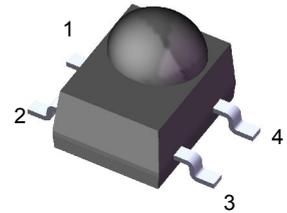


Infrared Remote Control Receiver Module

IRM-H6XX/TR2 Series

Features

- Standard protection ability against EMI.
- Circular lens to improve the receive characteristic.
- Line-up for various center carrier frequencies.
- Low voltage and low power consumption.
- High immunity against ambient light.
- Photodiode with integrated circuit.
- TTL and CMOS compatibility.
- Long reception distance.
- High sensitivity.
- Suitable min. burst length 10 pulses/burst.
- Pb free and RoHS compliant



Pin Configuration

1. GND
2. GND
3. OUT
4. Vcc

Descriptions

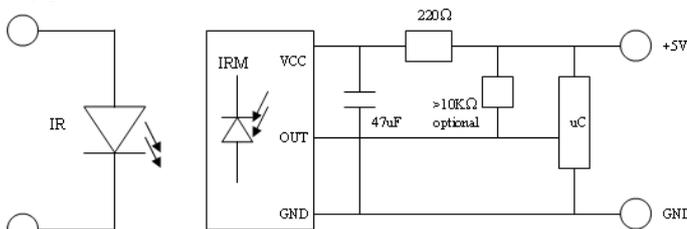
The device is miniature SMD type infrared remote control system receiver that has been developed and designed by utilizing the most updated IC technology.

The PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as an IR filter. The demodulated output signal can directly be decoded by a microprocessor.

Applications

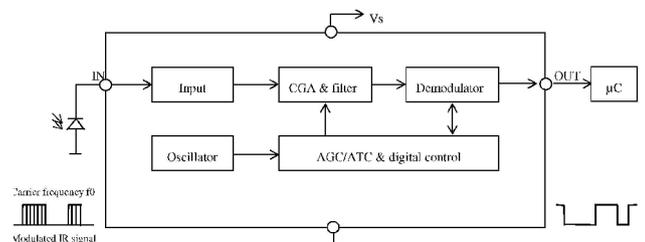
- Light detecting portion of remote control
- AV instruments such as Audio, TV, VCR, CD, MD, etc.
- Home appliances such as Air-conditioner, Fan, etc.
- The other equipments with wireless remote control.
- CATV set top boxes
- Multi-media Equipment

Application Circuit



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

Block Diagram





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Infrared Remote Control Receiver Module

IRM-H6XX/TR2 Series

Parts Table

Standard Application Type	
Model No.	Carrier Frequency
IRM-H636/TR2	36 kHz
IRM-H638/TR2	38 kHz
IRM-H640/TR2	40 kHz

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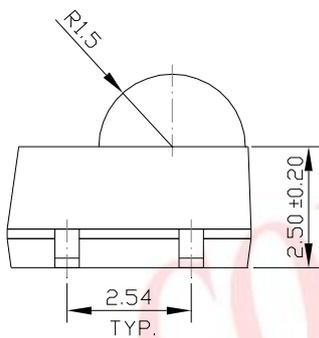
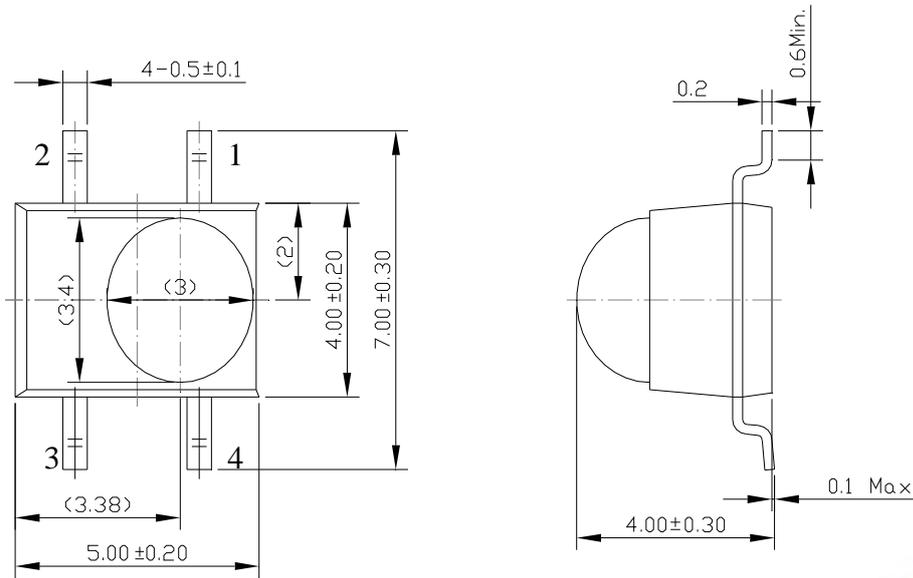
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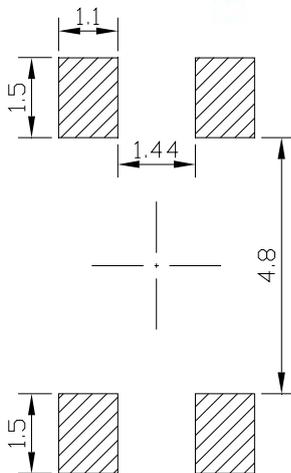
Package Dimenstions

(Dimensions in mm)



- 1. GND
- 2. GND
- 3. V_{OUT}
- 4. VCC

Recommended pad layout for surface mount leadform





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Absolute Maximum Ratings (T_a=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	V _s	6	V
Operating Temperature	T _{opr}	-25 ~ +85	
Storage Temperature	T _{stg}	-40 ~ +85	
Soldering Temperature ^{*1}	T _{sol}	260	

^{*1} 4mm from mold body less than 10 seconds

Electro-Optical Characteristics (T_a=25 and V_{cc}=3.0V)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Supply Current	I _{cc}	-	-	1.2	mA	No signal input
Supply Voltage	V _s	2.7	-	5.5	V	
Peak Wavelength	λ _p	-	940	-	nm	
Reception Distance	L ₀	8	-	-	m	At the ray axis *1, *3
	L ₄₅	5	-	-		
Half Angle (Horizontal)	Θ _h	-	45	-	deg	
Half Angle (Vertical)	Θ _v	-	45	-	deg	
High Level Pulse Width	T _{WH}	400	-	800	μs	At the ray axis *2, *3
Low Level Pulse Width	T _{WL}	400	-	800	μs	
High Level Output Voltage	V _H	2.7	-	-	V	*3
Low Level Output Voltage	V _L	-	-	0.5	V	*3

Notes:

*1 : The ray receiving surface at a vertex and relation to the ray axis in the range of θ = 0° and θ = 45°.

*2 : At a distance of 30cm from the pulse signal source.

*3 : Refer to Test Method.

Infrared Remote Control Receiver Module

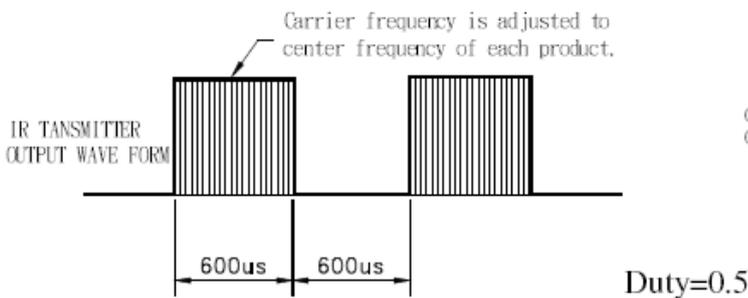
IRM-H6XX/TR2 Series

Test Method

The specified electro-optical characteristic is satisfied under the following Conditions at the controllable distance.

1. Measurement place
A place that is nothing of extreme light reflected in the room.
2. External light
Project the light of ordinary white fluorescent lamps which are not high Frequency lamps and must be less then 10 Lux at the module surface.
($E_e \leq 10\text{Lux}$)
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 ($V_r=5\text{V}$). (Standard light / Light source temperature 2856°K).
4. Measuring system According to the measuring system shown in Fig.-3

Fig.-1 Transmitter Wave Form



D.U.T output Pulse

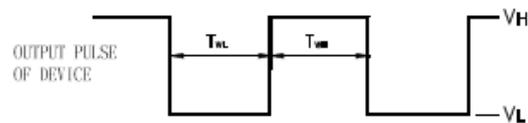


Fig.-2 Measuring Method

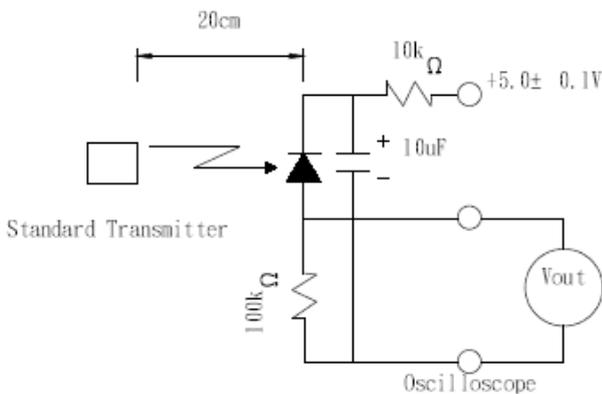
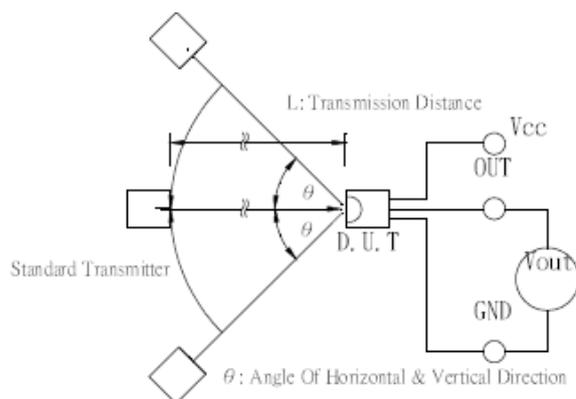


Fig.-3 Measuring System





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IRM-H6XX/TR2 Series

Typical Performance Curves

Fig.-4 Relative Spectral Sensitivity vs. Wavelength

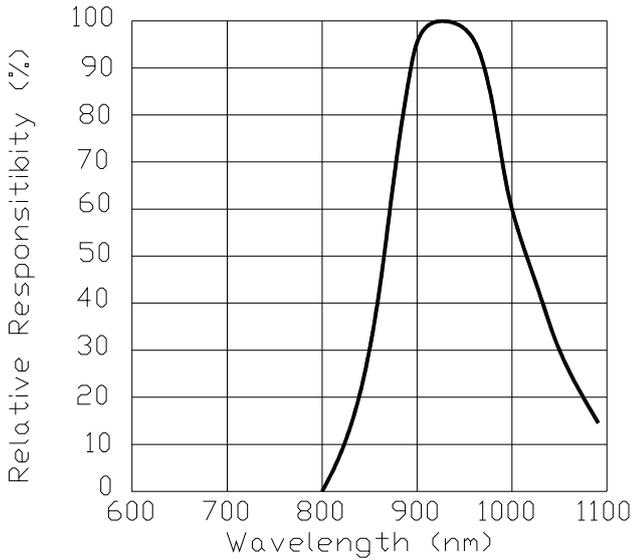


Fig.-5 Relative Transmission Distance vs. Direction

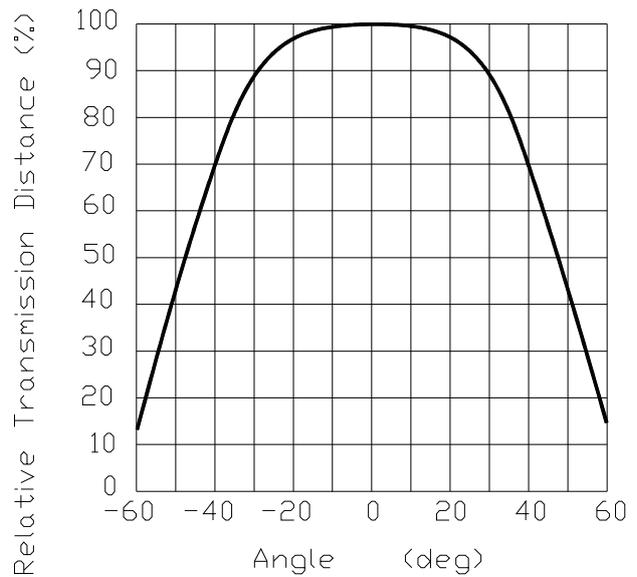


Fig.-6 Output Pulse Length vs. Arrival Distance

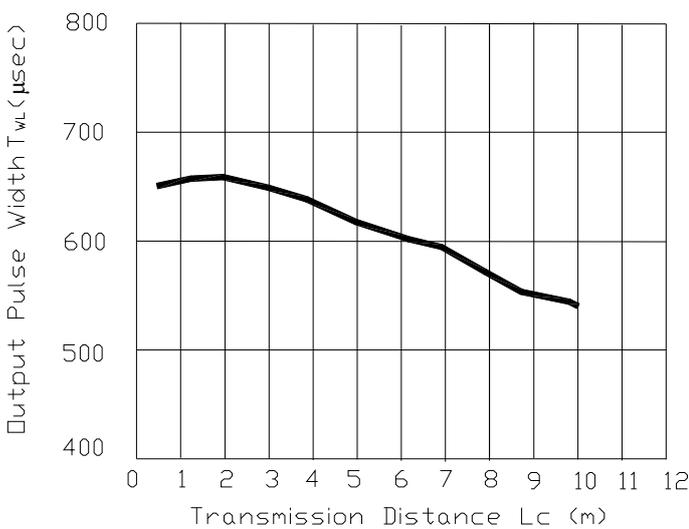
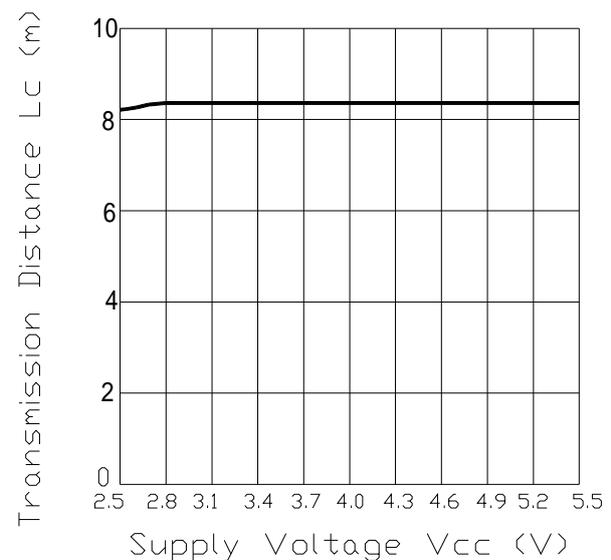


Fig.-7 Arrival Distance vs. Supply Voltage



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IRM-H6XX/TR2 Series

Fig.-8 Arrival Distance vs. Ambient Temperature

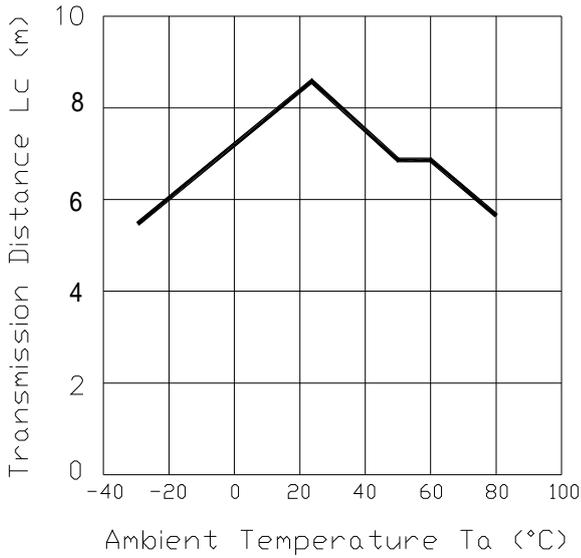


Fig.-9 Relative Transmission Distance vs. Center Carrier Frequency IRM-H636/TR2

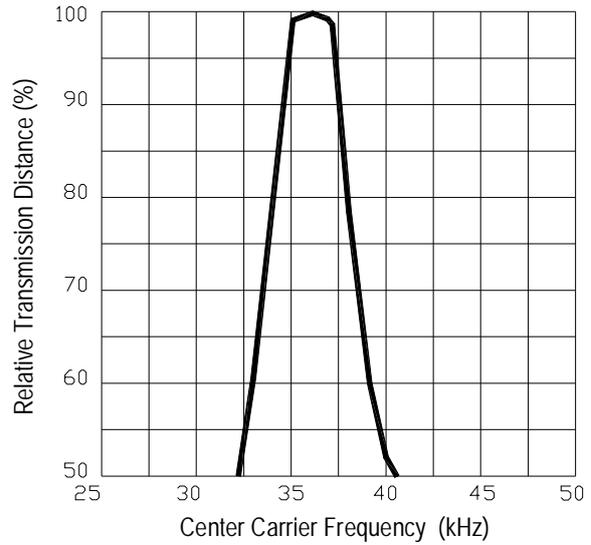


Fig.-10 Relative Transmission Distance vs. Center Carrier Frequency IRM-H638/TR2

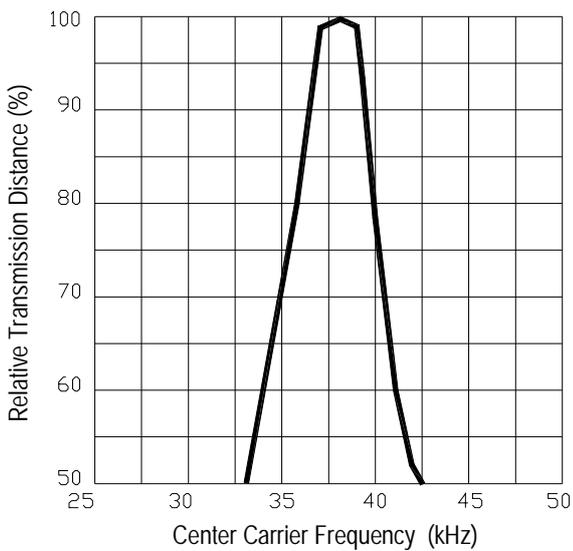
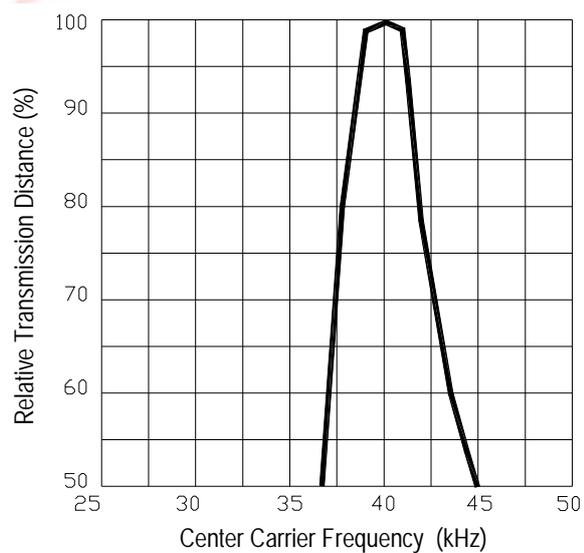


Fig.-11 Relative Transmission Distance vs. Center Carrier Frequency IRM-H640/TR2



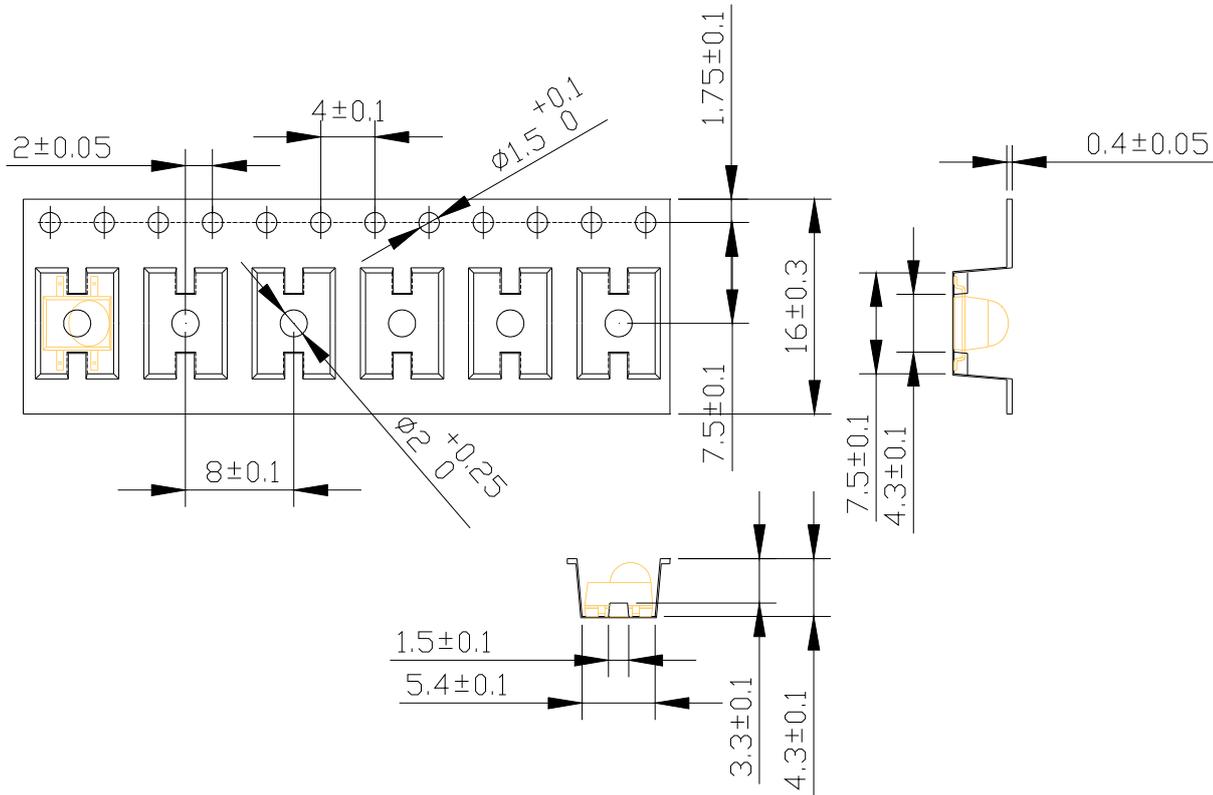


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IRM-H6XX/TR2 Series

Tape & Reel Packing Specifications



Packing Quantity

2000 pcs / Reel

5 Reels / Carton

Recommended method of storage

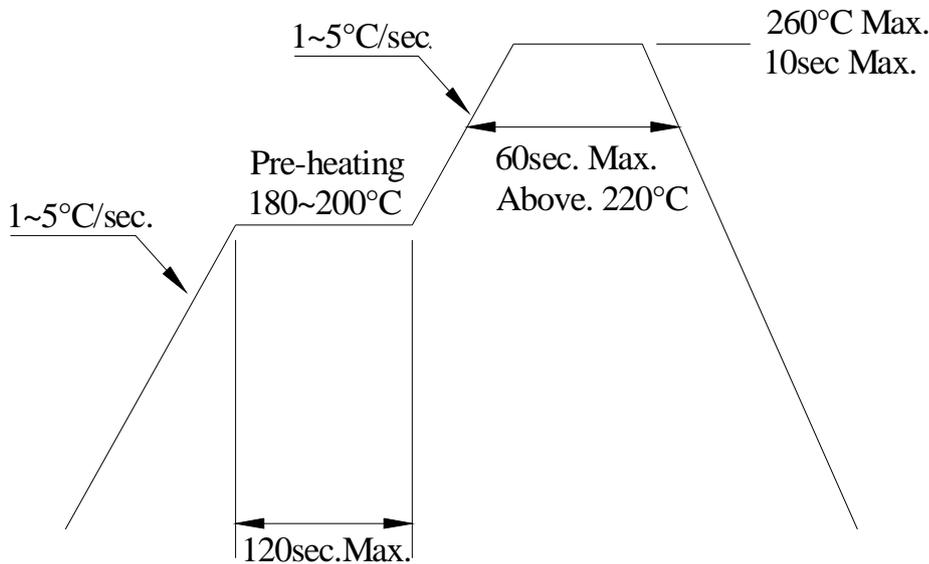
The following are general recommendations for moisture sensitive level (MSL) 4 storage and use:

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.



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IRM-H6XX/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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