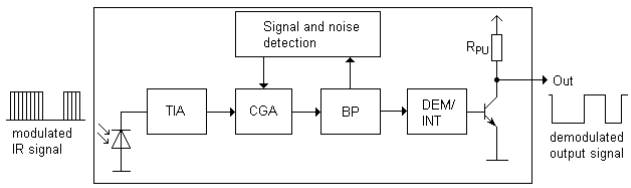
Infrared Receiver Module
EAIRMAA3 Series

Pin Configuration

1. OUT
2. GND
3. Vcc

Block Diagram



Features

- High protection ability against EMI
- Circular lens for improved reception characteristics
- Available for various carrier frequencies
- Low operating voltage and low power consumption
- High immunity against ambient light
- High immunity against TFT and PDP backlight
- Long reception range
- High sensitivity
- Pb free and RoHS compliant
- Compliance with EU REACH

Descriptions

The EAIRMAA3 device is miniature type infrared remote control system receiver which has been developed and designed by utilizing the most updated IC technology.

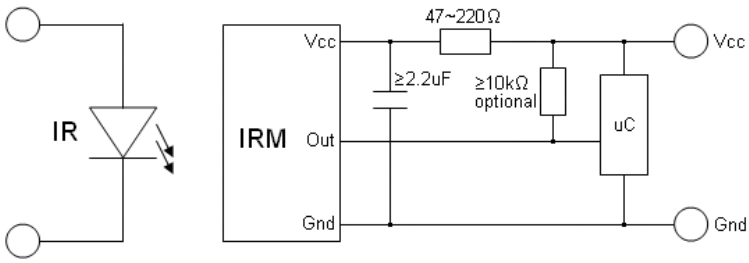
The PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as an IR filter.

The demodulated output signal can directly be decoded by a microprocessor.

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



The RC Filter must be connected as close as possible to Vcc and GND pins.

Part number table

Model No.	Carrier Frequency
EAIRMAA3	38 kHz

Absolute Maximum Ratings (Ta=25℃) [*1]

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{cc}	6	V
Operating Temperature	T_{opr}	-20 ~ +80	℃
Storage Temperature	T_{stg}	-40 ~ +85	℃
Soldering Temperature [*2]	T_{sol}	260	℃

[*1] Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute maximum ratings for extended periods of the time can adversely affect reliability.

[*2] 4mm from mold body for less than 5 seconds

Electro-Optical Characteristics (T_a=25℃, V_{cc}=3V)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Current consumption	Icc	---	1.0	2.0	mA	No input signal
Supply voltage	V_{CC}	2.7	---	5.5	V	
Peak wavelength	λ_p	---	940	---	nm	
Reception range	L_0	14	---	---	m	See chapter 'Test method' [*3]
	L_{45}	6	---	---		
Half angle(horizontal)	φ_h	---	±35	---	deg	
Half angle(vertical)	φ_v	---	±35	---	deg	
High level pulse width	T_H	400	---	800	μs	Test signal according to figure 1 [*4]
Low level pulse width	T_L	400	---	800	μs	
High level output voltage	V_{OH}	Vcc-0.4	---	---	V	$I_{SOURCE} \leqq 1\mu A$
Low level output voltage	V_{OL}	---	0.2	0.5	V	$I_{SINK} \leqq 2mA$

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

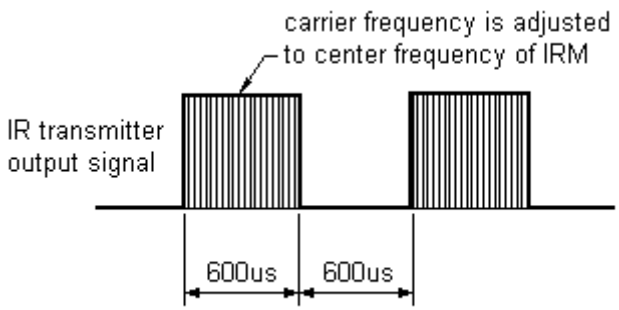
[*4] A range from 30cm to the arrival distance. Average value of 50 pulses.

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 ($E_v \leqq 10$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 **Vo=400mVp-p.** Both the test transmitter and the photo diode have the peak wavelength of 940nm. The photo diode for calibration is PD438B (λp=940nm, Vr=5V).
4. The measurement system is shown in Fig.-3

Fig.1 Transmitter Wave Form



D.U.T output Pulse

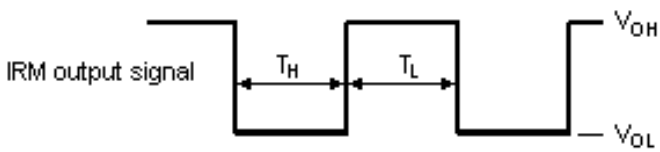


Fig.2 Standard transmitter calibration

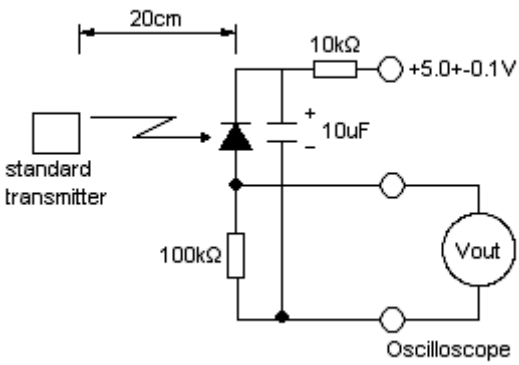
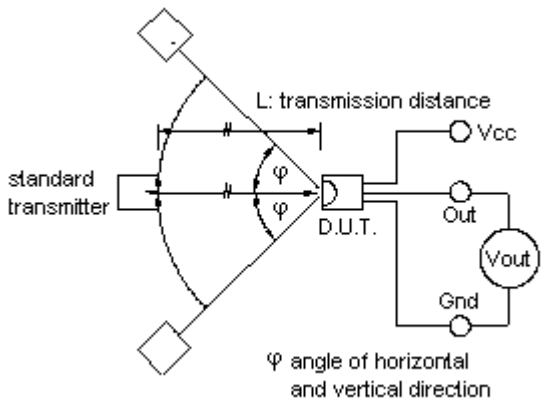


Fig.3 Measuring system



Typical Electro-Optical Characteristics Curves

Fig.-4 Relative Spectral Sensitivity vs. Wavelength

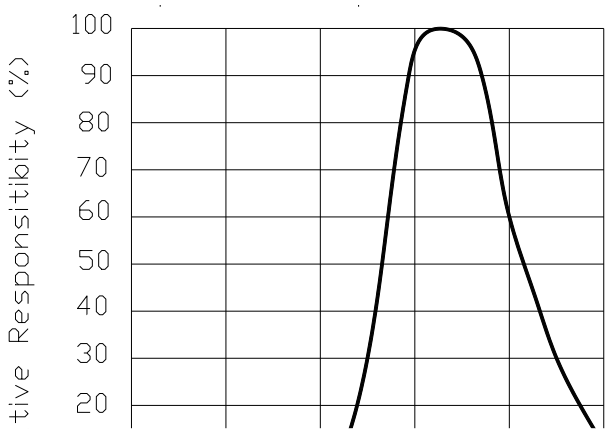
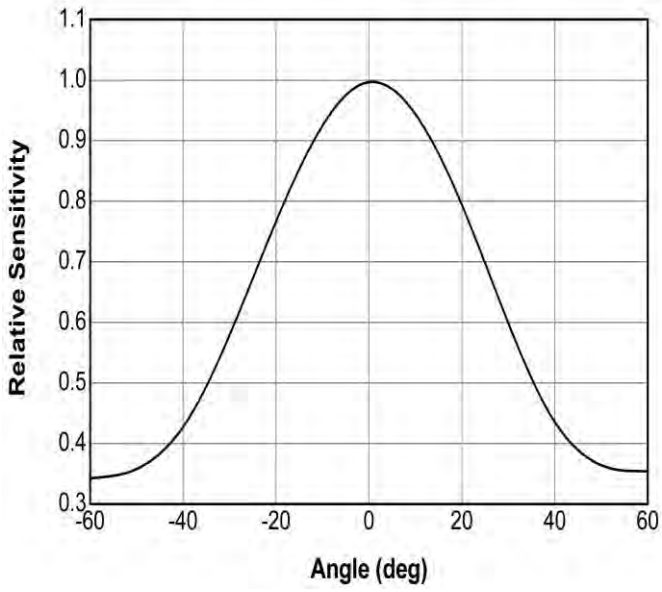


Fig.5 Relative Sensitivity vs. Angle



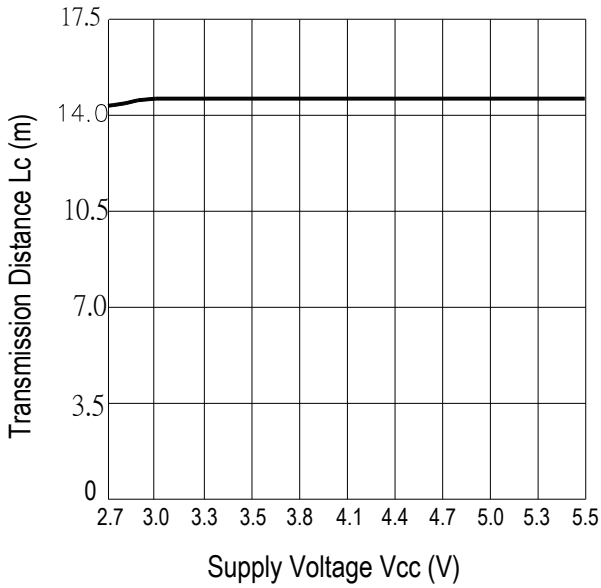


Fig.-8 Relative Transmission Distance vs. Center Carrier Frequency 36KHz

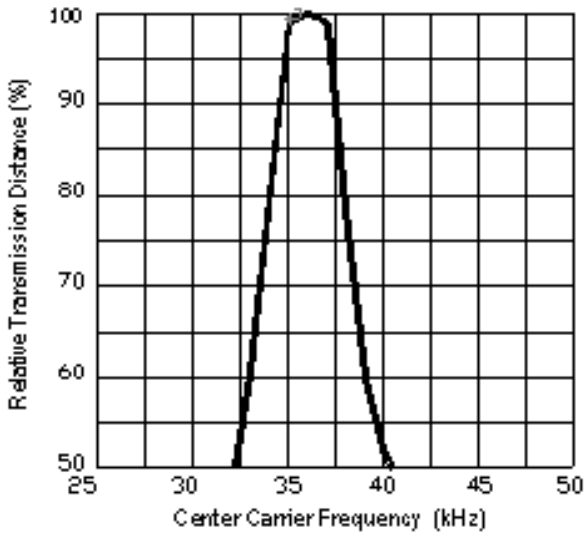


Fig.-9 Relative Transmission Distance vs. Center Carrier Frequency 38KHz

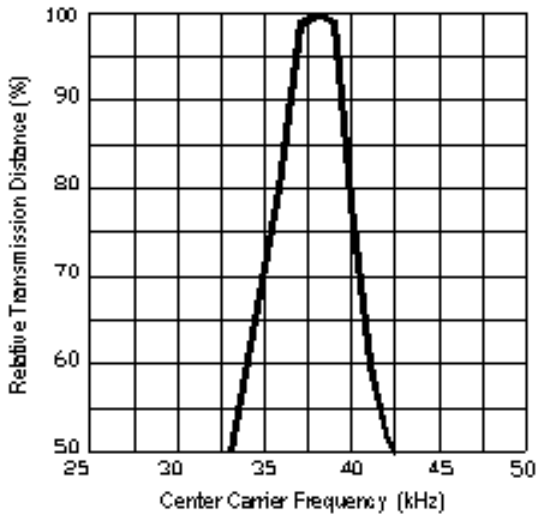


Fig.-10 Relative Transmission Distance vs. Center Carrier Frequency 40KHz

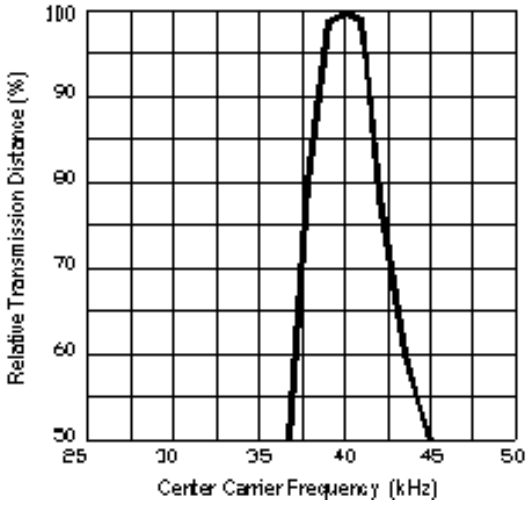
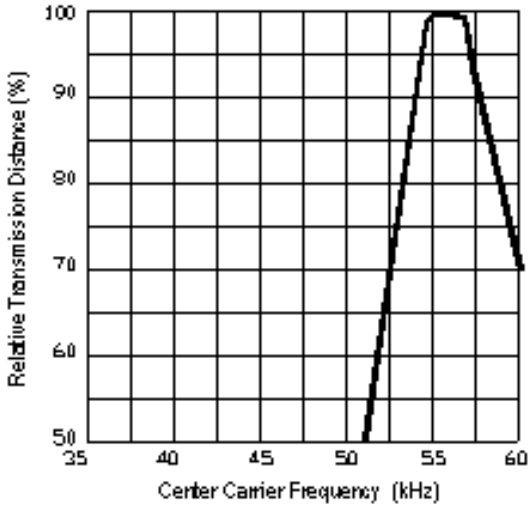


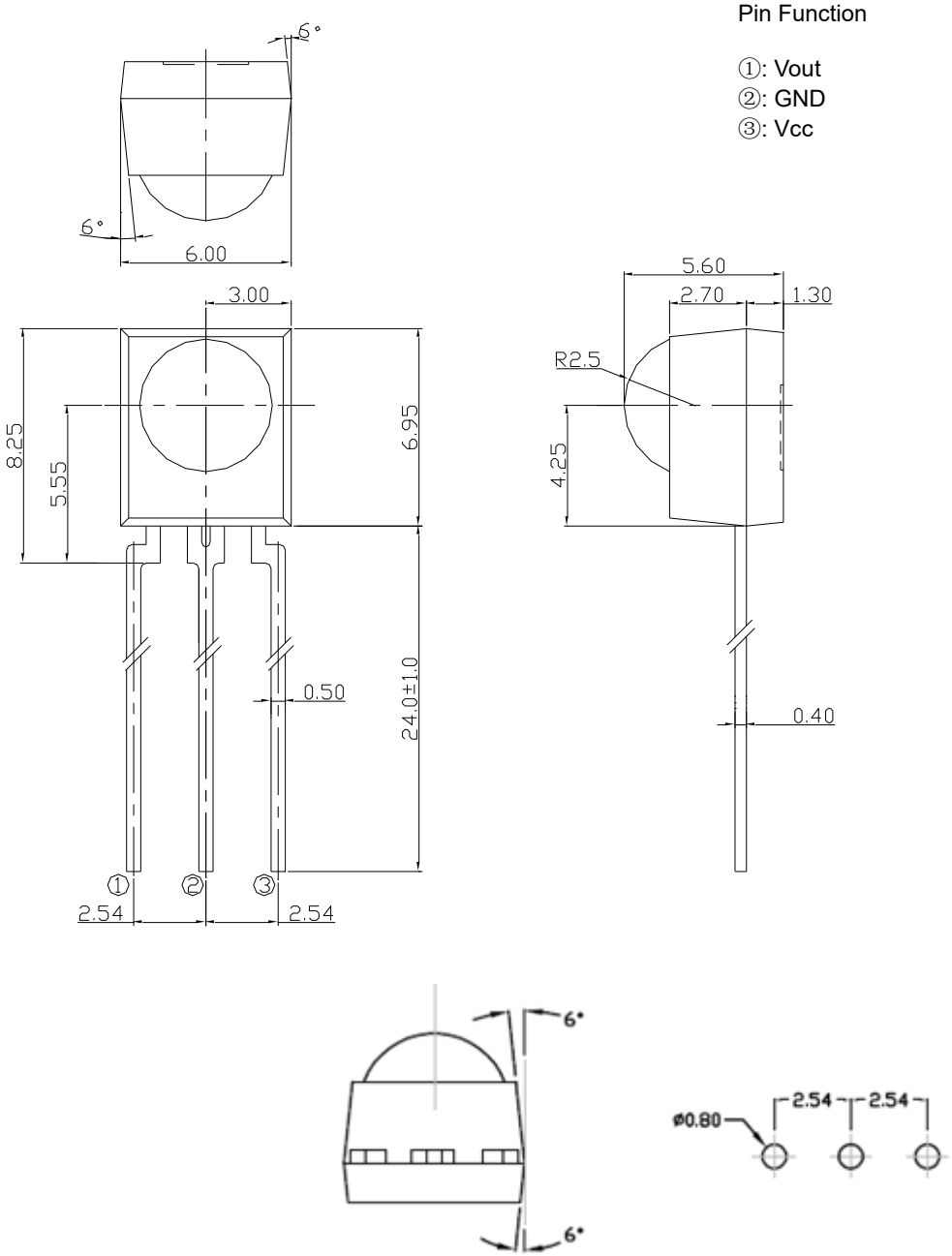
Fig.-11 Relative Transmission Distance vs. Center Carrier Frequency 56KHz



Package Dimensions
(Dimensions in mm)

Pin Function

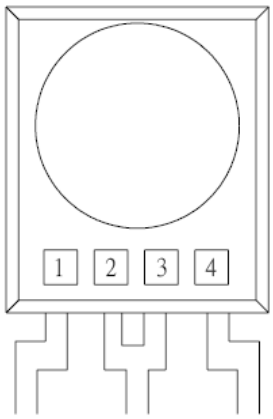
①: Vout
②: GND
③: Vcc



Notes:

1. All dimensions are in millimeters.
2. Tolerances unless dimensions ±0.5mm.
3. Suggested pad dimension is just for reference only.
   Please modify the pad dimension based on individual need.

Device Marking



Notes:

1 Denotes Year code
2 Denotes Month code
3 Denotes Device number
4 Denotes Carrier frequency

Packing Quantity

1500 pcs / Box
10 Boxes / Carton

Disclaimer

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
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