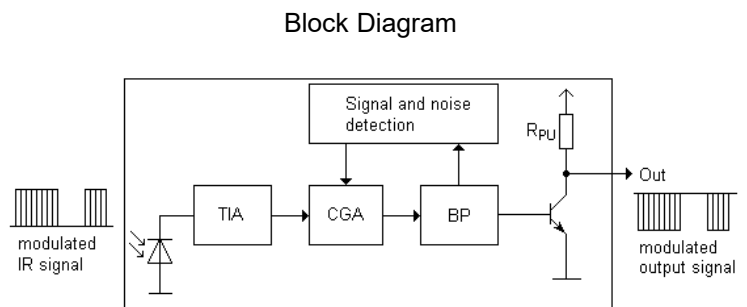
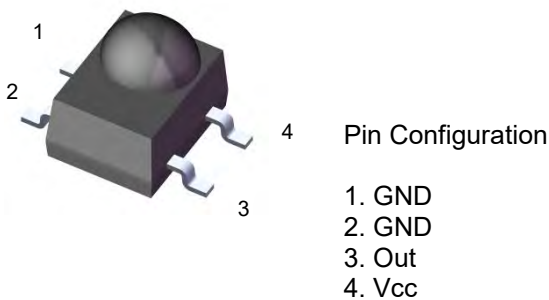


### Infrared Receiver Control Receiver Module EAIRMIA3



#### Features

- High protection ability against EMI
- Circular lens for improved reception characteristics
- Available for Carrier Frequencies between 20KHz to 60KHz
- TTL and CMOS Compatible
- Low operating voltage ( $V_{cc} = 2.7V$ )
- High immunity against ambient light
- Long reception range
- High sensitivity
- Pb free and RoHS compliant

#### Description

The EAIRMIA3 devices are miniature type infrared receivers which have been developed and designed by using the latest IC technology.

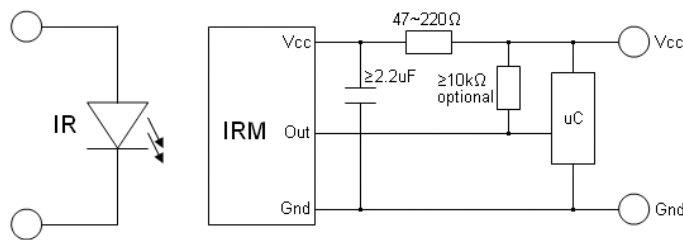
The photo diode and preamplifier are assembled onto a lead frame and molded into an epoxy package which operates as an IR filter.

The receiver provides a modulated output signal which can be used for IR code learning and IR repeater.

#### Applications

- IR code learning
- IR repeater
- Remote control

## Application Circuit



## Parts Table

Model No.	Carrier Frequency
EAIRMIA3	20~60 kHz

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	6	V
Operating Temperature	Topr	-20 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +85	°C
Soldering Temperature <sup>*1</sup>	Tsol	260	°C

<sup>\*1</sup> 4mm from mold body for less than 10 seconds

## Electro-Optical Characteristics (Ta=25°C)

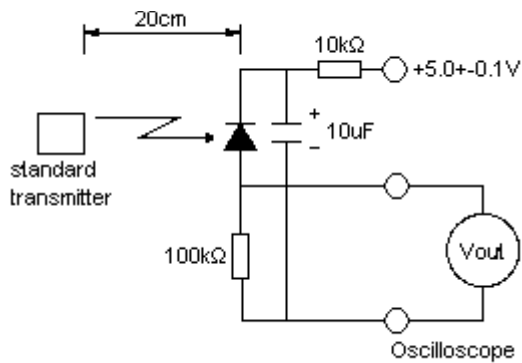
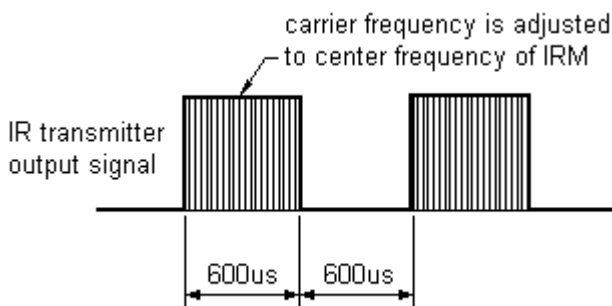
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Current consumption	I <sub>CC</sub>	---	0.4	0.5	mA	No input signal
Supply voltage	V <sub>CC</sub>	2.7	-	5.5	V	
Reception range	L <sub>0</sub>	8	---	---	m	See chapter 'Test method'
	L <sub>45</sub>	5	---	---	m	
Half angle(horizontal)	φ <sub>h</sub>	---	±45	---	deg	Test signal according to figure 1
Half angle(vertical)	φ <sub>v</sub>	---	±45	---	deg	
High level output voltage	V <sub>OH</sub>	V <sub>CC</sub> -0.4	---	---	V	
Low level output voltage	V <sub>OL</sub>	---	0.2	0.5	V	I <sub>SINK</sub> ≤ 2mA
Internal pull up resistor	R <sub>PU</sub>	46	52	58	kΩ	

### Test method

The specified electro-optical characteristics are valid under the following conditions.

1. Measurement environment  
A place without extreme light reflections.
2. External light  
The environment contains an ordinary, white fluorescent lamp without high frequency modulation. The color temperature is 2856K and the illumination at the IR receiver is less than 10 Lux ( $E_v \leq 10\text{Lux}$ ).
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. The measurement system is shown in Fig.-3

Fig.-1 Transmitter Wave Form



D.U.T output Pulse

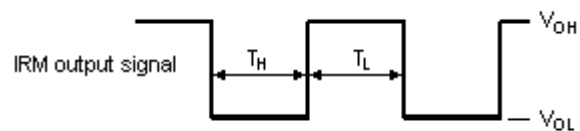
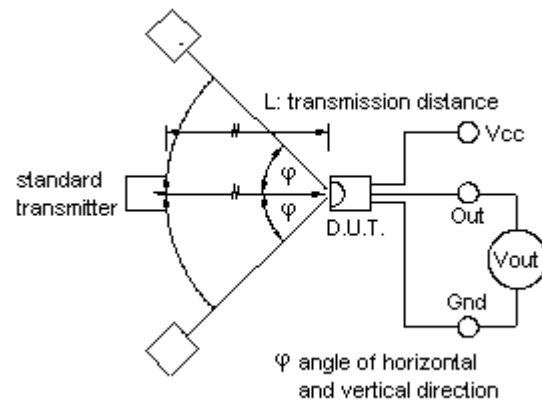


Fig.-3 Measuring System



## Typical Electro-Optical Characteristics Curves

Fig.-4 Relative Responsibility vs. Wavelength

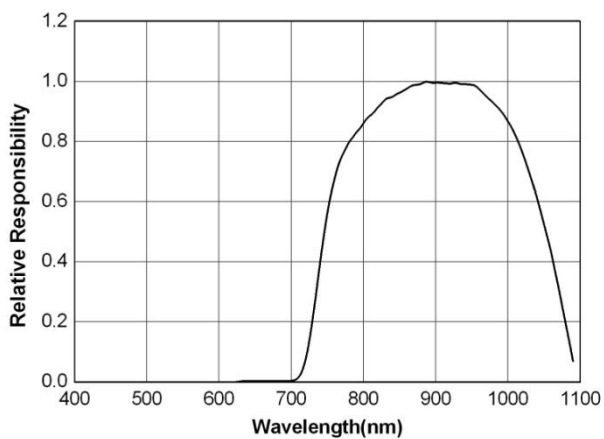


Fig.-5 Relative Sensitivity vs. Horizontal Angle

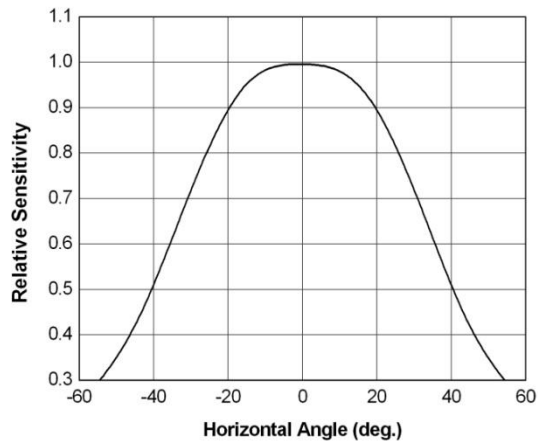


Fig.-6 Relative Transmission Distance vs. Supply Voltage

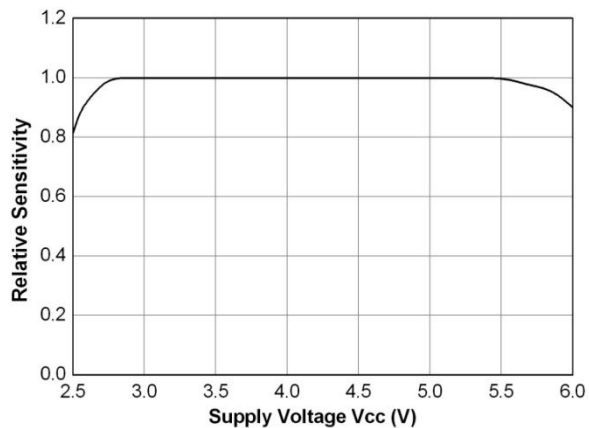
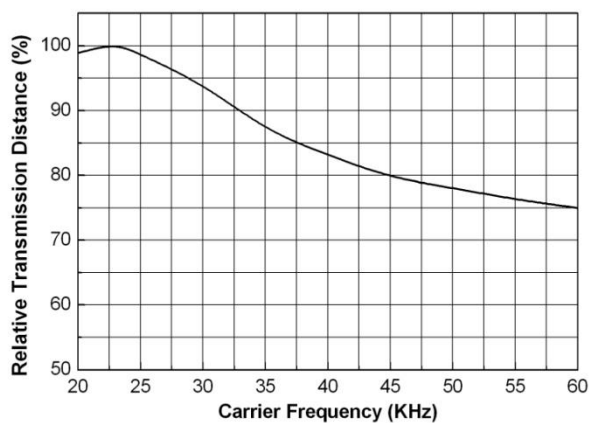
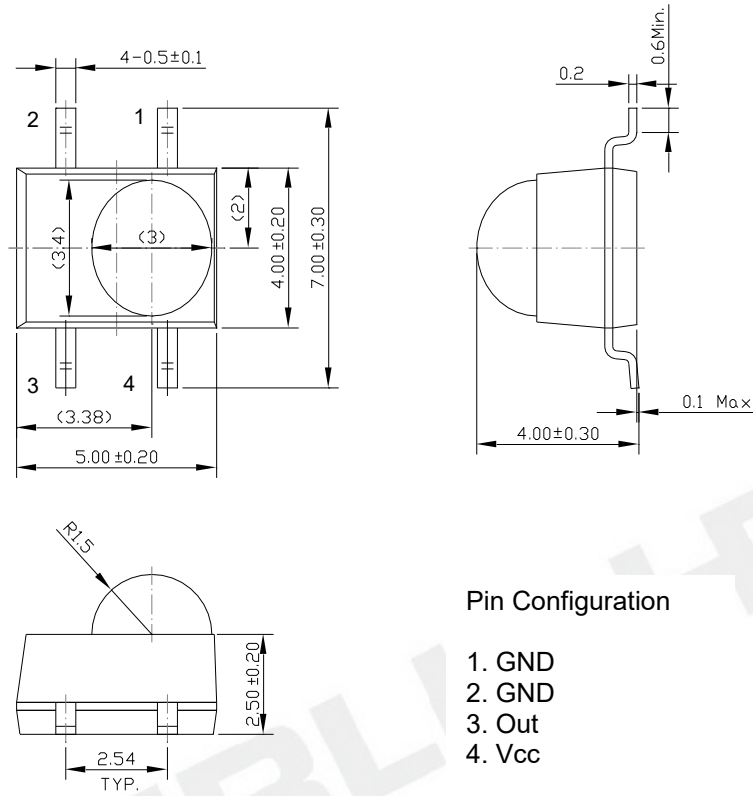


Fig.-7 Relative Transmission Distance vs. Carrier Frequency



**Package Dimension**



**Pin Configuration**

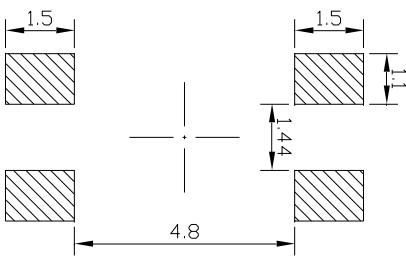
- 1. GND
- 2. GND
- 3. Out
- 4. Vcc

(Dimensions in mm)

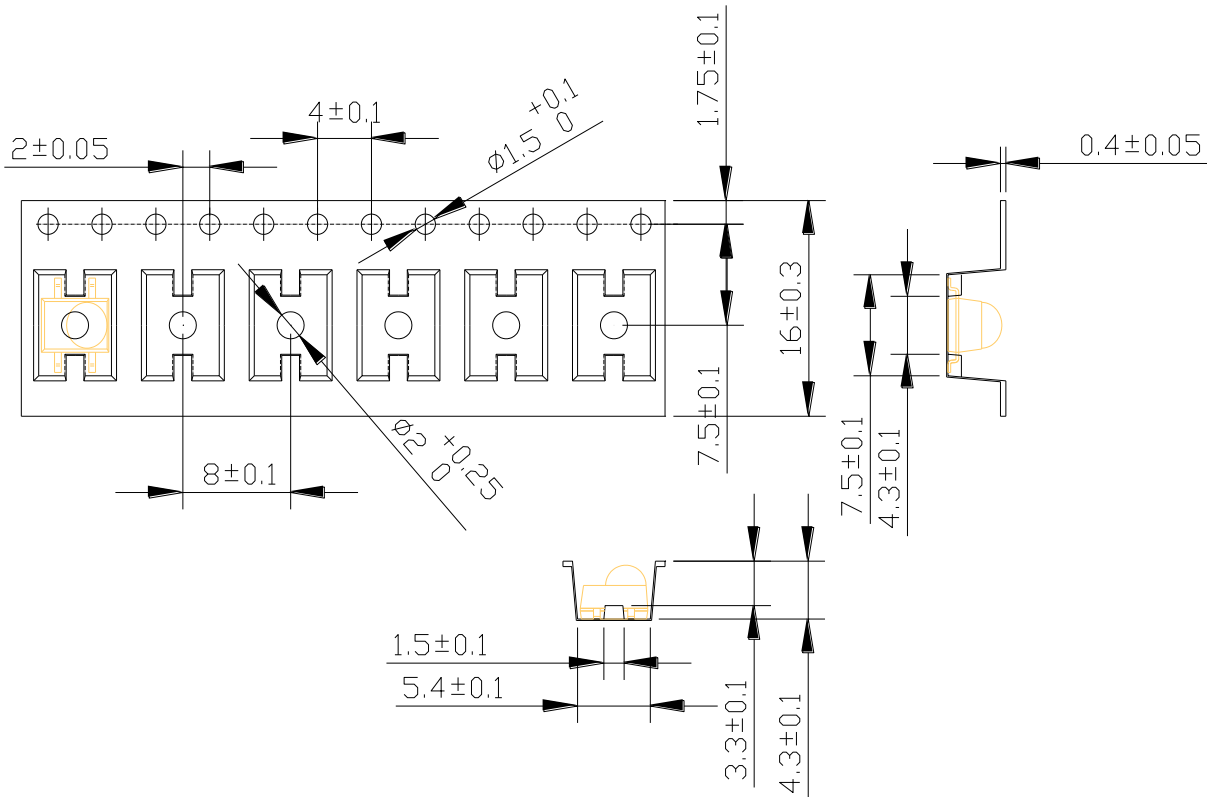
**Notes:**

Tolerance unless otherwise mentioned  $\pm 0.3$ mm

**Recommended pad layout for surface mount leadform**



**Tape & Reel Packing Specifications**



(Dimensions in mm)

**Packing Quantity**

1000 pcs / Reel  
5 Reel / Carton

**Label format**

**EVERLIGHT**

CPN:  
P/N: 30XXXXXXXX

**RoHS**

IRM-XXXX/TRX

QTY: 2000

CAT:  
HUE:  
REF:

LOT NO:

MADE IN CHINA

**Caution**  
This bag contains  
**MOISTURE-SENSITIVE DEVICES**

LEVEL

If blank, see adjacent bar code label

1. Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)
2. Peak package body temperature: \_\_\_\_\_ °C  
If blank, see adjacent bar code label
3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must
  - a) Mounted within: \_\_\_\_\_ hours of factory conditions  
If blank, see adjacent bar code label
  - b) Stored at <10% RH
4. Devices require bake, before mounting, if:
  - a) Humidity Indicator Card is >10% when read at 23 ± 5°C
  - b) 3a or 3b not met
5. If baking is required, devices may be baked for 48 hours at 125 ± 5°C

Note: If device containers cannot be subjected to high temperature or shorter bake times are desired, reference IPC/JEDEC J-STD-033 for bake procedure

Bag Seal Date: \_\_\_\_\_  
If blank, see adjacent bar code label

Note: Level and body temperature defined by IPC/JEDEC J-STD-020

Moisture Classification-storage and used condition label

## Recommended method of storage

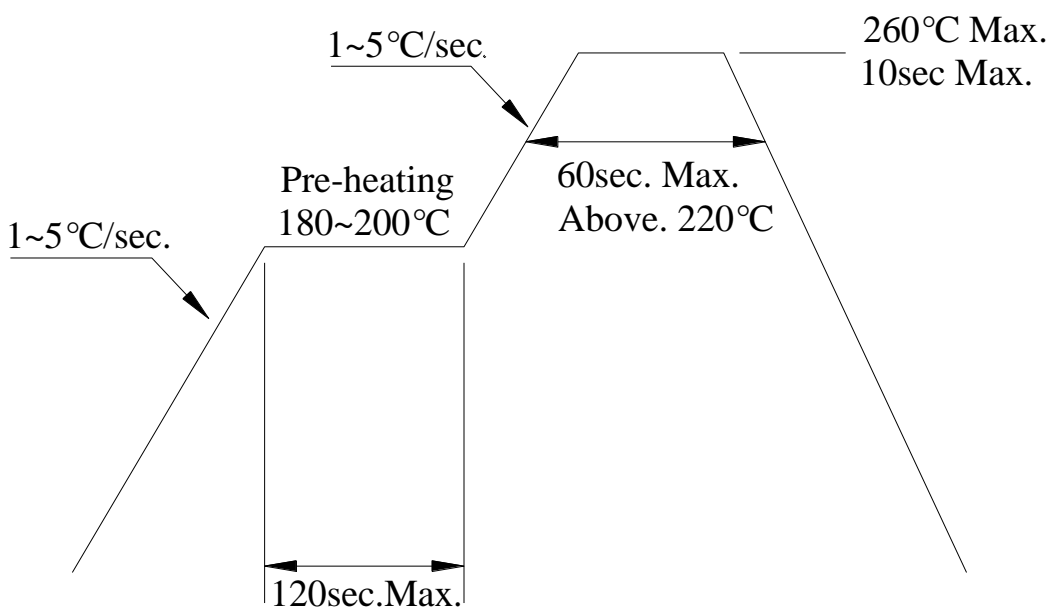
The following are general recommendations for moisture sensitive level (MSL) 4 storage and use:

1. Shelf life in sealed bag from the bag seal date: 12 months at  $< 40\text{ }^{\circ}\text{C}$  and  $< 90\%$  relative humidity (RH)
2. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be mounted within 72 hours of factory conditions  $< 30\text{ }^{\circ}\text{C}/60\%$ 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:  $60\pm 5^{\circ}\text{C}$  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.

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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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