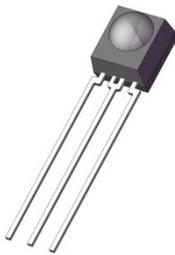# Infrared Receiver Module
IRM-36xxM3 Series
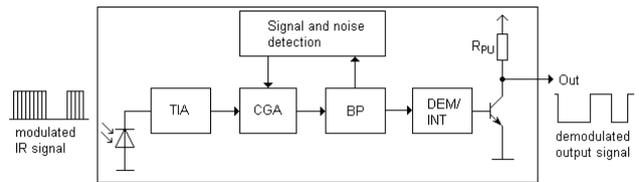
Pin Configuration

1. OUT

Block Diagram

1 2 3

Features

- High protection ability against EMI
- Circular lens for improved reception characteristics
- Available for various carrier frequencies
- min burst length (36/38 kHz): 8 cycles
- min burst length (56 kHz): 10 cycles
- min gap length (36/38 kHz): 12 cycles
- min gap length (56 kHz): 14 cycles
- Low operating voltage and low power consumption
- High immunity against ambient light
- High immunity against TFT and PDP backlight

LifecyclePhase: Approved   Expired Period: Forever

- Long reception range

- High sensitivity

- Pb free and RoHS compliant

Description

The IRM-36xxM3 Series 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.

- Short pause time protocols

- Toy applications

- CATV set top boxes

- Multi-media Equipment

- Other devices using IR remote control

Application circuit
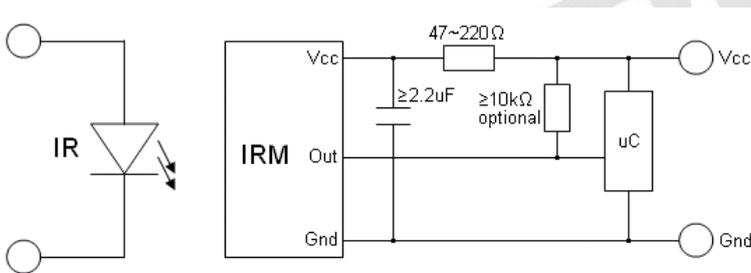
The RC Filter must be connected as close as possible to Vcc and GND pins.

Part number table

Model No.	Carrier Frequency
IRM-3636M3	36 kHz

LifecyclePhase: Approved   Expired Period: Forever

IRM-3638M3	38 kHz
IRM-3640M3	40 kHz
IRM-3656M3	56 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}=3V)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Current consumption	Icc	---	0.4	0.6	mA	No input signal
Supply voltage	V_{CC}	2.7	-	5.5	V	

LifecyclePhase: Approved   Expired Period: Forever

Peak wavelength	λ_p	---	940	---	nm	
Reception range	L_0	14	---	---	m	See chapter ,Test method'
	L_{45}	6	---	---		
Half angle(horizontal)	φ_h	---	±35	---	deg	
Half angle(vertical)	φ_v	---	±35	---	deg	
High level pulse width	T_H	450	---	750	µs	Test signal according to figure 1
Low level pulse width	T_L	450	---	750	µs	
High level output voltage	V_{OH}	Vcc-0.4	---	---	V	I_{SOURCE} 1µA
Low level output voltage	V_{OL}	---	0.2	0.5	V	I_{SINK} 2mA

Test method

Lifecycle Phase: Approved   Expired Period: Forever

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

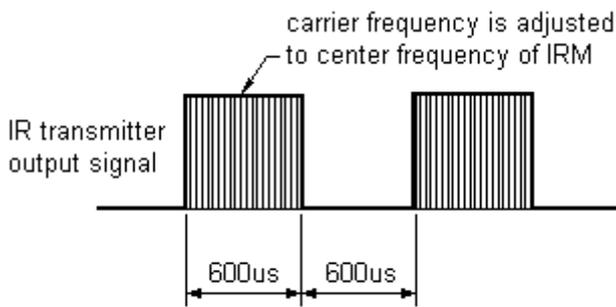   temperature is 2856K and the illumination at the IR receiver is less than 10 Lux (E_v 10Lux).

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
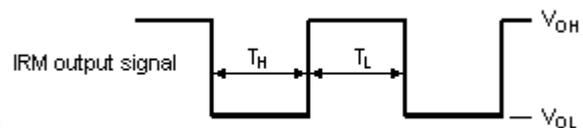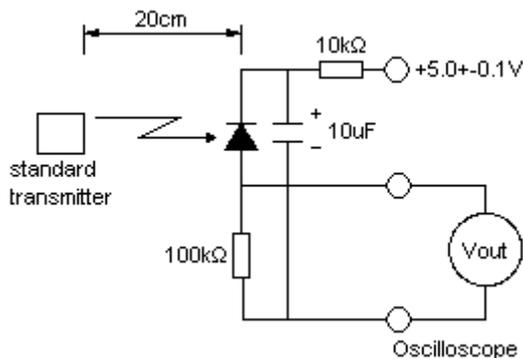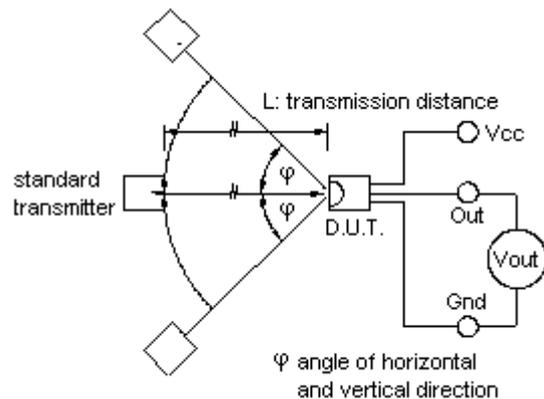

Fig.-2 standard transmitter calibration   Fig.-3   Measuring System

Typical Electro-Optical Characteristics Curves

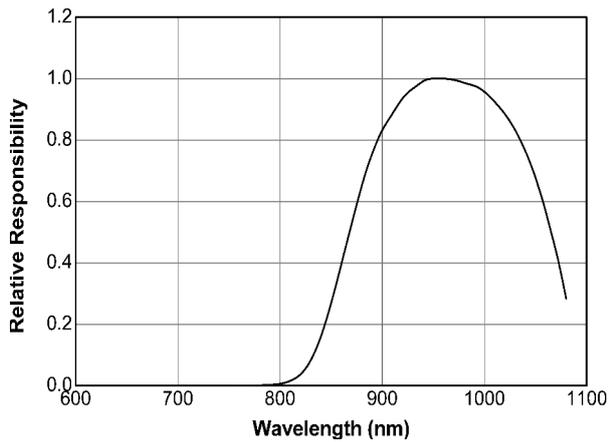**Fig.4 Relative Responsibility vs. Wavelength**

Fig.5 Relative Sensitivity vs. Angle

LifecyclePhase: Approved   Expired Period: Forever
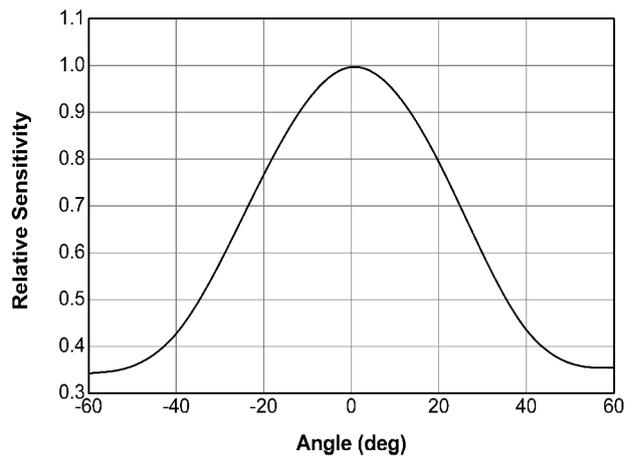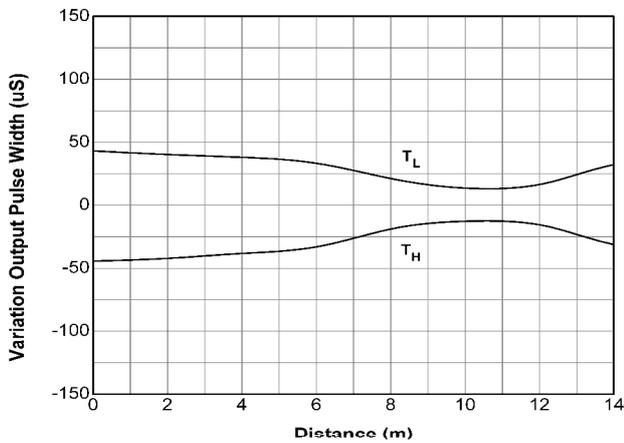
Fig.6 Variation Output Pulse Width vs. Distance

Fig.7 Relative Sensitivity vs. Supply Voltage
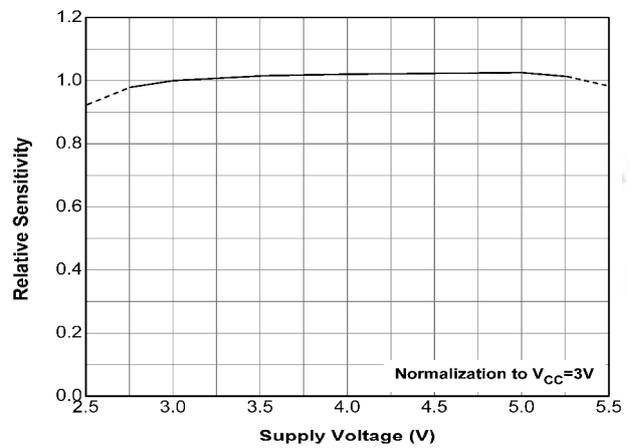
Fig.8 Relative Sensitivity vs. Carrier Frequency

LifecyclePhase: Approved   Expired Period: Forever
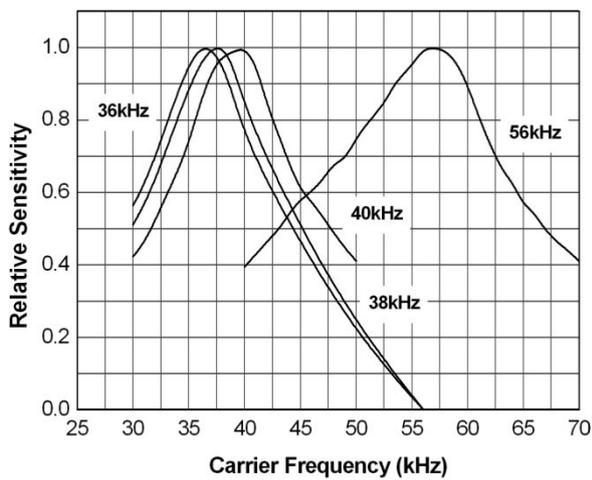
Package Dimensions

(Dimensions in mm)

① OUTPUT
② GND
③ Vcc
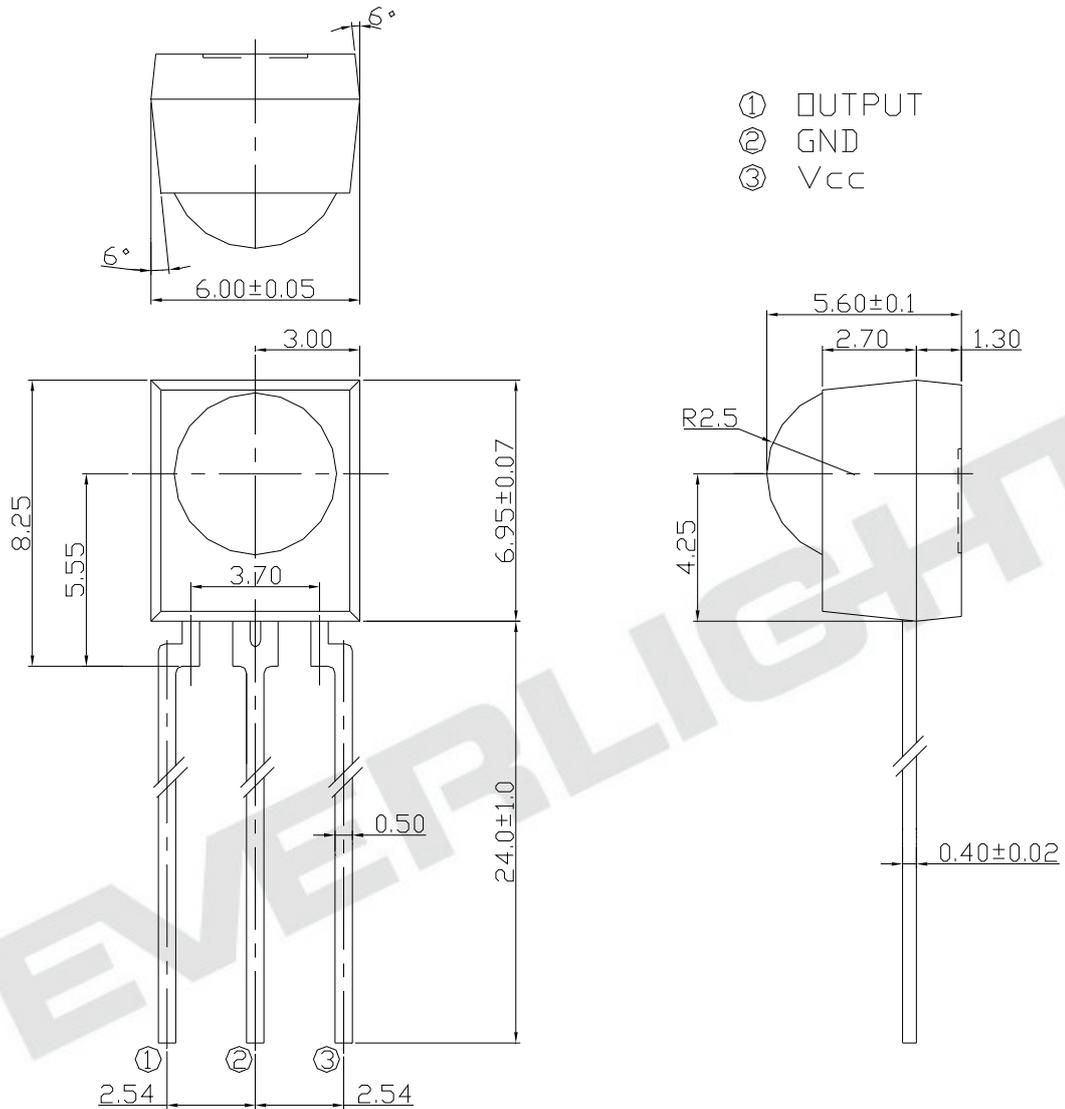
Notes:

    1. All dimensions are in millimeters.

    2. Tolerances unless dimensions ±0.3mm.

LifecyclePhase: Approved   Expired Period: Forever

Code compatibility

Protocol	Suitable	Protocol	Suitable
JVC	Yes	RCA	No
Matsushita	Yes	Sharp	Yes
Mitsubishi	No	Sony 12 bit [2]	Yes
NEC	Yes	Sony 15 bit	No
RC5	Yes	Sony 20 bit	No
RC6 [1]	Yes	Toshiba	Yes
RCMM	No	Continuous Code	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
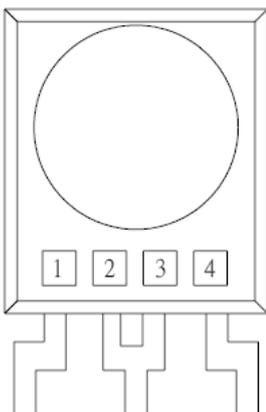
Notes:

1 denotes Year code

2 denotes Month code

3 denotes Device number

LifecyclePhase: Approved   Expired Period: Forever

4 denotes Carrier frequency

Packing Quantity

1.500 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.

4. These specification sheets include materials protected under copyright of EVERLIGHT. Reproduction in any form is prohibited without the specific consent of EVERLIGHT.

5. 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 Everlight sales agent for special application request.