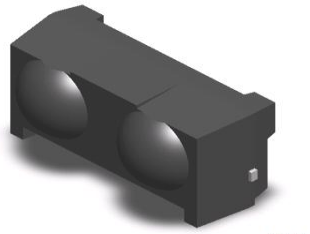
DATASHEET

Infrared Receiver Module
IRM-V8XXJ2/TR1(HKC) Series

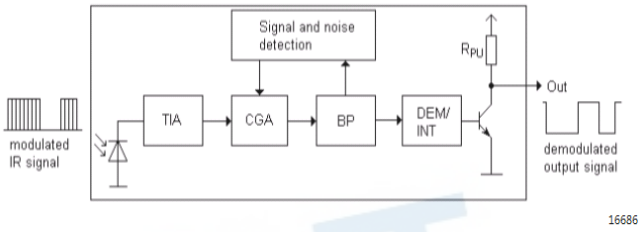


1 2 3 4

Pin Configuration

1. GND
2. VCC
3. OUT
4. GND

Block Diagram



Features

- Min burst length: 150us
- Min gap length: 300us
- Low operating voltage
- High sunlight and lamp noise immunity
- High immunity against TFT backlight
- Long reception range
- High sensitivity
- Pb free and RoHS compliant
- Compliance with EUREACH
- Compliance Halogen Free (Br < 900 ppm, Cl < 900 ppm, Br+Cl < 1500 ppm)

Description

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

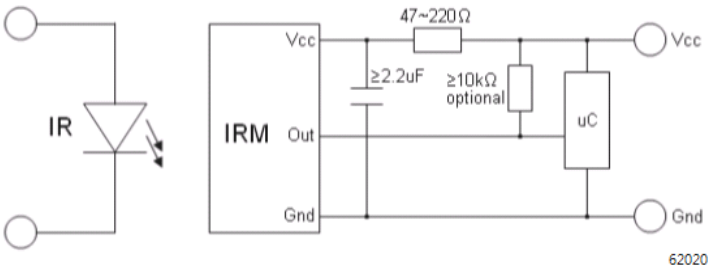
The PIN diode and preamplifier are assembled onto a lead frame and molded into a black epoxy package which operates as an IR filter.

The demodulated output signal can directly be decoded by a microprocessor.

Applications

- 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



Parts Table

Model No.	Carrier Frequency
IRM-V838J2/TR1(HKC)	38 kHz
IRM-V840J2/TR1(HKC)	40 kHz

Absolute Maximum Ratings (Ta=25˚C) *1

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	6	V
Operating Temperature	Topr	-20 ~ +85	˚C
Storage Temperature	Tstg	-40 ~ +85	˚C
Reflow Temperature *2	Tref	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 Soldering time < 5 seconds

Electro-Optical Characteristics (Ta=25˚C, Vcc=3V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Current consumption	Icc	-	0.4	0.8	mA	No input signal
Supply voltage	V_{CC}	2.7	-	5.5	V	
Peak wavelength	λ_p	---	940	---	nm	
Reception range	L_0	8	---	---	m	See chapter ,Test method*3
	L_{45}	5	---	---	m	
Half angle (horizontal)	φ_h	---	±45	---	deg	
Half angle (vertical)	φ_v	---	±45	---	deg	
High level pulse width	TH	400	---	800	μs	Test signal according to figure 1*4
Low level pulse width	TL	400	---	800	μs	
High level output voltage	VOH	Vcc-0.4	---	---	V	
Low level output voltage	VOL	---	0.2	0.5	V	ISINK≦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 must be a place without extreme reflections
2. Transmitter radiant intensity I_e = 80mW/sr
3. External lighting contains LED lighting with a color temperature of 6000K and illumination at the IR receiver is less than 100lux (Ev≦100Lux))
4. Test signal as shown below in figure 3

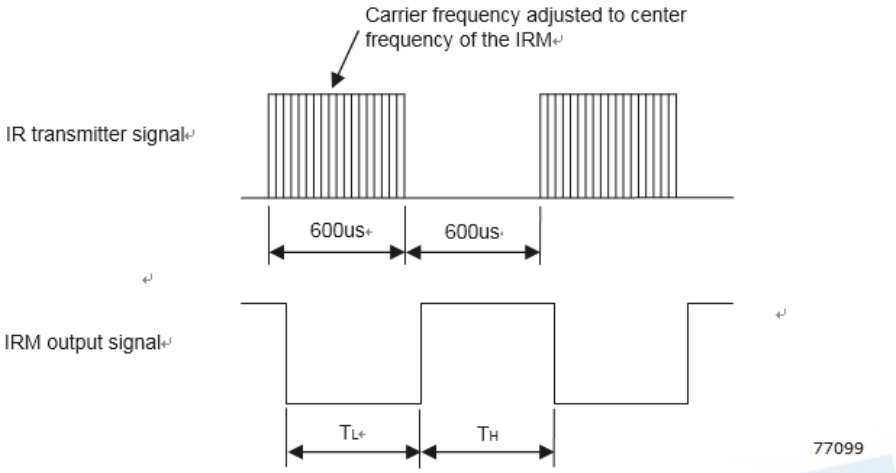


Fig.2 test signal and IRM output signal for reception distance and viewing angle test

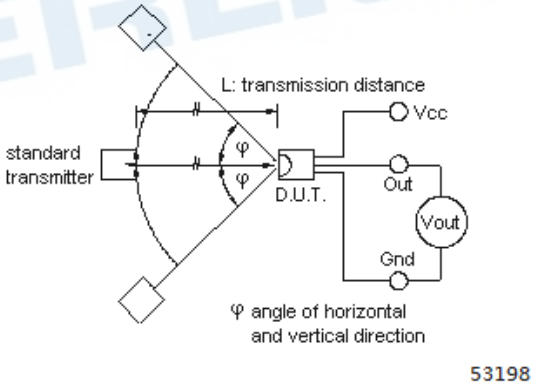


Fig.3 Measuring System

Typical Electro-Optical Characteristics Curves

Fig.4 Relative Responsibility vs. Wavelength

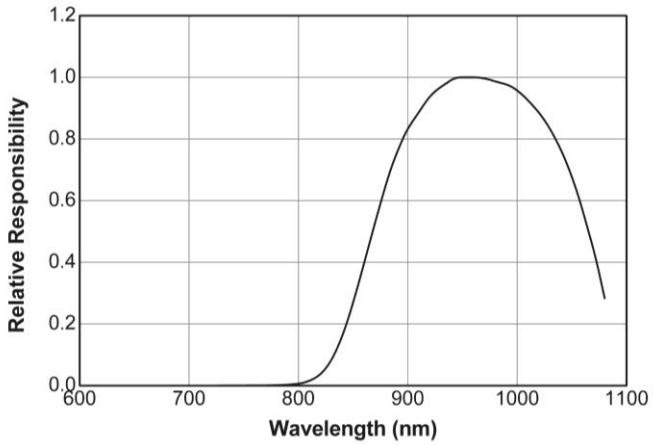


Fig.5 Relative Sensitivity vs. Angle

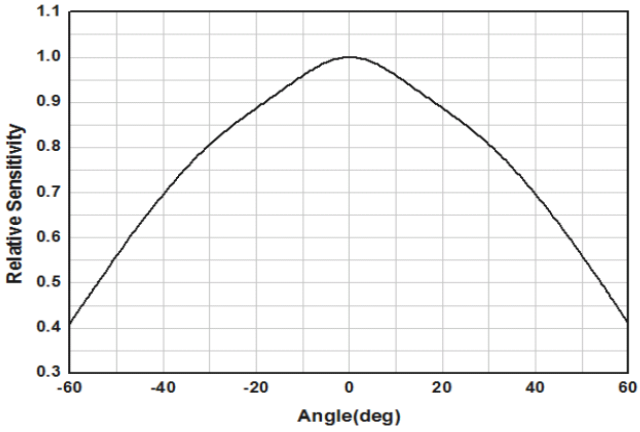


Fig.6 Variation Output Pulse Width vs. Distance

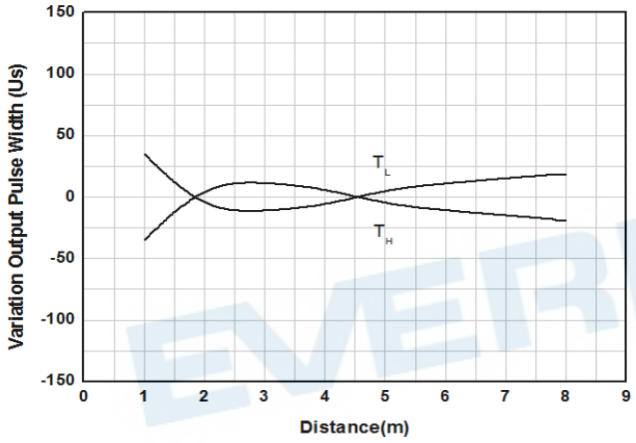


Fig.7 Relative Sensitivity vs. Supply Voltage

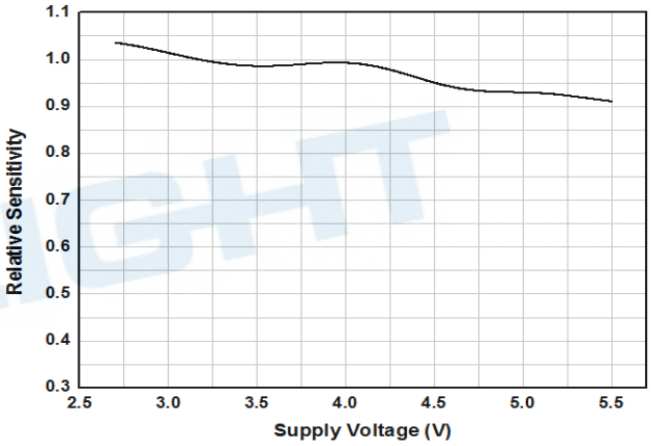
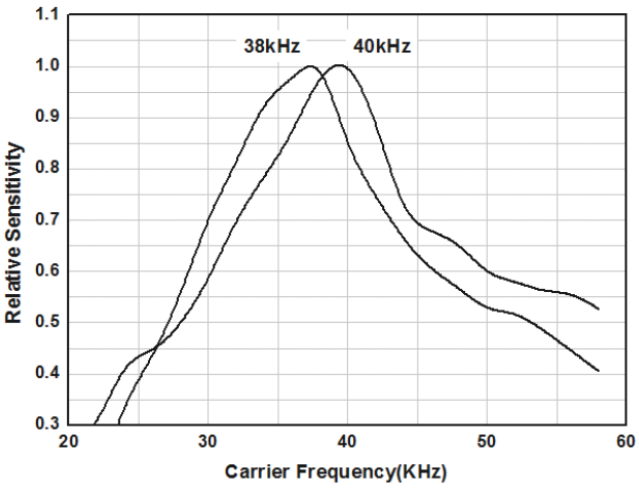
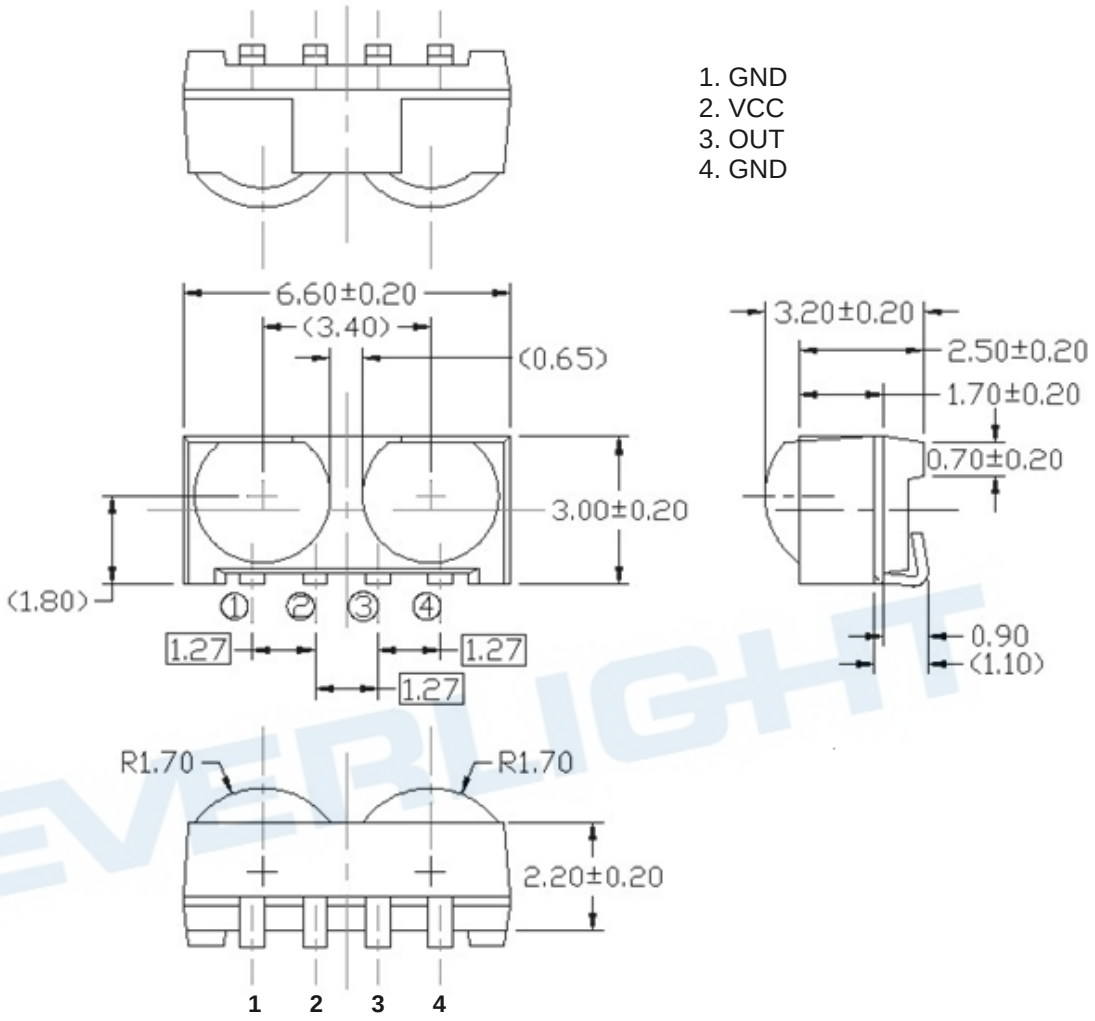


Fig.8 Relative Sensitivity vs. Carrier Frequency

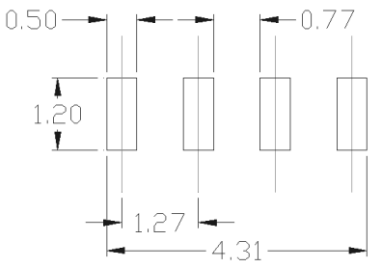


Package Dimension



Note: Tolerances unless mentioned ±0.5mm. Unit: mm

Recommended pad layout for surface mount leadform

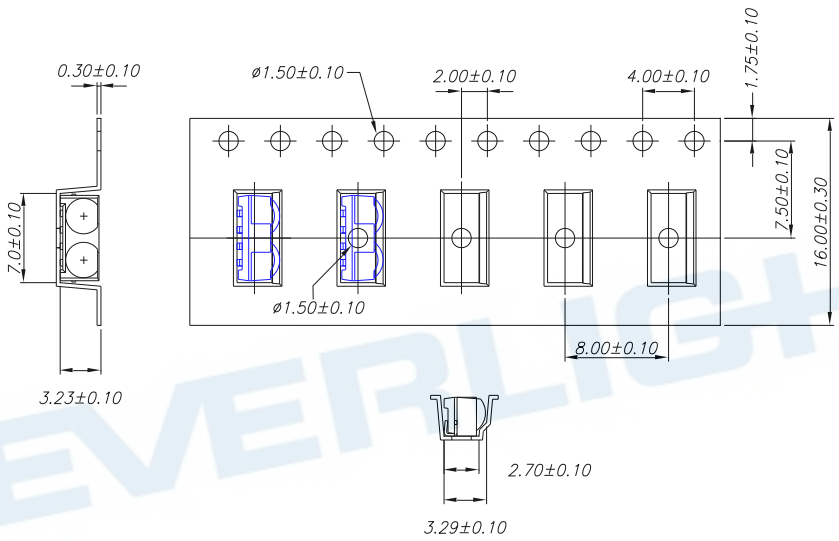


Notice: Suggested pad dimension is just for reference only.
Please modify the pad dimension based on individual need.

Code information

Protocol	Suitable	Protocol	Suitable
Matsushita	Yes	Sony 12 bit	Yes
NEC	Yes	Sony 15 bit	Yes
RC5	Yes	Sony 20 bit	Yes
RC6	Yes	Toshiba	Yes
RCMM	Yes	XMP	Yes

Tape & Reel Packing Specifications
(Dimensions in mm)



Packing Quantity

2000 pcs / Box
5 Boxes / Carton

Recommended method of storage

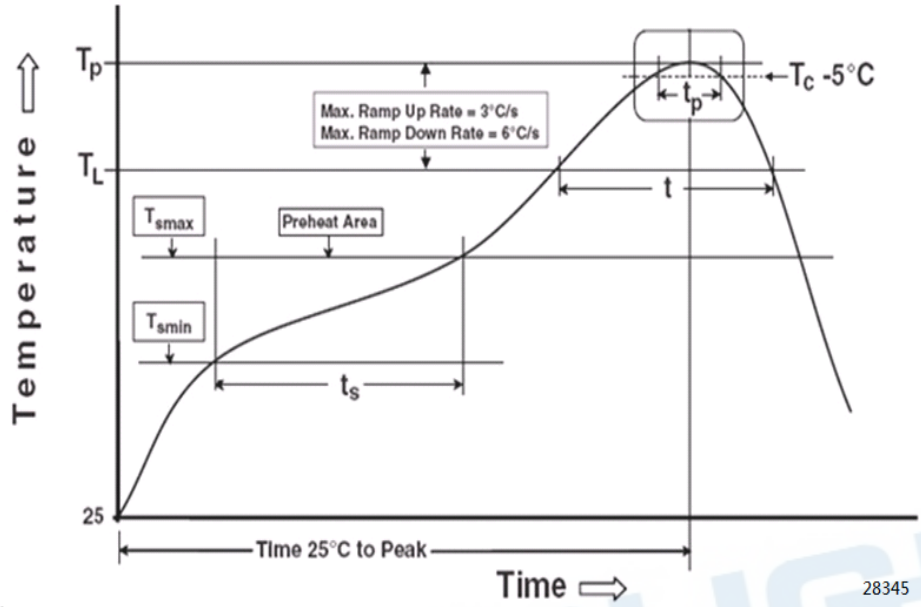
The following are general recommendations for moisture sensitive level (MSL) 4 storage and use:

1. Do not open moisture proof bag before devices are ready to use.
2. Shelf life in sealed bag from the bag seal date: 12 months at 10°C~30°C and < 90% RH.
3. After opening the package, the devices must be stored at 10°C~30°C and ≤ 60%RH, and used within 72 hours (floor life).
4. If the moisture absorbent material (desiccant material) has faded or unopened bag has exceeded the shelf life or devices (out of bag) have exceeded the floor life, baking treatment is required.
5. If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure or recommend the following conditions: 96 hours at 60°C ± 5°C and < 5 % RH.

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:	Reference: IPC/JEDEC J-STD-020D
Preheat	
Temperature min (Tsmin)	150 °C
Temperature max (Tsmax)	200°C
Time (Tsmin to Tsmax) (ts)	60-120 seconds
Average ramp-up rate (Tsmax to Tp)	3 °C/second max
Other	
Liquidus Temperature (TL)	217 °C
Time above Liquidus Temperature (t L)	60-100 sec
Peak Temperature (TP)	260°C
Time within 5 °C of Actual Peak Temperature: TP - 5°C	30 s
Ramp- Down Rate from Peak Temperature	6°C /second max.
Time 25°C to peak temperature	8 minutes max.
Reflow times	2 times

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. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT 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. EVERLIGHT 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.
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