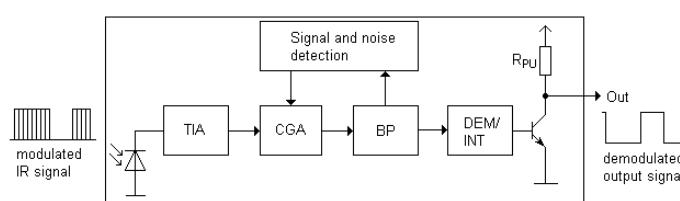


Infrared Receiver Module EAIRMGA0 & EAIRMGA1



Block Diagram



Features

- High protection ability against EMI
- Available for various carrier frequencies
- Min burst length: 10 cycles
- Min gap length: 14 cycles
- Low operating voltage and low power consumption
- High immunity against ambient light
- Long reception range
- High sensitivity
- Pb free and RoHS compliant
- Compliance with EU REACH
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm)

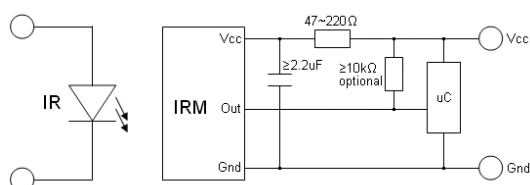
Descriptions

- The device is a 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 PCB, the epoxy package is designed as an IR filter. The demodulated output signal can directly be decoded by a microprocessor.

Applications

- Optical switch
- 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.

Parts Table

Model No.	Carrier Frequency
EAIRMGA0	36 kHz
EAIRMGA1	38 kHz

Absolute Maximum Ratings (Ta=25°C)

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

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

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Supply Current	I _{cc}	---	1.0	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	---
	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 _H	400	---	800	μs	At the ray axis *2
Low Level Pulse Width	T _L	400	---	800	μs	
High Level Output Voltage	V _H	V _{cc} -0.4	---	---	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.

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

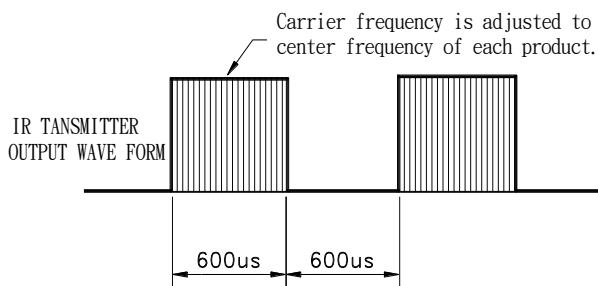
Ordinary white fluorescent lamps (Light source temperature 2856°K, $E_e \leq 10\text{Lux}$) without high frequency modulation

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 **$V_o=400\text{mVp-p}$** . Both, the test transmitter and the photo diode, have a peak wavelength of 940nm. The photo diode for calibration is PD438B ($\lambda_p=940\text{nm}$, $V_r=5\text{V}$).

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

Fig.-1 Transmitter Wave Form



D.U.T output Pulse

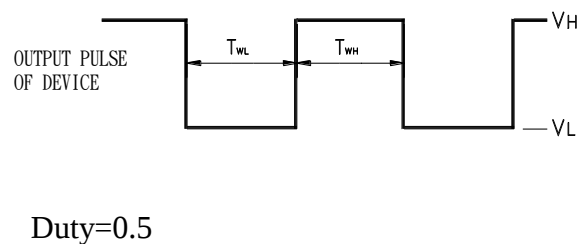


Fig.-2 Measuring Method

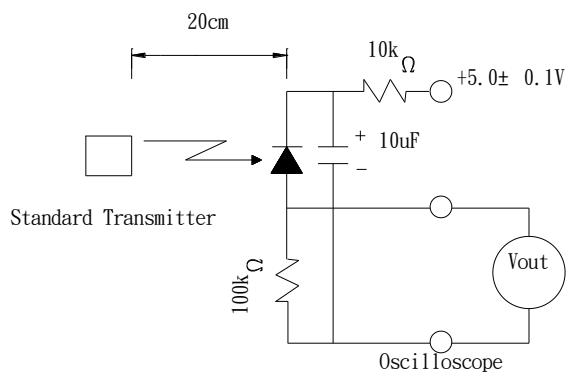
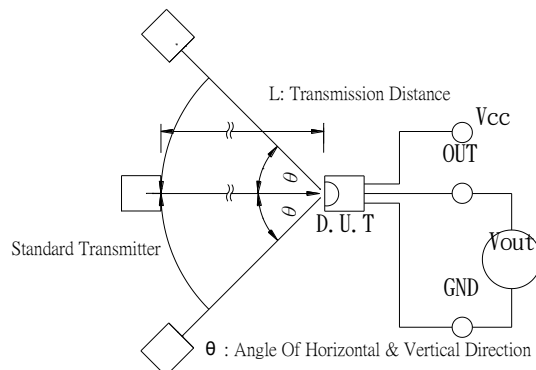


Fig.-3 Measuring System



Typical Electro-Optical Characteristics Curves

Fig.-4 Relative Spectral Sensitivity vs. Wavelength

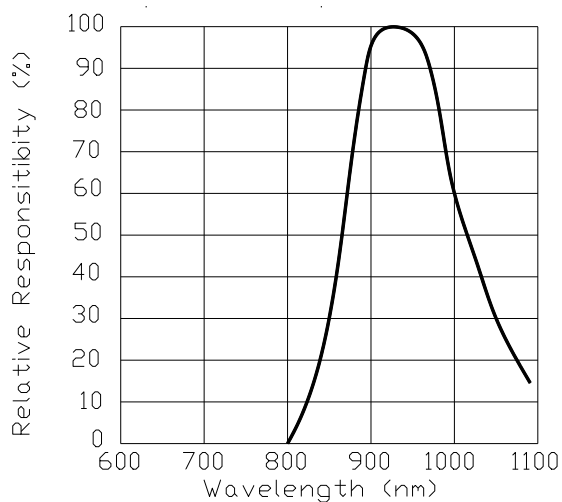


Fig.-5 Relative Transmission Distance vs. Direction

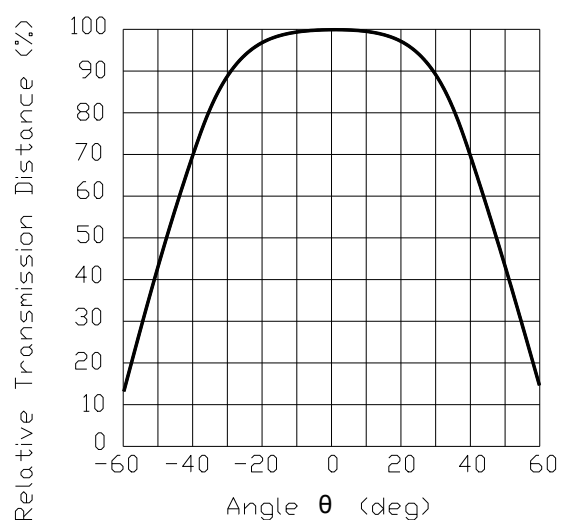


Fig.-6 Output Pulse Length vs. Arrival Distance

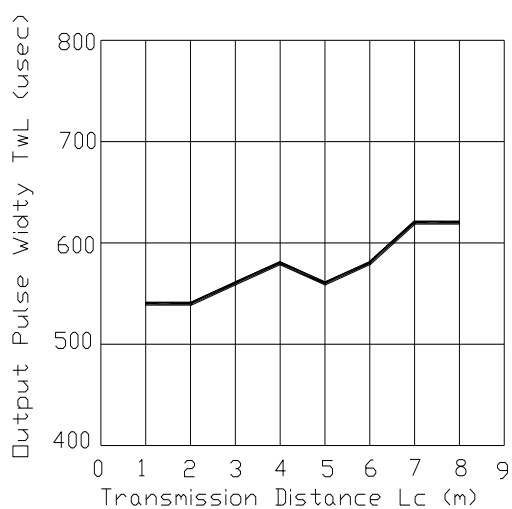
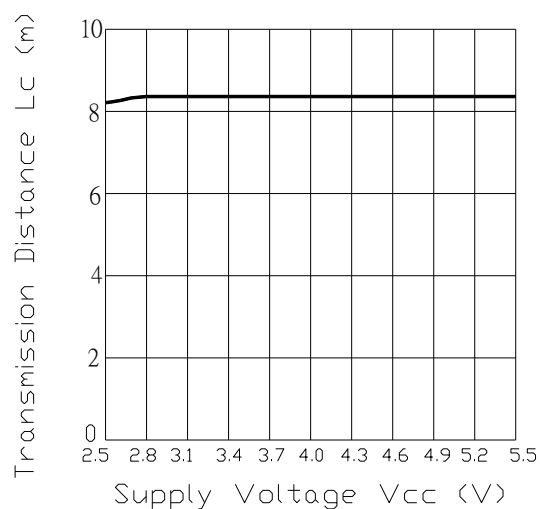


Fig.-7 Arrival Distance vs. Supply Voltage



Typical Electro-Optical Characteristics Curves

Fig.- 8 Relative Transmission Distance vs.

Center Carrier Frequency – 36 KHz

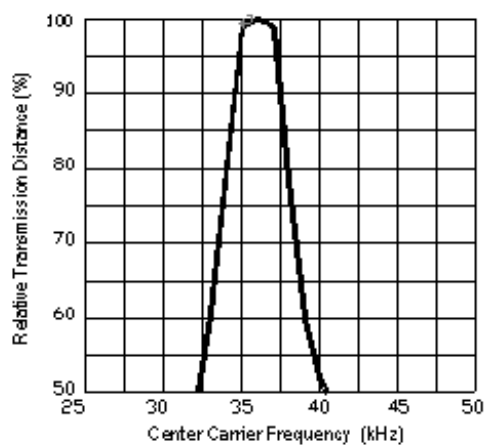
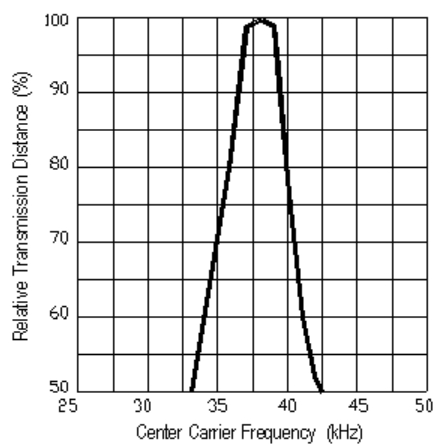


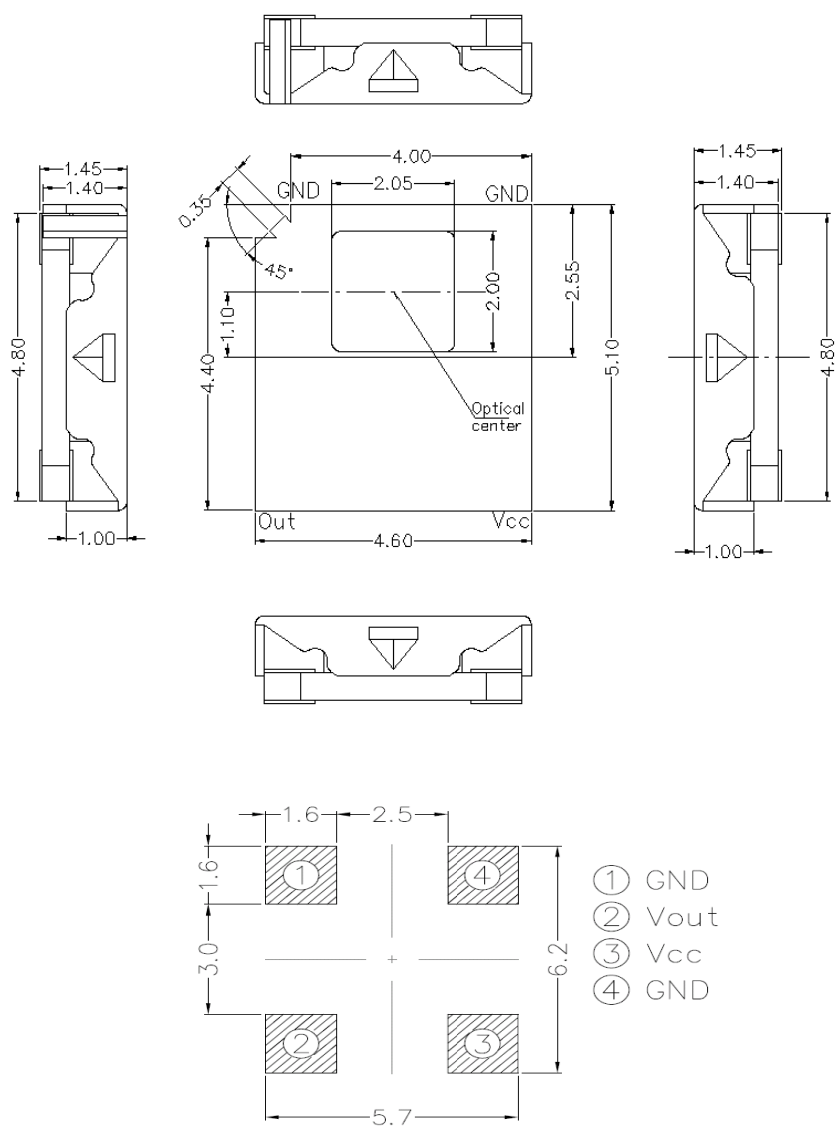
Fig.- 9 Relative Transmission Distance vs.

Center Carrier Frequency – 38 KHz



Package Dimenstions

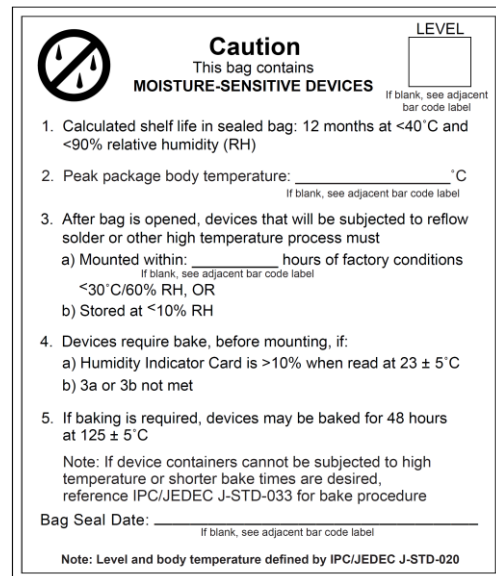
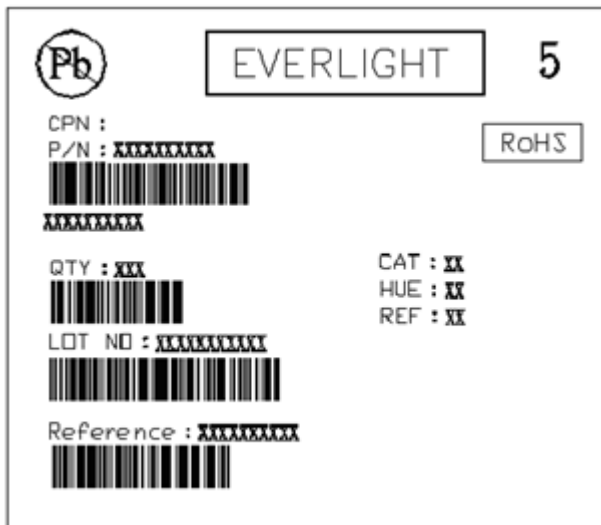
(Dimensions in mm)



Notes : Tolerances unless dimensions $\pm 0.2\text{mm}$.

Shield need contact GND pin on PCB.

Label format



Moisture Classification-storage and used condition label

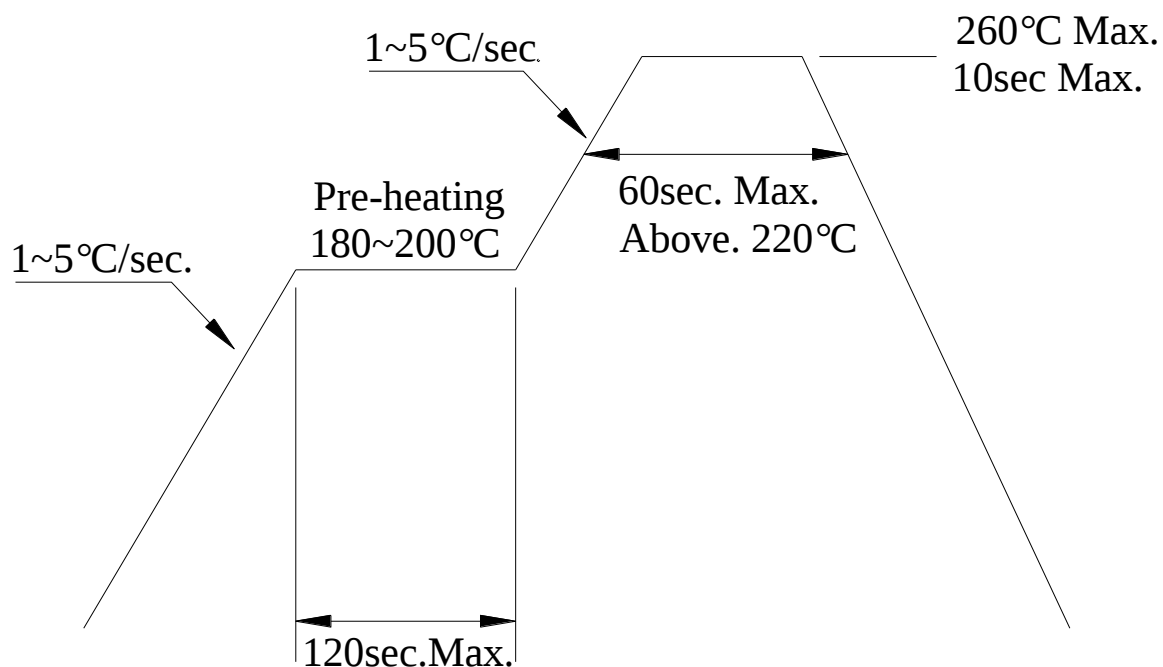
Recommended method of storage

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 $< 40^{\circ}\text{C}$ 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 $< 30^{\circ}\text{C}/60\%\text{RH}$.
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: $60\pm 5^{\circ}\text{C}$ for 96 hours.

ESD Precaution

Proper storage and handling 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 Americas 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 Americas 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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