EVERLIGHT

Infrared Remote Control Receiver Module

IRM-V5xxM3/TR1

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

Descriptions

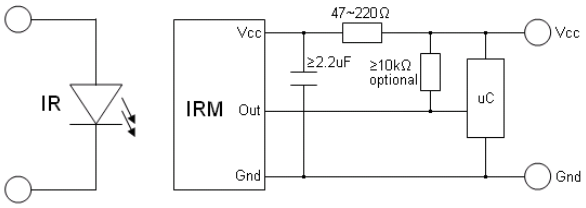
The device is miniature SMD type infrared receiver that has been developed and designed by utilizing the latest IC technology.

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.

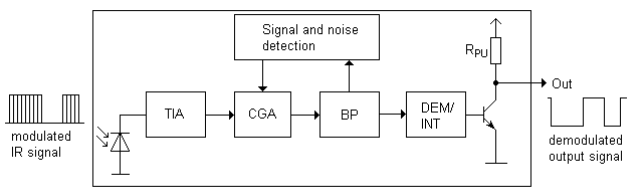
Applications

- Light detecting portion of remote control
- AV instruments such as Audio, TV, VCR, CD, MD, etc
- Home appliances such as Air-conditioner, Fan, etc
- 0ther devices using IR remote control
- CATV set top boxes
- Multi-media Equipment

Application Circuit



Block Diagram



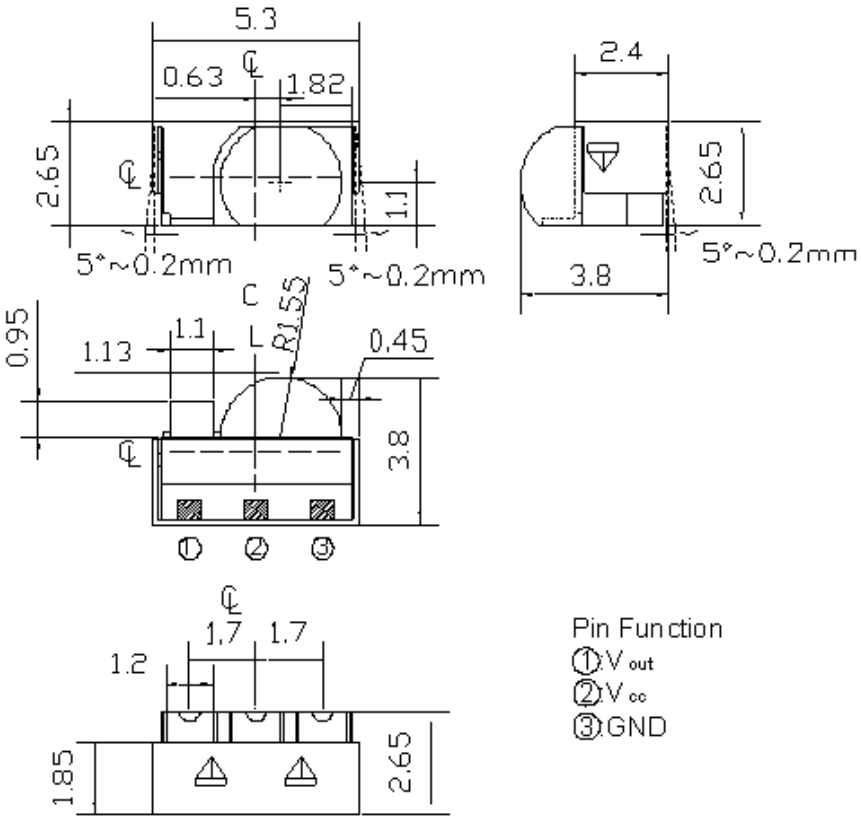
The RC Filter should be connected closely between Vcc pin and GND pin.

Parts Table

Model No.	Carrier Frequency
IRM-V536M3/TR1	36 kHz
IRM-V538M3/TR1	38 kHz

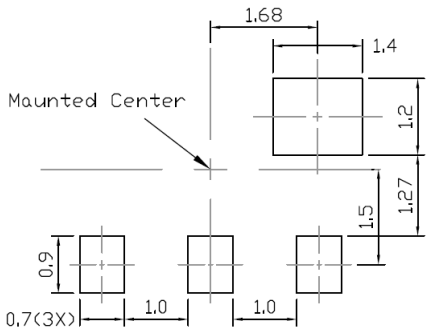
Package Dimenstions

(Dimensions in mm)



Note :Tolerances unless dimensions ± 0.5 mm.

Recommended pad layout for surface mount leadform



Absolute Maximum Ratings (T_a=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	Vs	6	V
Operating Temperature	Topr	-20 ~ +80	℃
Storage Temperature	Tstg	-40 ~ +85	℃
Soldering Temperature *1	Tsol	260	℃

*1 4mm from mold body less than 10 seconds

Electro-Optical Characteristics (Ta=25℃ and Vcc=3.0V)

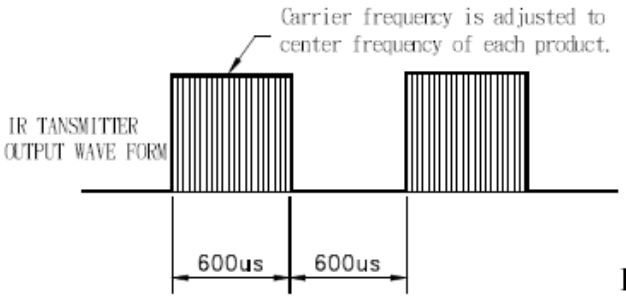
Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Current Consumption	Icc	-	0.4	0.6	mA	No signal input
Supply Voltage	Vs	2.7	-	5.5	V	
Peak Wavelength	λ_p	-	940	-	nm	
Reception Distance	L_0	8	-	-	m	See chapter ‚Test method'
	L_{45}	5				
Half Angle (Horizontal)	Θ_h		45		deg	
Half Angle (Vertical)	Θ_v		45	-	deg	
High Level Pulse Width	T_{WH}	450	-	750	μs	Test signal according to figure 1
Low Level Pulse Width	T_{WL}	450	-	750	μs	
High Level Output Voltage	V_H	Vcc-0.4	-	-	V	
Low Level Output Voltage	V_L	-	0.2	0.5	V	I_{SINK}≦2mA
Internal pull up resistor	R_{PU}	-	40	-	kΩ	

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, Ee≦10Lux) without high frequency modulation
3. Standard transmitter
   A transmitter whose output is so adjusted as to **Vo=400mVp-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 λp=940nm,Δλ=50nm. Also, photodiode is used of PD438B (Vr=5V)..
4. Measuring system According to the measuring system shown in Fig.-3

Fig.-1 Transmitter Wave Form



D.U.T output Pulse

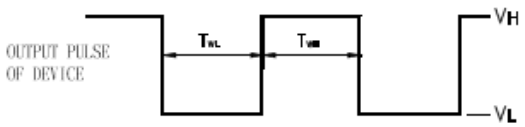


Fig.-2 Measuring Method

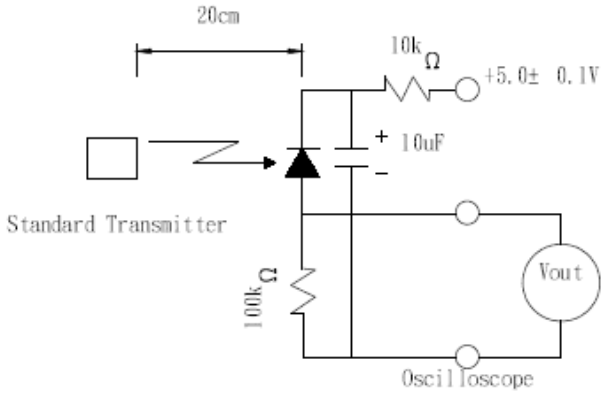
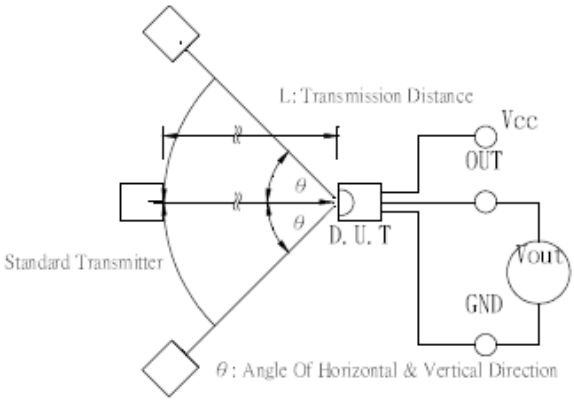


Fig.-3 Measuring System



Typical Performance Curves

Fig.4 Relative Responsibility vs. Wavelength

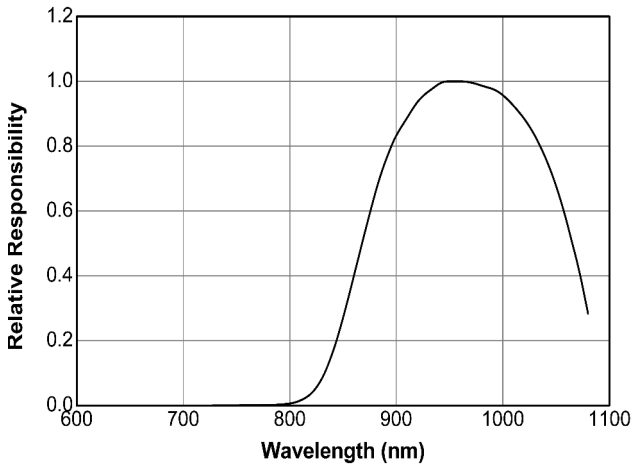


Fig.-5 Relative Sensitivity vs. Angle

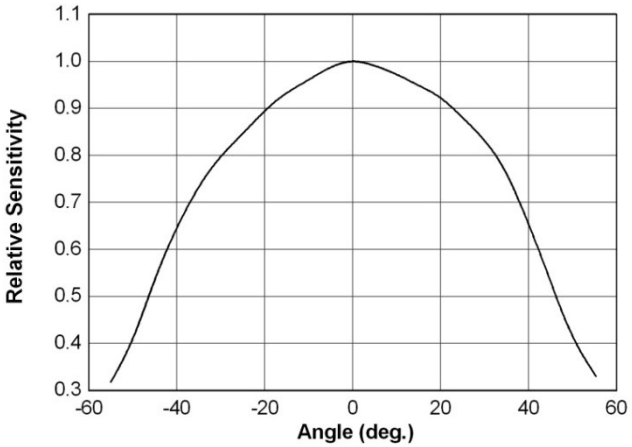


Fig.6 Variation Output Pulse Width vs. Distance

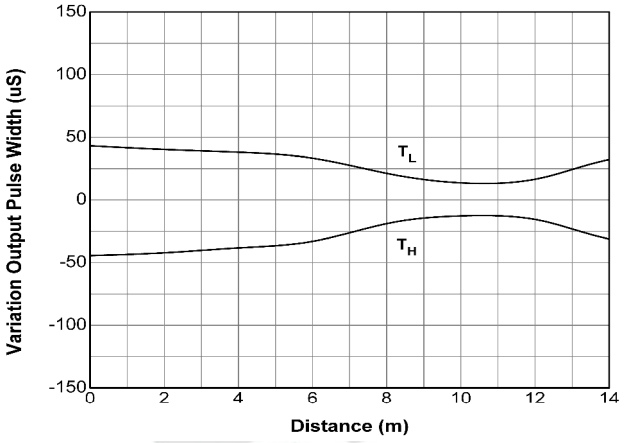
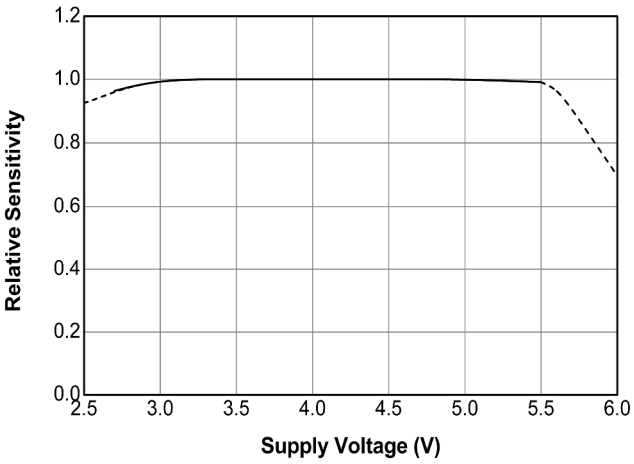


Fig.7 Relative Sensitivity vs. Supply Voltage

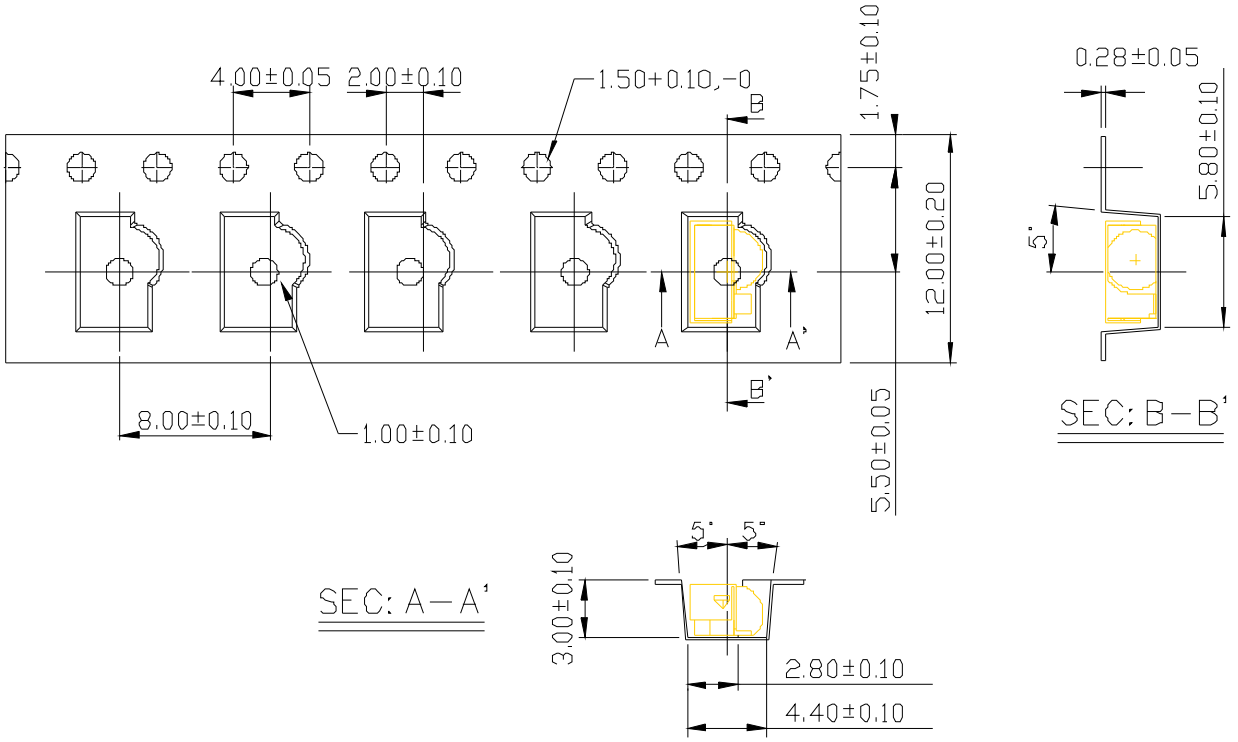


Code information

Protocol	Suitable	Protocol	Suitable
JVC	Yes	RCA	No
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
RCS-80	No	Continuous Code	No

Tape & Reel Packing Specifications

(Dimensions in mm)

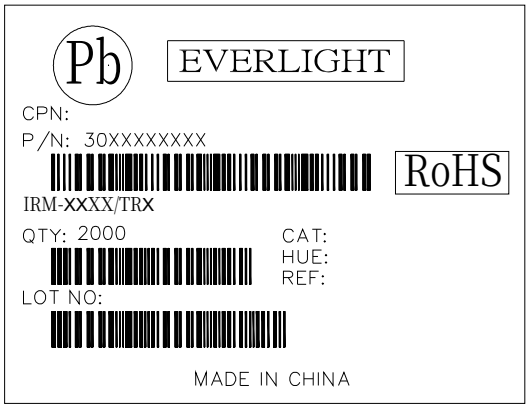


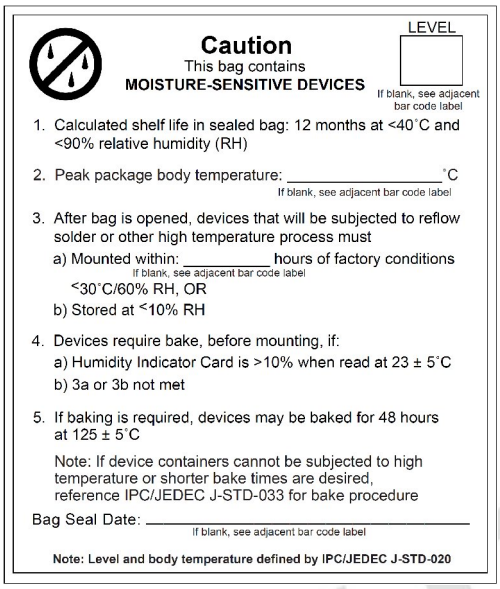
Packing Quantity

2000 pcs / Reel

5 Reels / Carton

Label format





Moisture Classification-storage and used condition label

Recommended method of storage

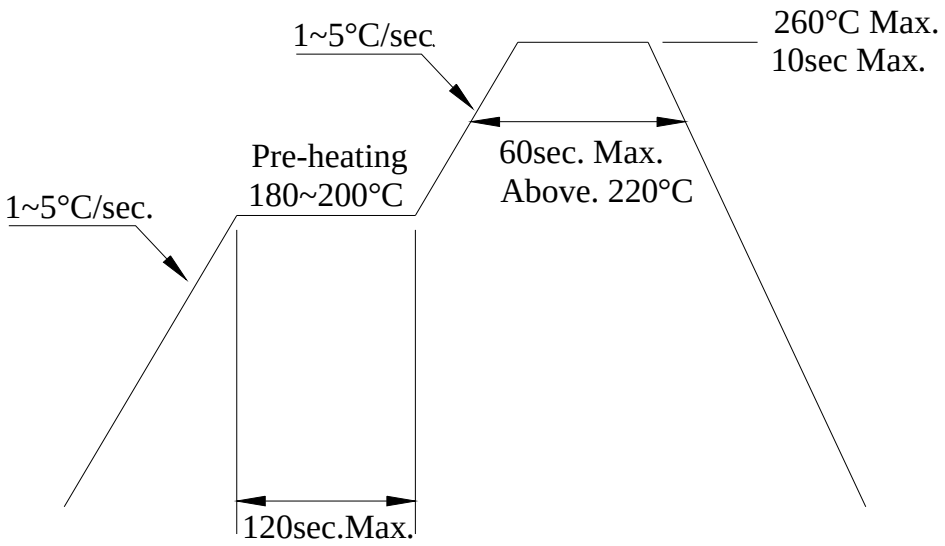
The following are general recommendations for moisture sensitive level (MSL) 4 storage and use:

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.

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.

DISCLAIMER

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.

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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