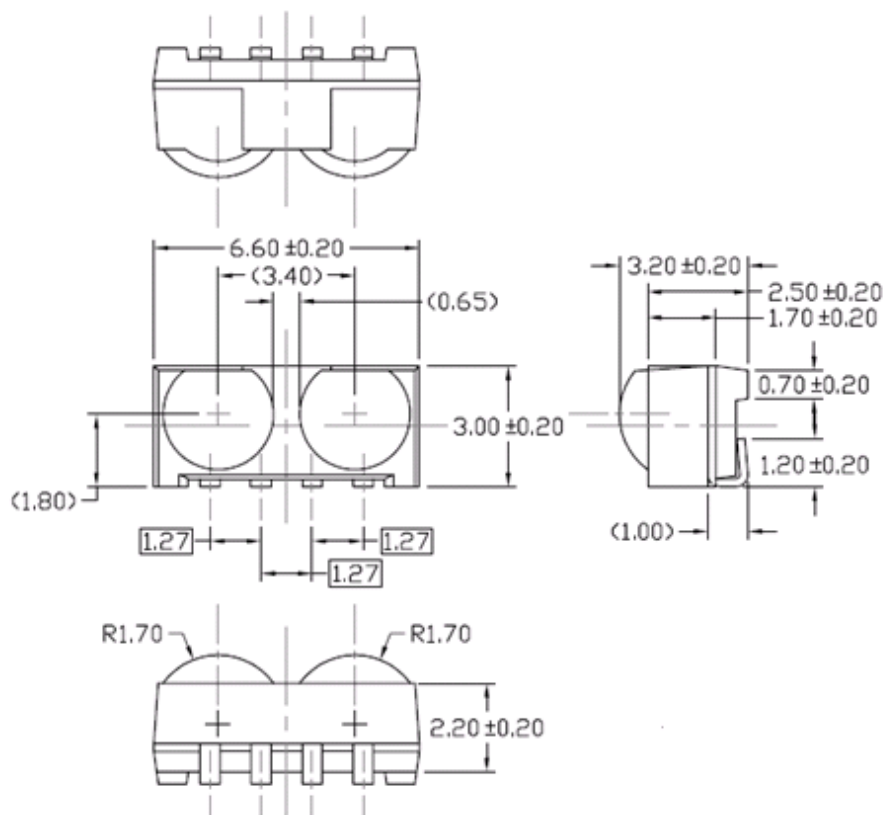
**IRM-H8xxM3/TR2 series**

**Parts Table**

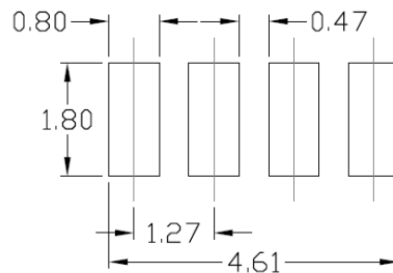
Model No.	Carrier Frequency
IRM-H836M3/TR2	36 kHz
IRM-H838M3/TR2	38 kHz
IRM-H856M3/TR2	56 KHz

**Package Dimenstions**

(Dimensions in mm)



**Recommended pad layout for surface mount leadform**



**Infrared Remote Control  
Receiver Module****IRM-H8xxM3/TR2 series****Absolute Maximum Ratings (T<sub>a</sub>=25°C)**

Parameter	Symbol	Rating	Unit
Supply Voltage	V <sub>s</sub>	6	V
Operating Temperature	T <sub>opr</sub>	-20 ~ +80	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +85	°C
Soldering Temperature <sup>*1</sup>	T <sub>sol</sub>	260	°C

<sup>\*1</sup> 4mm from mold body less than 10 seconds

**Electro-Optical Characteristics (T<sub>a</sub>=25°C and V<sub>cc</sub>=3.0V)**

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Current Consumption	I <sub>cc</sub>	-	0.4	0.6	mA	No signal input
Supply Voltage	V <sub>s</sub>	2.7	-	5.5	V	
Peak Wavelength	λ <sub>p</sub>	-	940	-	nm	
Reception Distance	L <sub>0</sub>	8	-	-	m	See chapter ,Test method'
	L <sub>45</sub>	5				
Half Angle (Horizontal)	Θ <sub>h</sub>		45		deg	
Half Angle (Vertical)	Θ <sub>v</sub>		45	-	deg	
High Level Pulse Width	T <sub>WH</sub>	450	-	750	μs	
Low Level Pulse Width	T <sub>WL</sub>	450	-	750	μs	Test signal according to figure 1
High Level Output Voltage	V <sub>H</sub>	V <sub>cc</sub> -0.4	-	-	V	
Low Level Output Voltage	V <sub>L</sub>	-	0.2	0.5	V	I <sub>SINK</sub> ≤ 2mA
Internal pull up resistor	R <sub>PU</sub>	-	40	-	kΩ	

## Infrared Remote Control Receiver Module

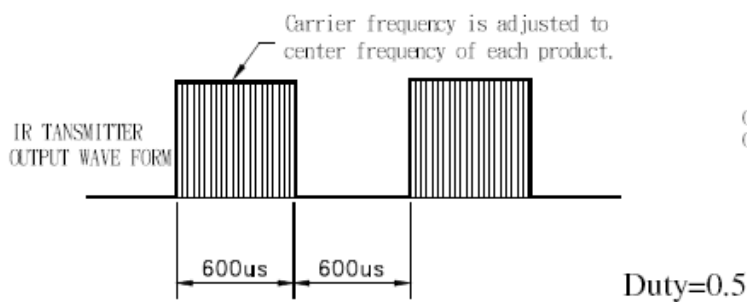
## IRM-H8xxM3/TR2 series

### Test Method

The specified electro-optical characteristic is satisfied under the following Conditions:

1. Measurement environment  
A place without extreme light reflected
2. External light  
Ordinary white fluorescent lamps (Light source temperature 2856°K,  $E_e \leq 10\text{Lux}$ ) without high frequency modulation
3. Standard transmitter  
A transmitter whose output is so adjusted as to  **$V_o=400\text{mVp-p}$**  and the output Wave form shown in Fig.-1. According to the measurement method shown in Fig.-2 the standard transmitter is specified. However, the infrared photodiode to be used for the transmitter should be  $\lambda_p=940\text{nm}$ ,  $\Delta\lambda=50\text{nm}$ . Also, photodiode is used of PD438B ( $V_r=5\text{V}$ )..
4. Measuring system According to the measuring system shown in Fig.-3

Fig.-1 Transmitter Wave Form



D.U.T output Pulse

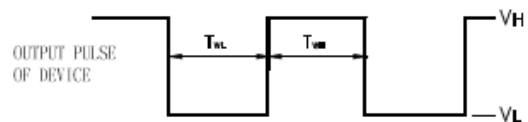


Fig.-2 Measuring Method

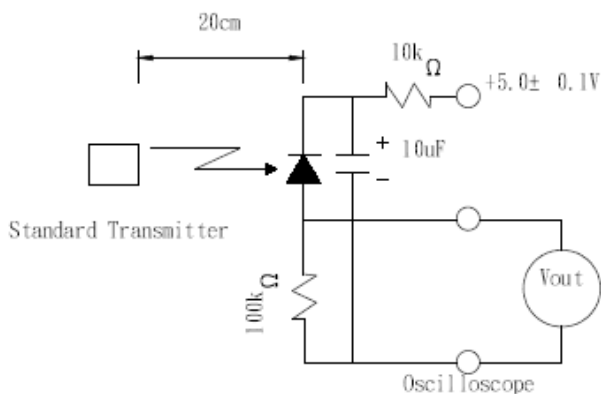
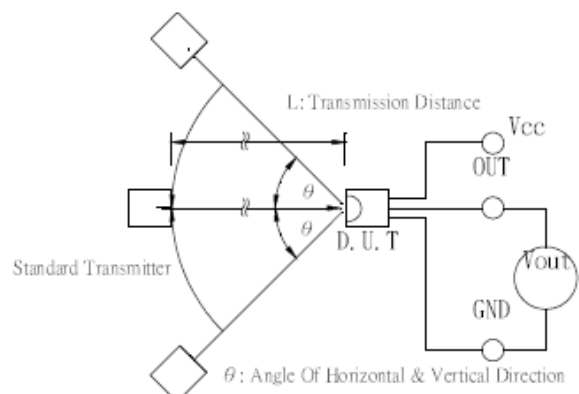


Fig.-3 Measuring System

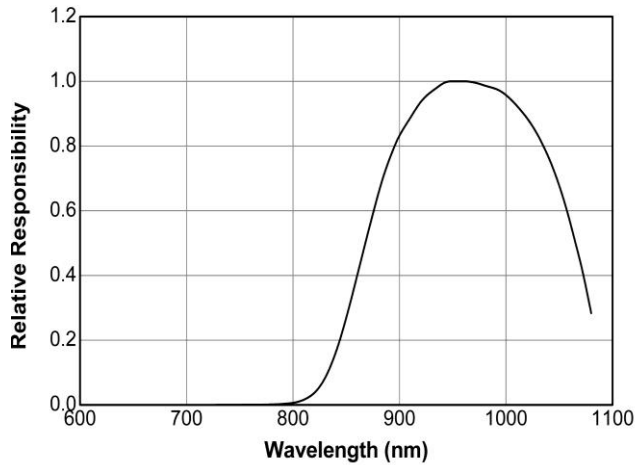


**Infrared Remote Control  
Receiver Module**

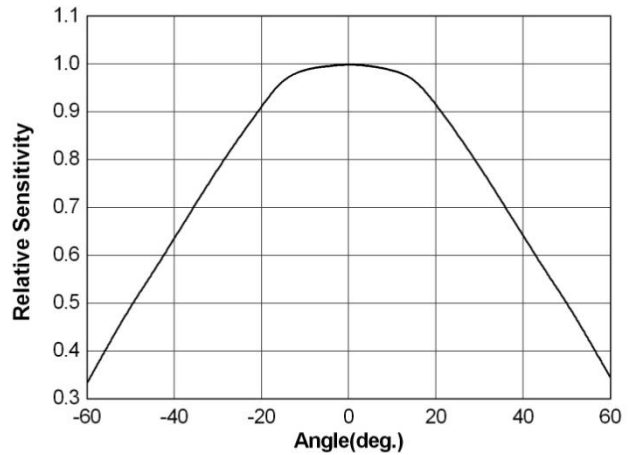
**IRM-H8xxM3/TR2 series**

**Typical Performance Curves**

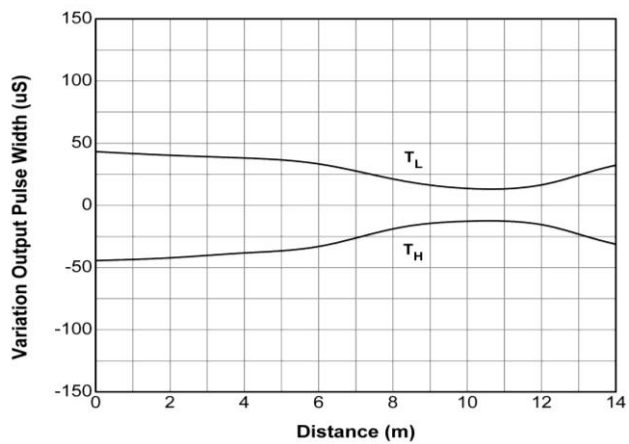
**Fig.4 Relative Responsibility vs. Wavelength**



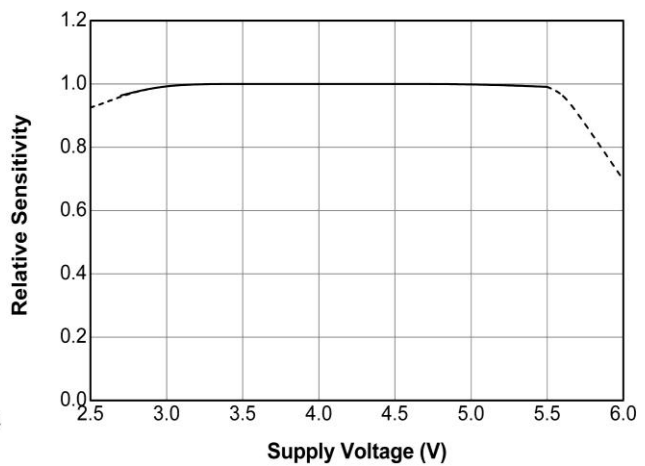
**Fig.-5 Relative Sensitivity vs. Angle**



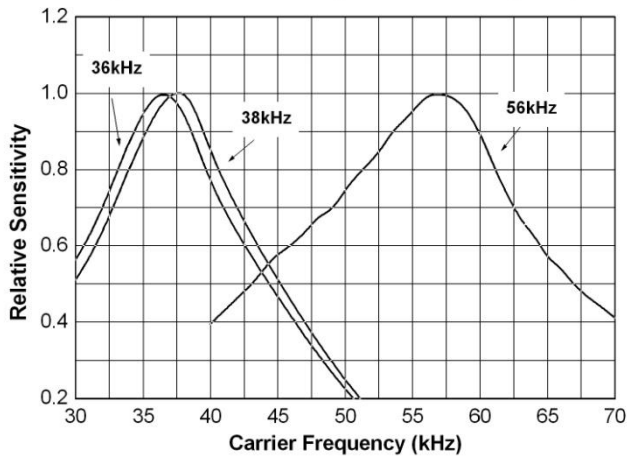
**Fig.6 Variation Output Pulse Width vs. Distance**



**Fig.7 Relative Sensitivity vs. Supply Voltage**



**Fig.8 Relative Sensitivity vs. Carrier Frequency**



**Infrared Remote Control  
Receiver Module**

**IRM-H8xxM3/TR2 series**

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**Code information**

<b>Protocol</b>	<b>Suitable</b>	<b>Protocol</b>	<b>Suitable</b>
JVC	Yes	R-step	Yes
Matsushita	Yes	Sharp	Yes
Mitsubishi	No	Sony 12 Bit	Yes
NEC	Yes	Sony 15 Bit	No
RC5	Yes	Sony 20Bit	No
RC6	Yes	Toshiba	Yes
RCMM	No	Zenith	Yes
RCA	No	XMP	Yes
Panasonic	Yes	Continuous Code	No
RCS-80	No		

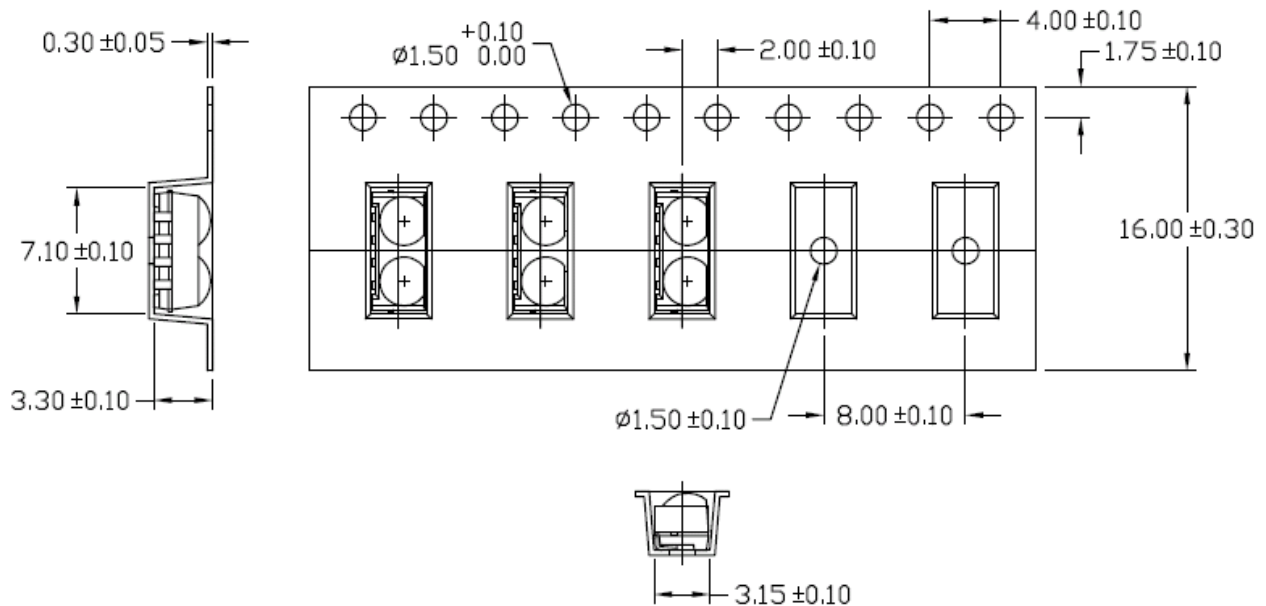
*Preliminary*

**EVERLIGHT**

## Infrared Remote Control Receiver Module

## IRM-H8xxM3/TR2 series

### Tape & Reel Packing Specifications



### Packing Quantity

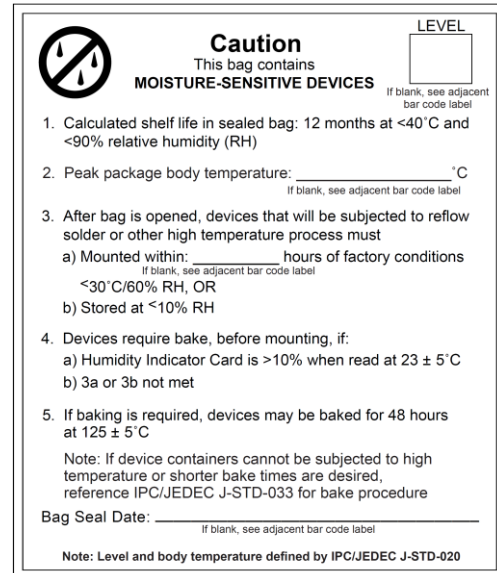
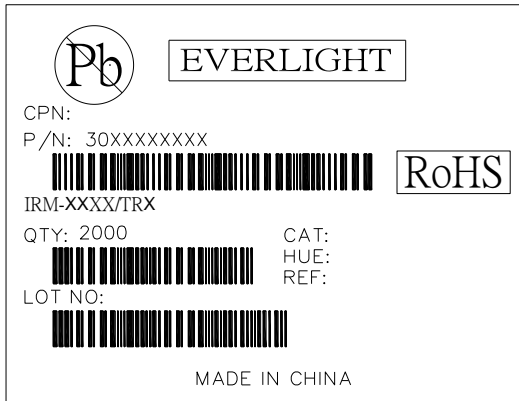
1000 pcs / Reel

5 Reels / Carton

## Infrared Remote Control Receiver Module

## IRM-H8xxM3/TR2 series

### Label format



Moisture Classification-storage and used condition label

### Recommended method of storage

The following are general recommendations for moisture sensitive level (MSL) 4 storage and use:

1. Shelf life in sealed bag from the bag seal date: 12 months at < 40 °C and < 90% relative humidity (RH)
2. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must mounted within 72 hours of factory conditions < 30 °C/60%RH.
3. If the moisture absorbent material (silica gel) has faded away or the IRM has exceeded the storage time.  
Baking treatment is required, refer to IPC/JEDEC J-STD-033 for bake procedure or recommend the conditions: 60±5°C for 96 hours.

### ESD Precaution

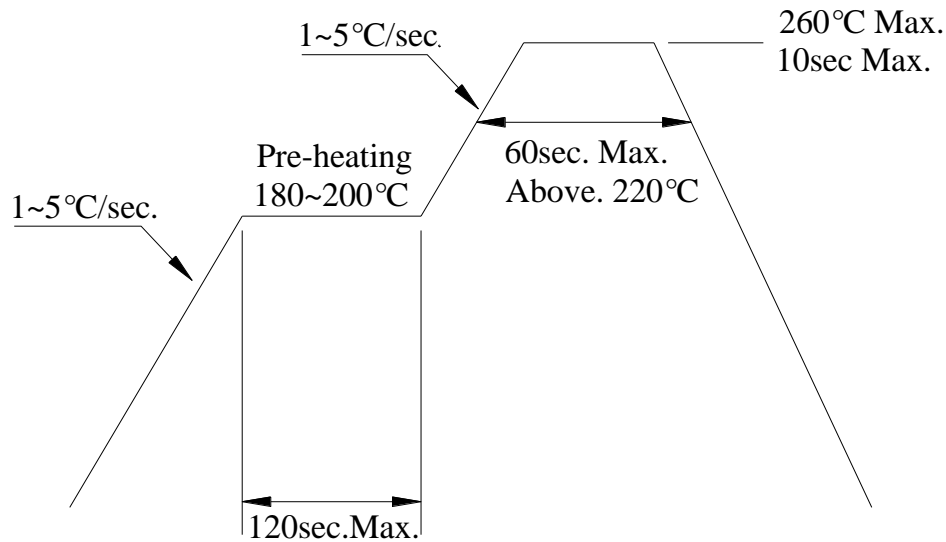
Proper storage and handing procedures should be followed to prevent ESD damage to the devices especially when they are removed from the Anti-static bag. Electro-Static Sensitive Devices warning labels are on the packing.



**Infrared Remote Control  
Receiver Module**

**IRM-H8xxM3/TR2 series**

**Solder Reflow Temperature Profile**



**Note:**

1. Reflow soldering should not be done more than two times.
2. When soldering, do not put stress on the IRM device during heating.
3. After soldering, do not warp the circuit board.

**Infrared Remote Control  
Receiver Module**

**IRM-H8xxM3/TR2 series**

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2. 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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