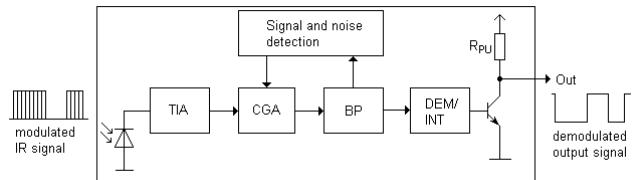


DATASHEET

Infrared Receiver Control Receiver Module EAIRMLA4



Block Diagram



Features

- High protection ability against EMI
- Circular lens for improved reception characteristics
- 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).

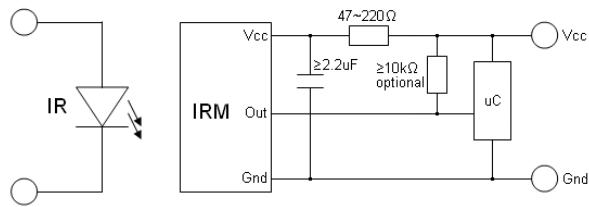
Description

- 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 operated 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
- Other devices using IR remote control
- CATV set top boxes
- Multi-media Equipment

Application Circuit



Parts Table

| Model No. | Carrier Frequency |
|-----------|-------------------|
| EAIRMLA4 | 40 kHz |

Absolute Maximum Ratings (Ta=25°C)

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

^{*1} 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 _{CC} | - | 0.4 | 0.6 | mA | No input signal |
| Supply voltage | V _{CC} | 2.7 | - | 5.5 | V | |
| Peak wavelength | λ _p | --- | 940 | --- | nm | |
| Reception range | L ₀ | 8 | --- | --- | m | See chapter , Test method' |
| | L ₄₅ | 5 | --- | --- | | |
| Half angle(horizontal) | Φ _h | --- | ±45 | --- | deg | |
| Half angle(vertical) | Φ _v | --- | ±45 | --- | deg | |
| High level pulse width | T _H | 450 | - | 700 | μs | Test signal according to figure 1 |
| Low level pulse width | T _L | 500 | - | 750 | μs | |
| High level output voltage | V _{OH} | V _{CC} -0.4 | --- | --- | V | I _{SOURCE} ≤1μA |
| Low level output voltage | V _{OL} | --- | 0.2 | 0.5 | V | I _{SINK} ≤2mA |
| Internal pull up resistor | R _{PU} | 85 | 100 | 115 | 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

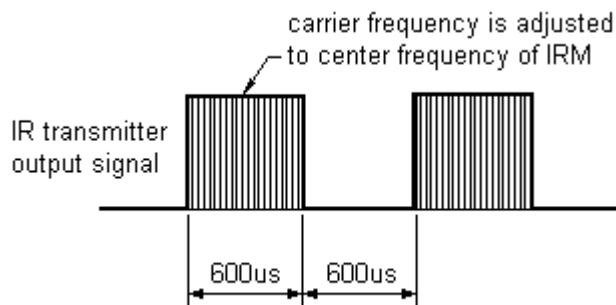
The environment contains an ordinary, white fluorescent lamp without high frequency modulation. The color temperature is 2856K and the illumination at the IR receiver is less than 10 Lux ($E_v \leq 10\text{Lux}$).

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

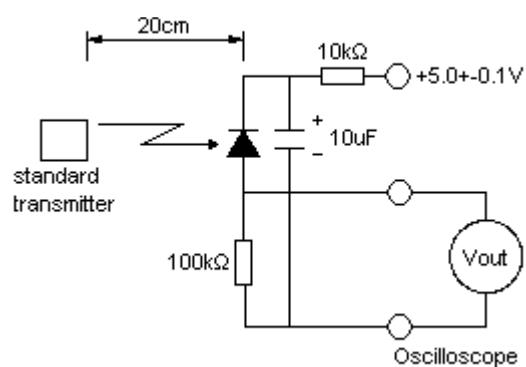
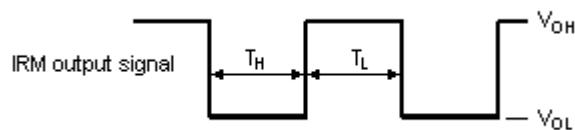
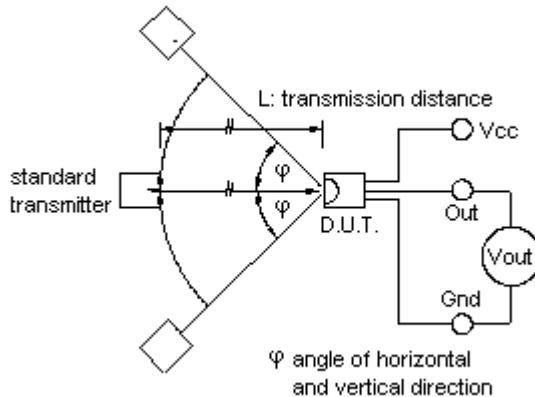


Fig.-3 Measuring System



Typical Electro-Optical Characteristics Curves

Fig.4 Relative Responsability vs. Wavelength

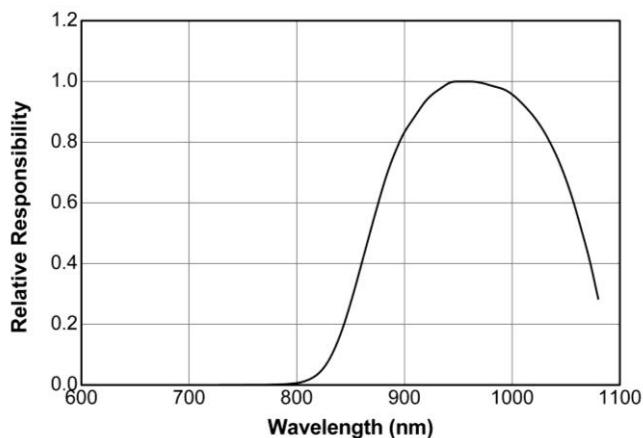


Fig.-5 Relative Sensitivity vs. Angle

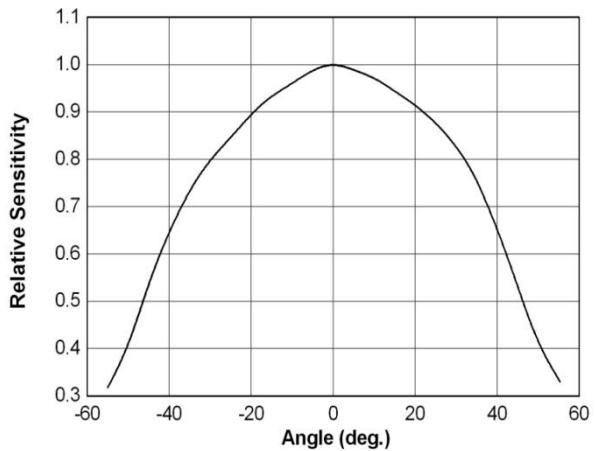


Fig.6 Variation Output Pulse Width vs. Distance

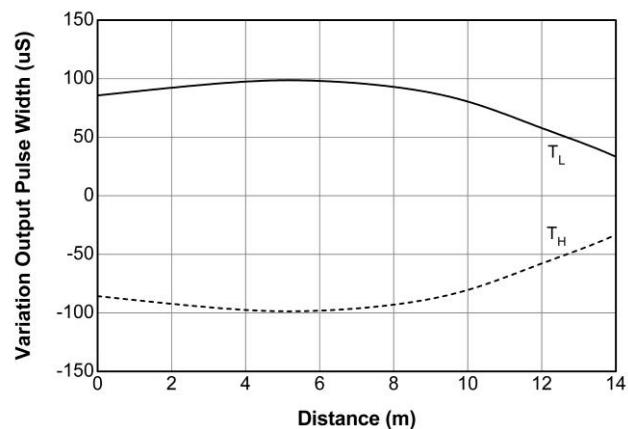


Fig.7 Supply Voltage vs. Distance

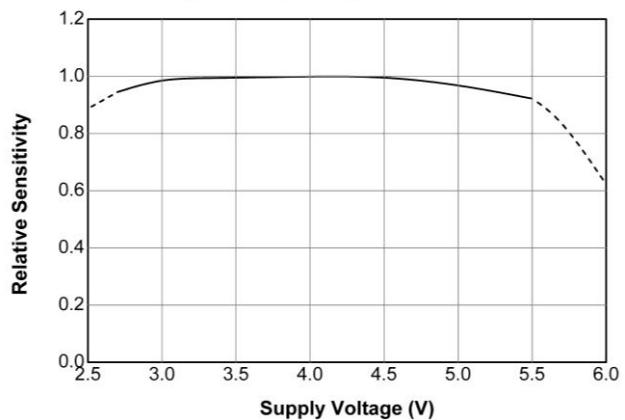
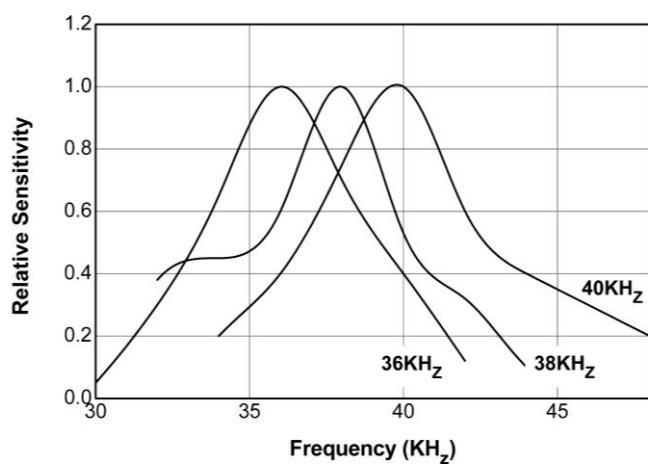
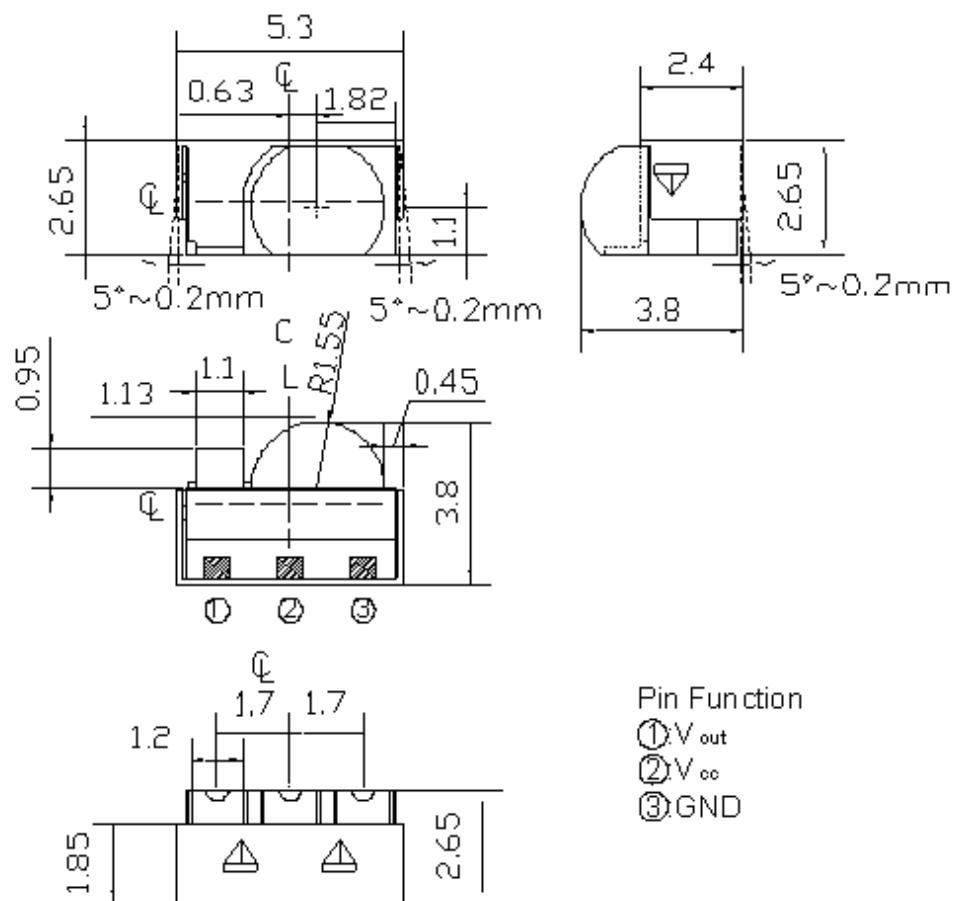


Fig.8 Relative Sensitivity vs. Frequency

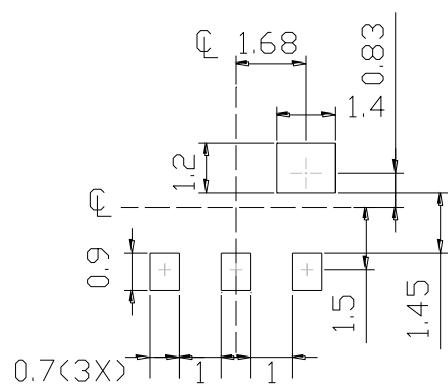


Package Dimension
(Dimensions in mm)



Note :Tolerances unless dimensions ± 0.5 mm.

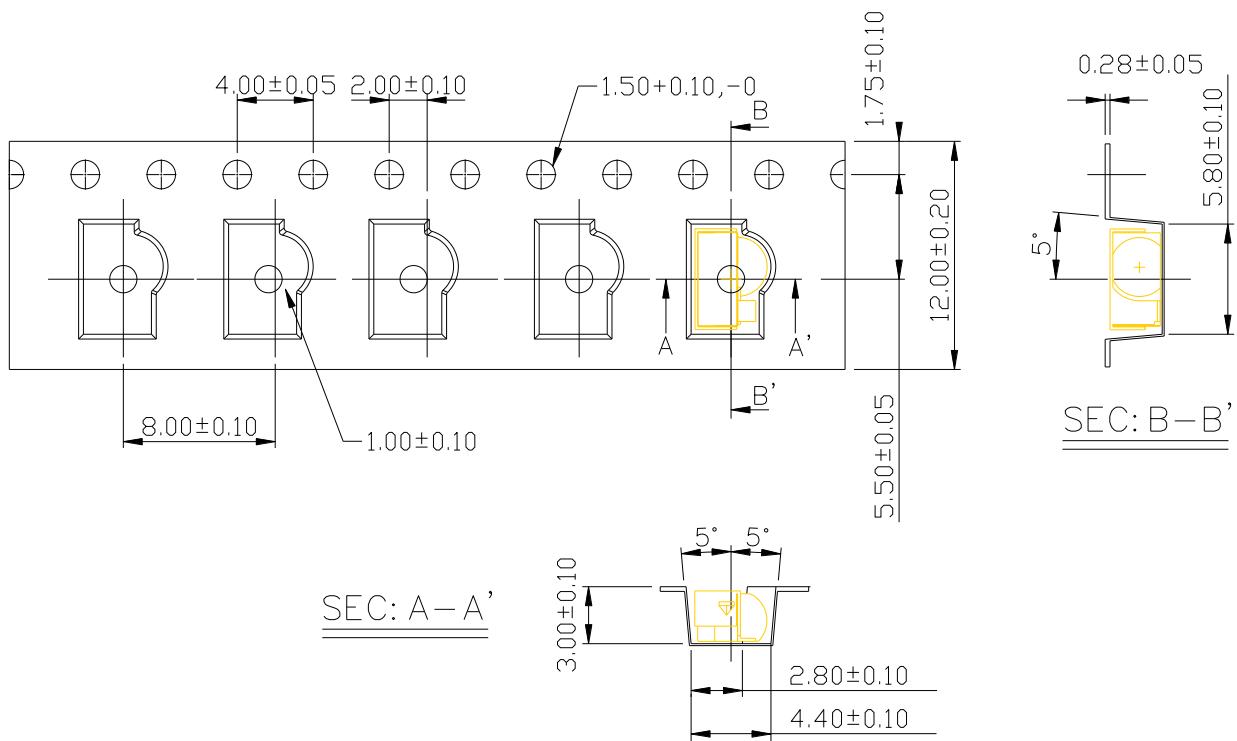
Recommended pad layout for surface mount leadform



Code information

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

Tape & Reel Packing Specifications (Dimensions in mm)

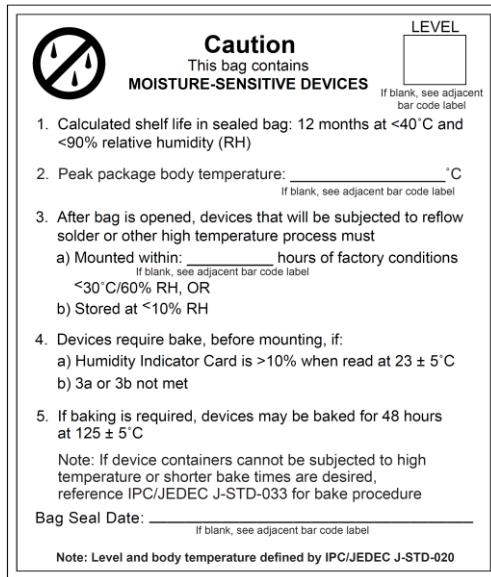
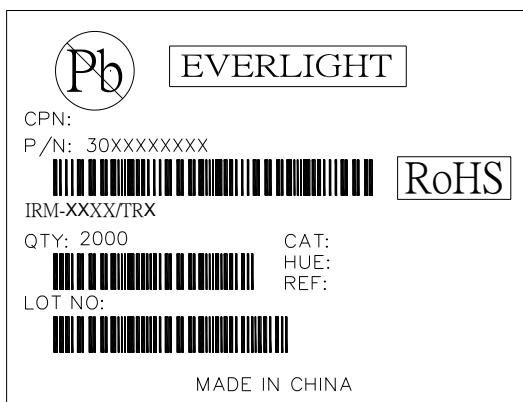


Packing Quantity

2000 pcs / Reel

5 Reels / Carton

Label format



Moisture Classification-storage and used condition label

Recommended method of storage

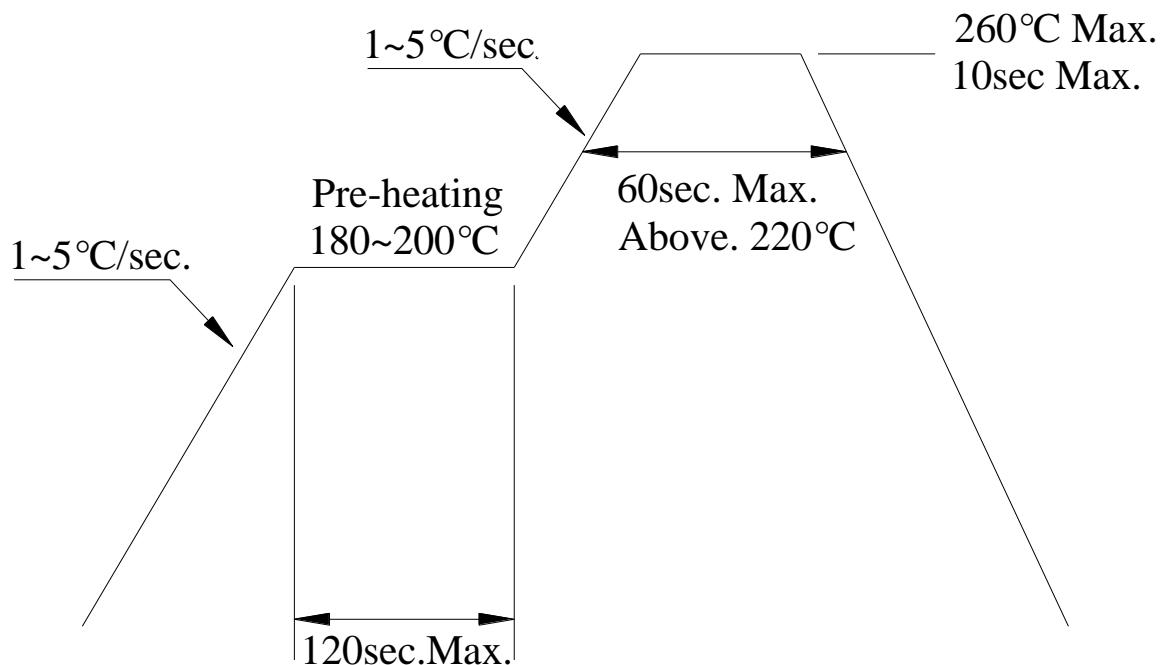
The following are general recommendations for moisture sensitive level (MSL) 4 storage and use:

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 be mounted within 72 hours of factory conditions $< 30^{\circ}\text{C}/60\%$ 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.

Application Restrictions

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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