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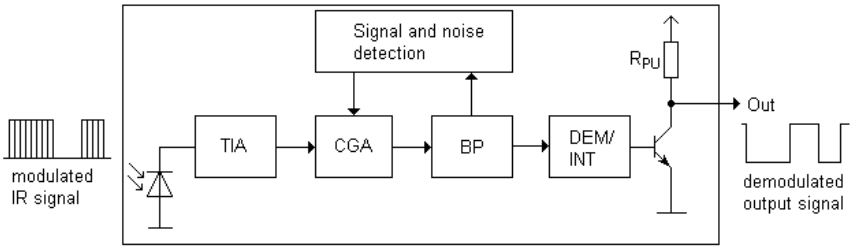
DATASHEET

Infrared Receiver Control Receiver Module
IRM-V5XXT/TR1 Series

Pin Configuration

1. OUT
2. Vcc
3. GND

Block Diagram



Features

- High shielding against electric field disturbance.
- 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.
- Side-received SMD.
- Suitable burst length ≧10 pulses/burst.
- This product itself will remain within RoHS compliant version.
- Pb free.

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 operates as an IR filter. The demodulated output signal can directly be decoded by a microprocessor

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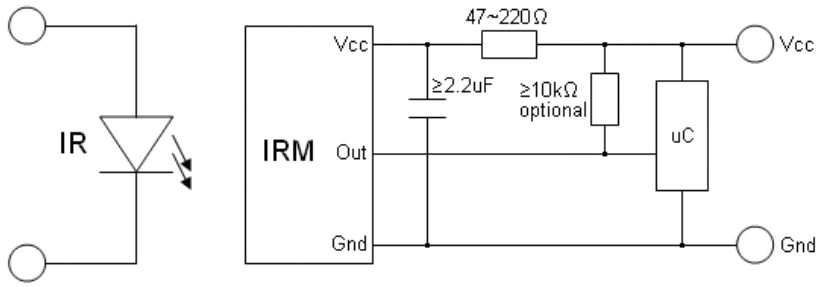
Applications

- 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



Parts Table

Model No.	Carrier Frequency
IRM-V538T/TR1	38 kHz

Absolute Maximum Ratings (T_a=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	0~6	V
Operating Temperature	Topr	-20 ~ +80	°C
Storage Temperature*1	Tstg	-40 ~ +85	°C

*1 4mm from mold body less than 5 seconds

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

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Current Consumption	Icc	-	-	1.2	mA	No signal input
Supply Voltage	Vcc	2.7	-	5.5	V	
Peak Wavelength	λ_p	-	940	-	nm	
Reception Distance	L_0	8	-	-	m	
	L_{45}	5	-	-		
Half Angle(Horizontal)	Θ_h	---	45	---	deg	At the ray axis *1
Half Angle(Vertical)	Θ_v	---	45	---	deg	
High Level Pulse Width	T_{WH}	400	-	800	μs	At the ray axis *2
Low Level Pulse Width	T_{WL}	400	-	800	μs	
High Level Output Voltage	V_H	2.7	-	-	V	
Low Level Output Voltage	V_L	-	0.2	0.5	V	

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：A range from 30cm to the arrival distance. Average value of 50 pulses.

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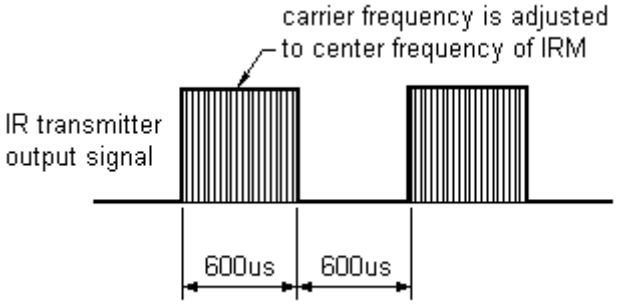
Test Method

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
   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. Measuring system According to the measuring system shown in Fig.-3

Fig.-1 Transmitter Wave Form



D.U.T output Pulse

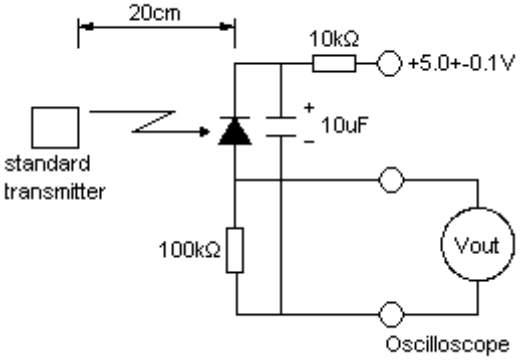


Fig.-2 Measuring Method

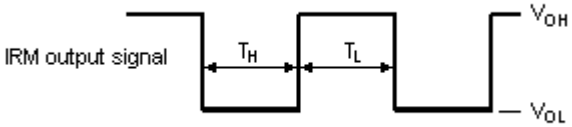
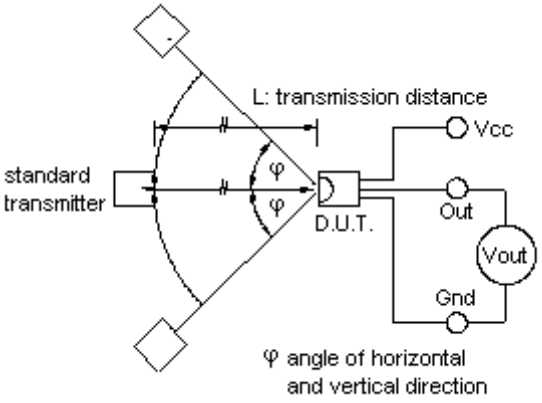


Fig.-3 Measuring System



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Typical Performance Curves

Fig.-4 Relative Spectral Sensitivity vs. Wavelength

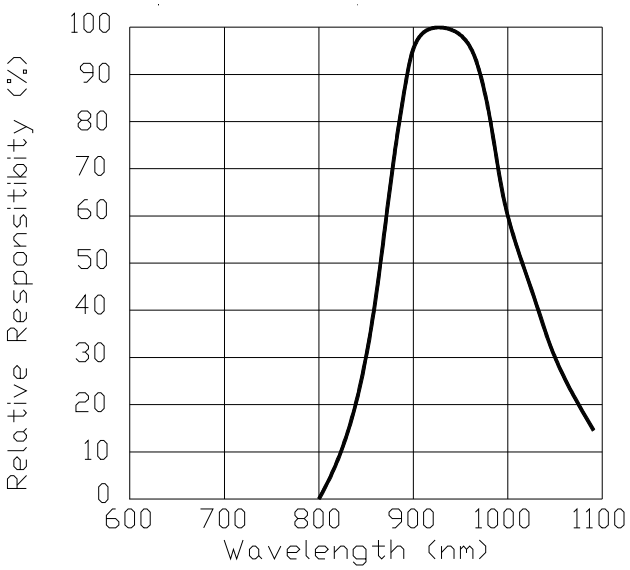

Fig.-5 Relative Transmission Distance vs. Direction

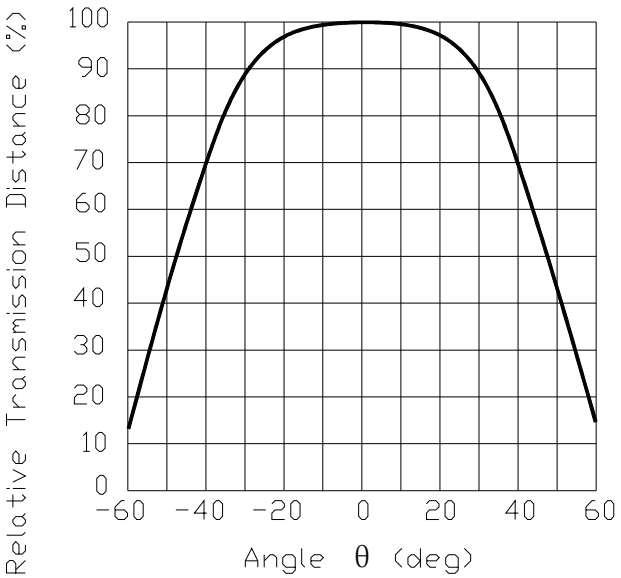

Fig.-6 Output Pulse Length vs. Arrival Distance

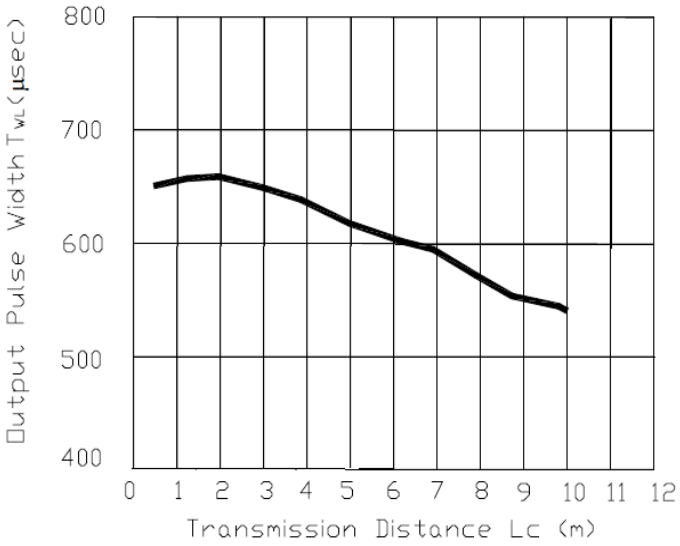

Fig.-7 Arrival Distance vs. Supply Voltage

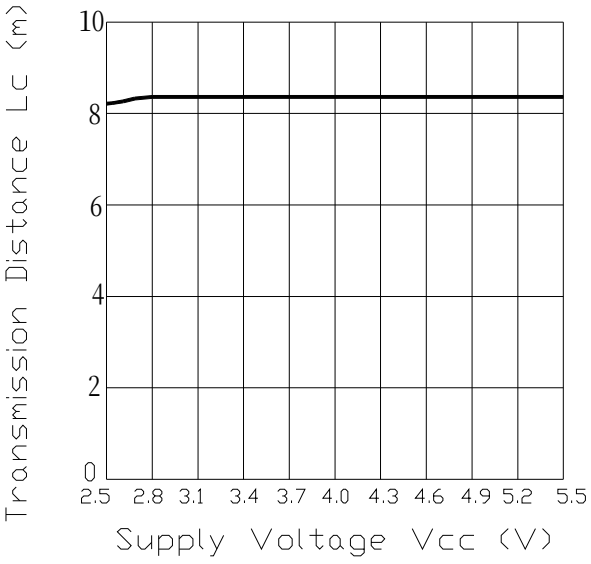

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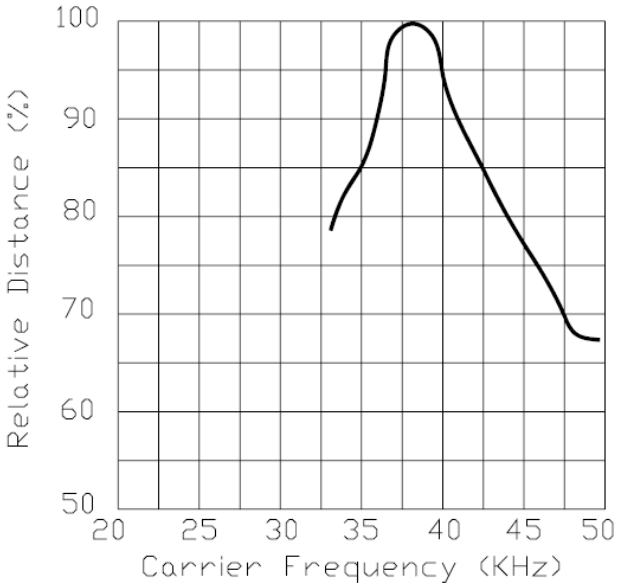
Fig.-8 Relative Transmission Distance vs. Center Carrier Frequency



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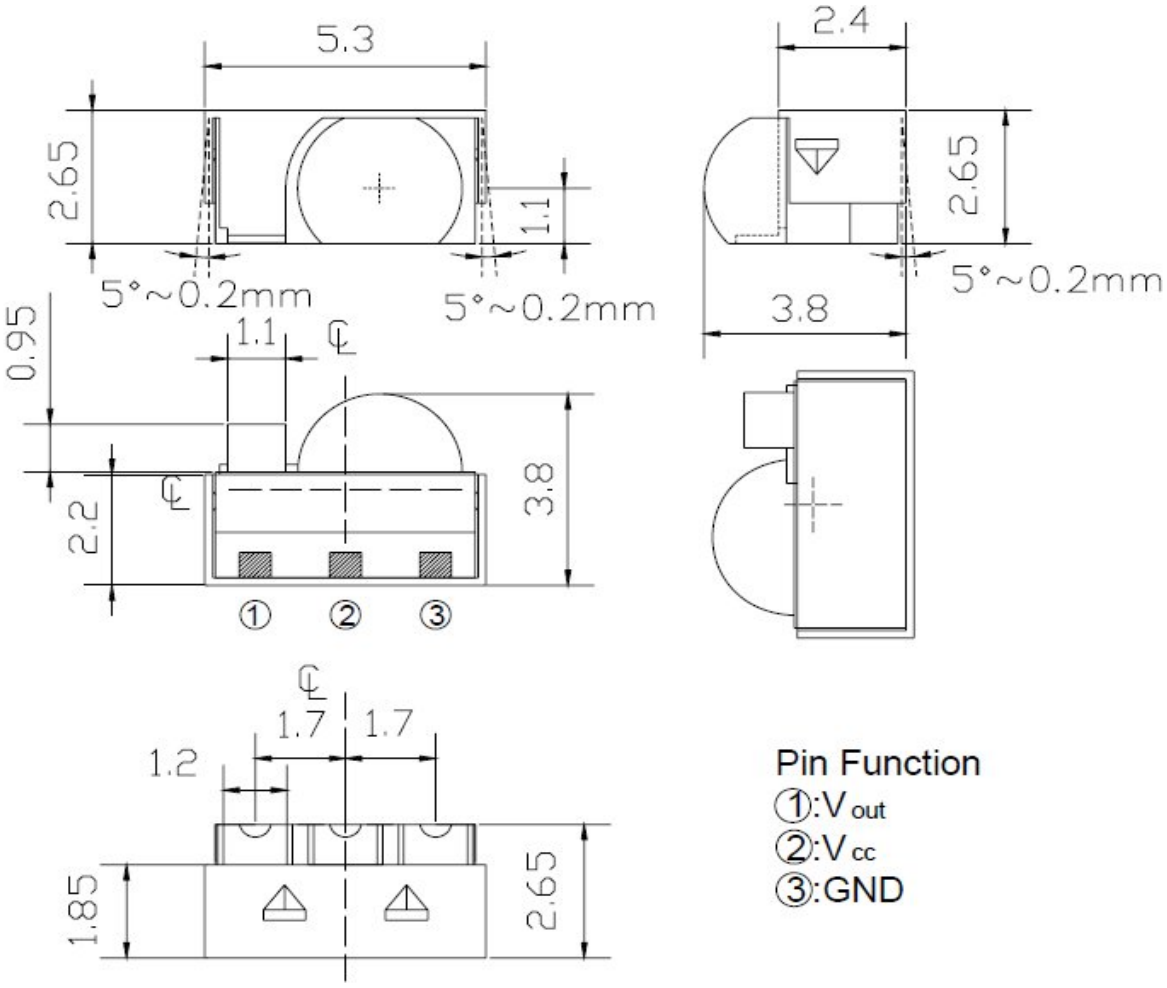
Package Dimenstions

(Dimensions in mm)



Pin Function
①:V_{out}
②:V_{cc}
③:GND

Notes：1.All dimensions are in millimeters.
2.Tolerances unless dimensions ±0.3mm.

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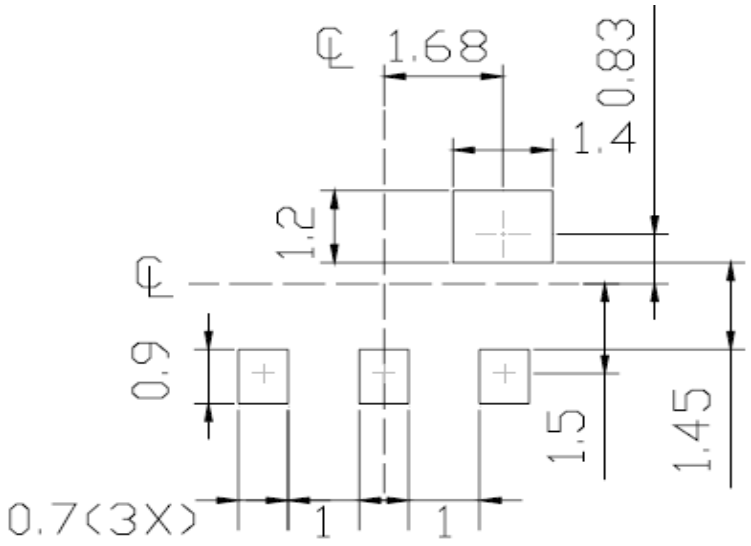
Soldering patterns

The following soldering patterns are recommended for reflow-soldering



Unit: mm

Code information

Protocol	Suitable	Protocol	Suitable
JVC	No	RCA	No
Matsushita	Yes	Sharp	Yes
Mitsubishi	No	Sony 12 Bit	Yes
NEC	Yes	Sony 15 Bit	No
RC5	Yes	Sony 20 Bit	No
RC6	Yes	Toshiba	Yes
RCMM	No	Zenith	Yes
RCS-80	No	Continuous Code	No

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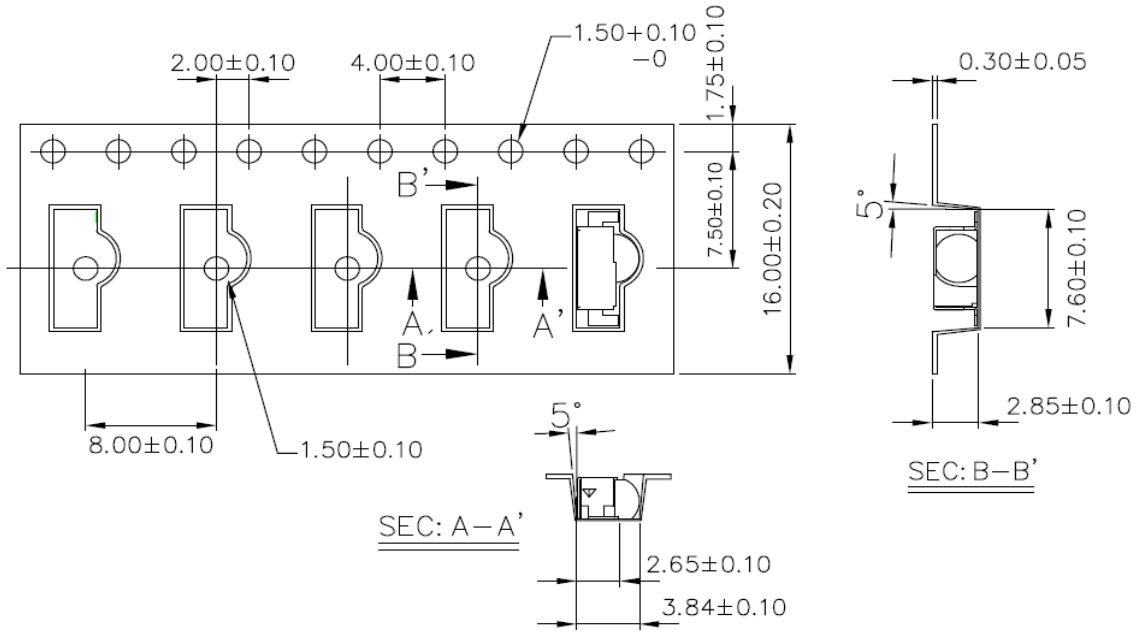
Tape & Reel Packing Specifications

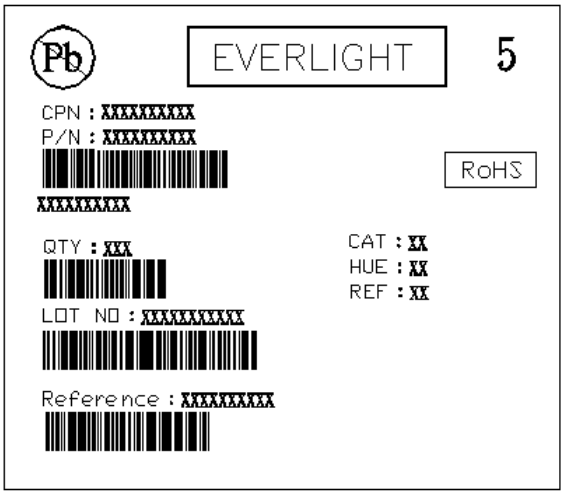


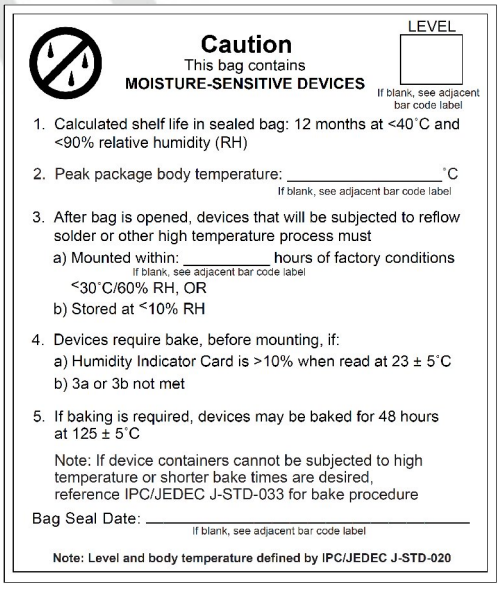
Packing Quantity

2000 pcs / Reel

5 Reels / Carto

Label format





Moisture Classification-storage and used condition label

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Recommended method of storage

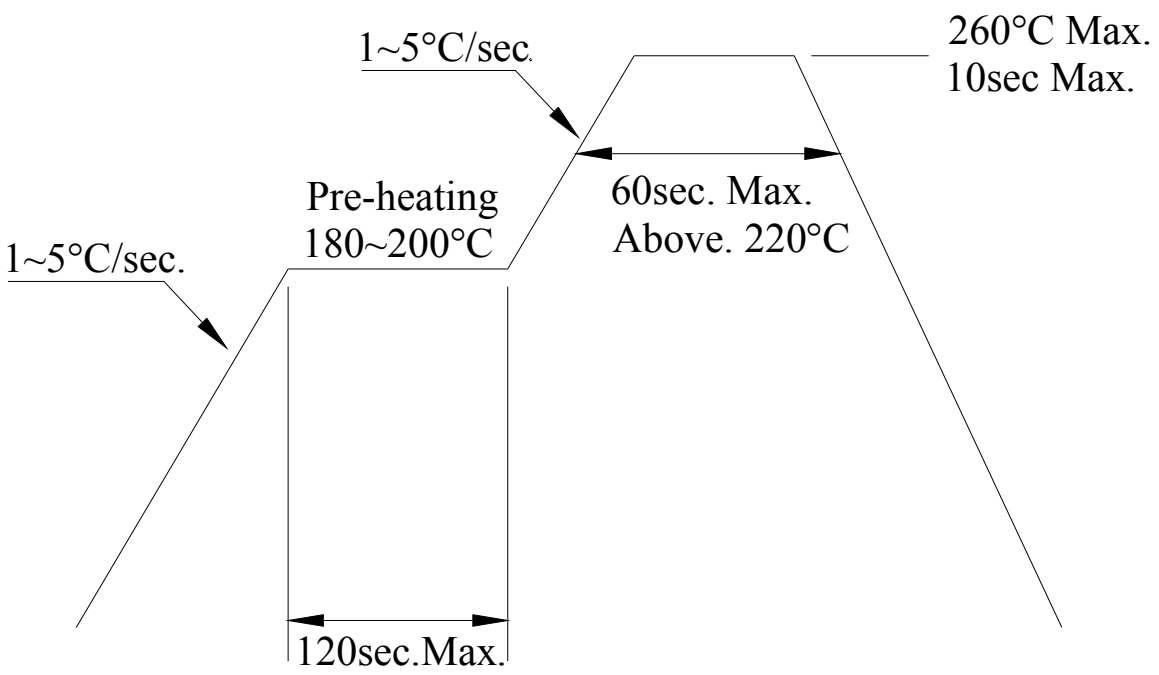
The following are general recommendations for moisture sensitive level (MSL) 4 storage and use:

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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