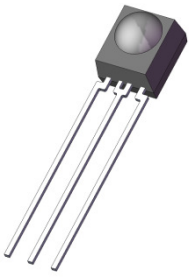
DATASHEET

# Infrared Remote Control Receiver Module
# EAIRMAA1

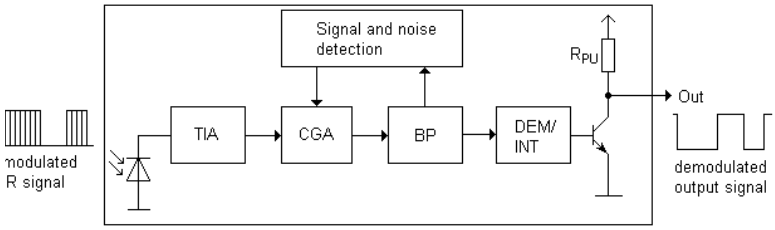


1 2 3

Pin Configuration

1. OUT
2. GND
3. $V_{cc}$

**Block Diagram**




## Features

- High 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.
- Pb free and RoHS compliant.

## Description

The EAIRMAA1 device is miniature type infrared remote control system receiver which 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.

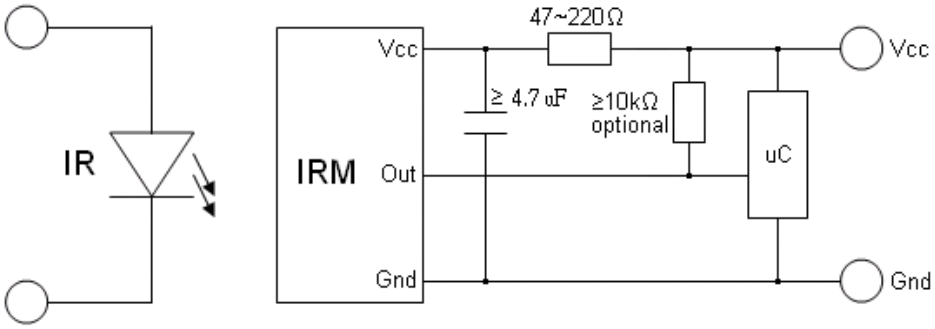



Issue No: DMO-0000555. Rev:1

## 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.

## Parts Table

| Model No. | Carrier Frequency |
|---|---|
| EAIRMAA1 | 38 kHz |

## Absolute Maximum Ratings ($T_a$=25℃)

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Supply Voltage | Vcc | 6 | V |
| Operating Temperature | Topr | -20 ~ +80 | ℃ |
| Storage Temperature | Tstg | -40 ~ +85 | ℃ |
| Soldering Temperature *1 | Tsol | 260 | ℃ |

*1. 4mm from mold body less than 5 seconds

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

| Parameter | Symbol | MIN. | TYP. | MAX. | Unit | Condition |
|---|---|---|---|---|---|---|
| Consumption Current | Icc | -- | 0.4 | 0.6 | mA | No signal input |
| Supply Voltage | Vcc | 2.7 | -- | 5.5 | V | |
| Peak Wavelength | λp | -- | 940 | -- | nm | |
| Reception Distance | L0 | 14 | -- | -- | m | At the ray axis *2 |
| | L45 | 6 | -- | -- | m | |
| Half Angle(Horizontal) | θh | -- | 45 | -- | deg | |
| Half Angle(Vertical) | θv | -- | 45 | -- | deg | |
| High Level Pulse Width | TH | 400 | -- | 800 | μs | At the ray axis *3 |
| Low Level Pulse Width | TL | 400 | -- | 800 | μs | |
| High Level Output Voltage | VH | Vcc-0.4 | --- | --- | V | $I_{SOURCE} \leqq 1\mu A$ |
| Low Level Output Voltage | VL | --- | 0.2 | 0.5 | V | $I_{SINK} \leqq 2mA$ |

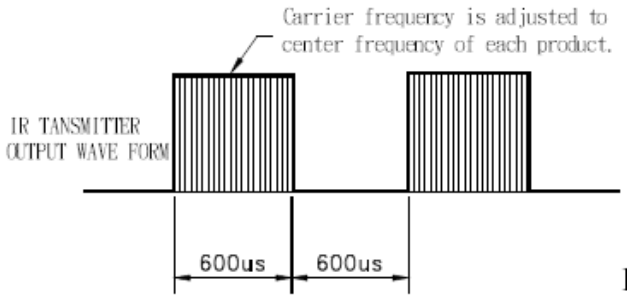
*2. The ray receiving surface at a vertex and relation to the ray axis in the range of θ=0° and θ=45°.
*3. A range from 30cm to the arrival distance. Average value of 50 pulses.

## Test Method

The specified electro-optical characteristics 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. (Ee≦10Lux)
3. Standard transmitter
   A transmitter whose output is so adjusted as to **Vo=400mVp-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 λp=940nm,Δλ=50nm. Also, photodiode is used of PD438B (Vr=5V). (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

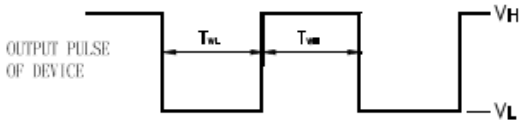



Fig.-2 Measuring Method

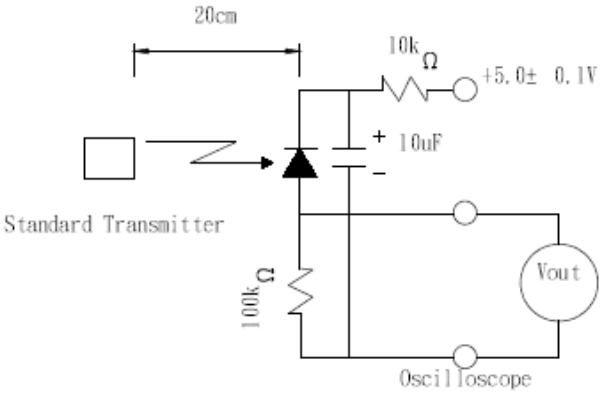
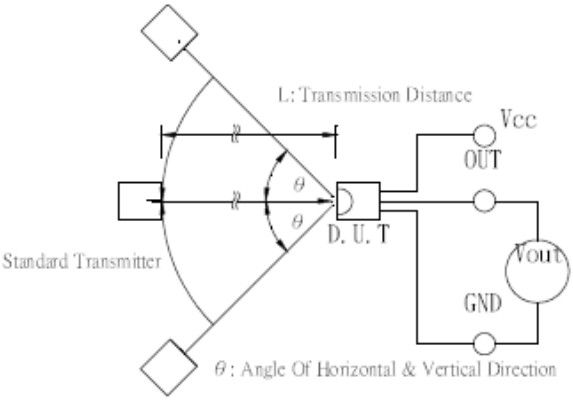



Fig.-3 Measuring System



## Typical Performance Curves

Fig.4 Relative Responsibility vs. Wavelength

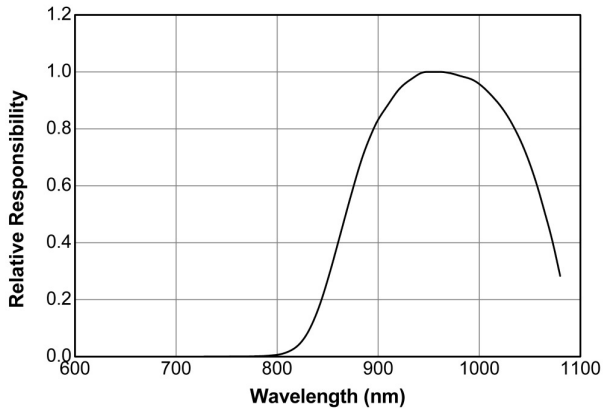



Fig.-5 Relative Sensitivity vs. Angle

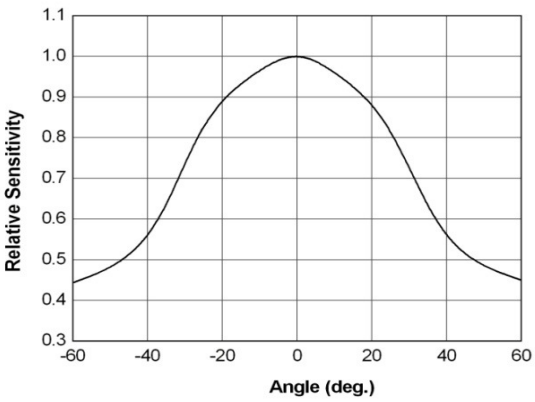



Fig.-6 Output Pulse Width vs. Transmission Distance

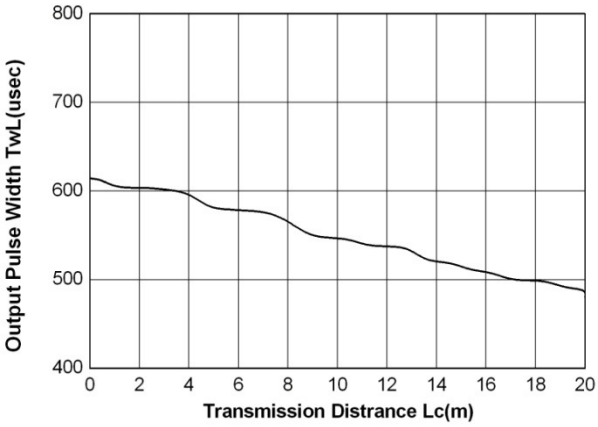



Fig.-7 Relative Transmission Distance vs. Supply Voltage

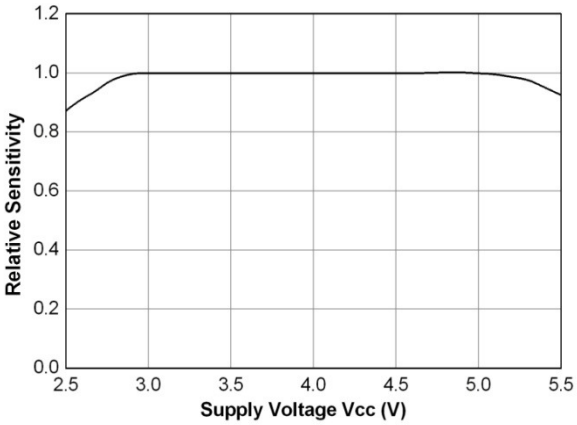
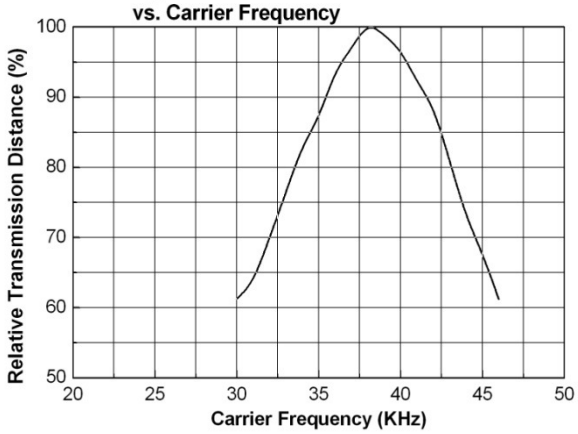
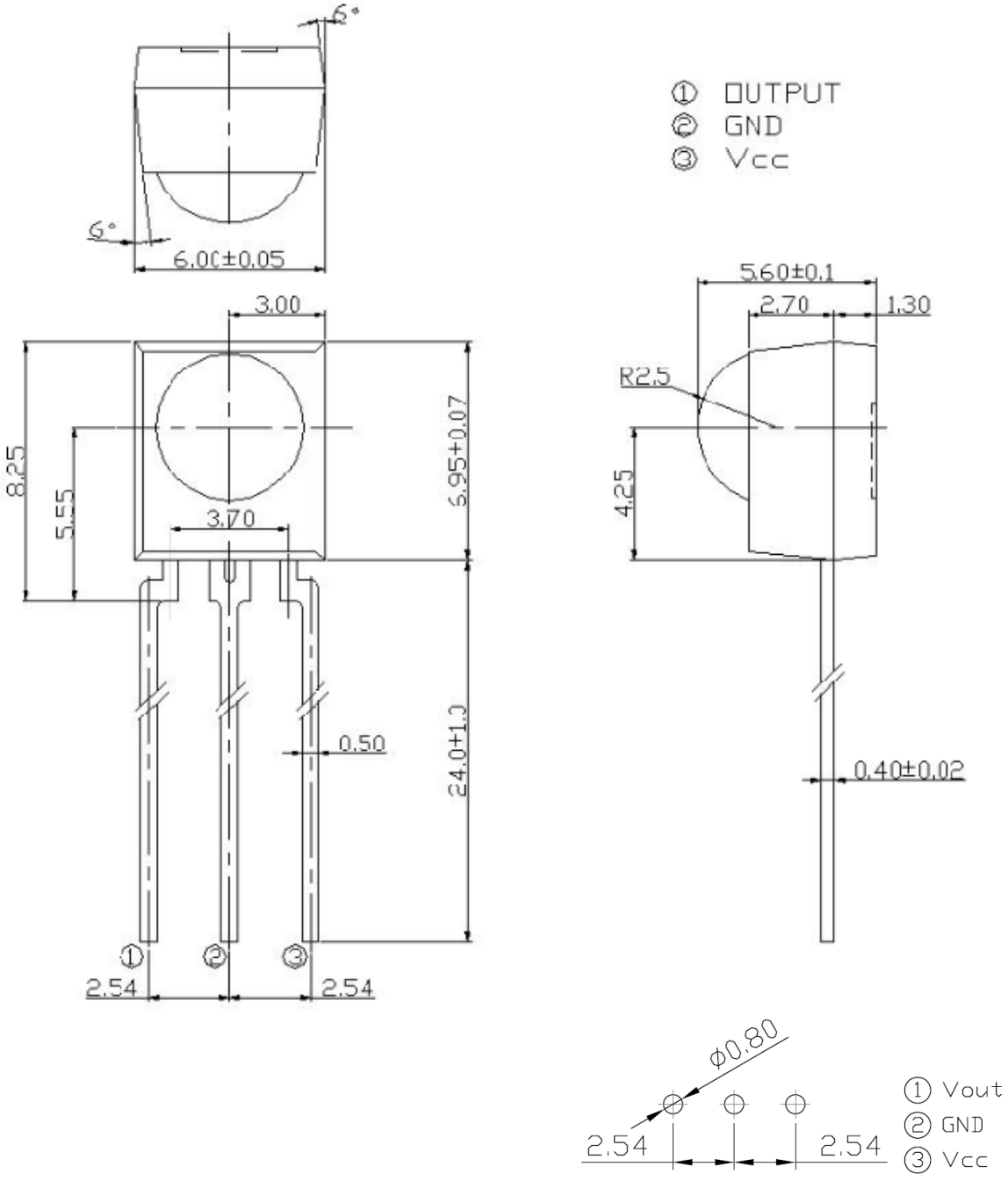



Fig.-8 Relative Transmission Distance vs. Carrier Frequency



## Package Dimensions




**Notes:** 1.All dimensions are in millimeters.

2.Tolerances unless dimensions ±0.3mm.

## Code information

| Protocol | Suitable | Protocol | Suitable |
|---|---|---|---|
| JVC | Yes | High Data Rate code | No |
| Matsushita | Yes | Continuous Code | No |
| Mitsubishi | No | Sharp | Yes |
| NEC | Yes | Sony 12 Bit | Yes |
| RC5_Philips | Yes | Sony 15 Bit | No |
| RC6_Philips | Yes | Sony 20 Bit | No |
| RCA_Thomson | No | Toshiba | Yes |
| Zenith | Yes | | |

## Packing Quantity

1500 pcs / Box

10 Boxes / Carton

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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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