■ PACKAGE DIMENSIONS:

15.3

15.3

3.6

2.54

2.1

6.0

5.08

EVERLIGHT

IRM-8420

N

13.2

5.0

1: GND

2: Vcc

3: Output

4: GND

5: GND

OFFICE: NO 25, Lane 76, Chung Yang Rd, Sec.3 Tucheng, Taipei 236, Taiwan, R.O.C.

TEL : 886-2-2267-2000, 2266-9936 (22 Lines)

FAX : 886-2-2267-6189

http://www.everlight.com
NOTES :
1. This drawing measure is a standard value. All dimensions are in millimeter.
2. In case of designation is tolerance ± 0.3mm.
3. Lead spacing is measured where the lead emerge from the package.
4. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
5. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don't reproduce or cause anyone to reproduce them without EVERLIGHT consent.
6. When using this produce, 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.
Description:
1. The module is a small type infrared remote control system receiver which has been developed and designed by utilizing the latest hybrid technology.
2. This single unit type module incorporates a photo diode and a receiving preamplifier IC.
3. The demodulated output signal can directly be decoded by a microprocessor.

Feature:
1. High protection ability to EMI and metal case can be customized.
2. Mold type and metal case type to meet the design of front panel.
3. Elliptic lens to improve the characteristic against
4. Line-up for various center carrier frequencies.
5. Low voltage and low power consumption.
6. High immunity against ambient light.
7. Photodiode with integrated circuit.
8. TTL and CMOS compatibility.

Application:
1. Optical switch
2. 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
**Absolute maximum ratings**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Ratings</th>
<th>Unit</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>Vcc</td>
<td>4.3~5.7</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Topr</td>
<td>-10〜+60</td>
<td>℃</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>-20〜+70</td>
<td>℃</td>
<td></td>
</tr>
<tr>
<td>Soldering Temperature</td>
<td>Tsol</td>
<td>260</td>
<td>℃</td>
<td>4mm from mold body less than 5 seconds</td>
</tr>
</tbody>
</table>

**Electro Optical Characteristics**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>Unit</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>Vcc</td>
<td>4.7</td>
<td>5</td>
<td>5.3</td>
<td>V</td>
<td>DC voltage</td>
</tr>
<tr>
<td>Supply Current</td>
<td>Icc</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>mA</td>
<td>No signal input</td>
</tr>
<tr>
<td>B.P.F Center Frequency</td>
<td>fo</td>
<td>-</td>
<td>37.9</td>
<td>-</td>
<td>KHz</td>
<td></td>
</tr>
<tr>
<td>Peak Wavelength</td>
<td>λp</td>
<td>-</td>
<td>940</td>
<td>-</td>
<td>nm</td>
<td></td>
</tr>
<tr>
<td>Transmission Distance</td>
<td>L₀</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>m</td>
<td>At the ray axis</td>
</tr>
<tr>
<td></td>
<td>L₄₅</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>m</td>
<td>*1</td>
</tr>
<tr>
<td>Half Angle</td>
<td>θ</td>
<td>-</td>
<td>45</td>
<td>-</td>
<td>deg</td>
<td></td>
</tr>
<tr>
<td>High Level Pulse Width</td>
<td>T_H</td>
<td>400</td>
<td>-</td>
<td>800</td>
<td>µs</td>
<td>At the ray axis</td>
</tr>
<tr>
<td>Low Level Pulse Width</td>
<td>T_L</td>
<td>400</td>
<td>-</td>
<td>800</td>
<td>µs</td>
<td>*2</td>
</tr>
<tr>
<td>High Level Output Voltage</td>
<td>V_H</td>
<td>4.5</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Low Level Output Voltage</td>
<td>V_L</td>
<td>-</td>
<td>0.2</td>
<td>0.5</td>
<td>V</td>
<td></td>
</tr>
</tbody>
</table>

*1: The ray receiving surface at a vertex and relation to the ray axis in the range of φ=0° and φ=45°.
*2: 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 (V_R=5V).
   (Standard light / Light source temperature 2856°K).

4. Measuring system
   According to the measuring system shown in Fig.-3
Carrier frequency is adjusted to center frequency of each product.

**Fig.-1 Transmitter Wave Form**

- IR TRANSMITTER OUTPUT WAVE FORM
- Carrier frequency is adjusted to center frequency of each product.
- Duty=0.5

**Fig.-2 Measuring Method**

- Standard Transmitter
- Oscilloscope
- 10uF
- 100kΩ
- 10kΩ
- +5.0± 0.1V

**Fig.-3 Measuring System**

- Standard Transmitter
- Oscilloscope
- Vcc
- D.U.T
- OUT
- GND
- L: Transmission Distance
- θ: Angle Of Horizontal & Vertical Direction
TYPICAL ELECTRICAL/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
- Fig.-8 Relative Transmission Distance vs. Center Carrier Frequency
- Fig.-9 Arrival Distance vs. Ambient Temperature
## Reliability test item and condition

The reliability of products shall be satisfied with items listed below.

**Confidence level:** 90%

**LTPD:** 10%

<table>
<thead>
<tr>
<th>Test Items</th>
<th>Test Conditions</th>
<th>Failure Judgement Criteria</th>
<th>Samples(n)</th>
<th>Defective(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation life</td>
<td>Vcc=5V, Ta:25°C, 1000hrs</td>
<td></td>
<td>n=22, c=0</td>
<td></td>
</tr>
<tr>
<td>Temperature cycle</td>
<td>1 cycle -20°C +25°C +70°C (30min) 5min (30min) 50 cycle test</td>
<td>$L_0 \leq L \times 0.8$</td>
<td>n=22, c=0</td>
<td></td>
</tr>
<tr>
<td>Thermal shock</td>
<td>-10°C to +70°C (5min) (10sec) (5min) 50 cycle test</td>
<td>$L_{45} \leq L \times 0.8$</td>
<td>n=22, c=0</td>
<td></td>
</tr>
<tr>
<td>High temperature storage</td>
<td>Temp: +70°C, 1000hrs</td>
<td></td>
<td>n=22, c=0</td>
<td></td>
</tr>
<tr>
<td>Low temperature storage</td>
<td>Temp: -20°C, 1000hrs</td>
<td></td>
<td>n=22, c=0</td>
<td></td>
</tr>
<tr>
<td>High temperature High humidity</td>
<td>Ta: 85°C, RH:85%, 1000hrs</td>
<td>$L$: Lower specification limit</td>
<td>n=22, c=0</td>
<td></td>
</tr>
<tr>
<td>Solder heat</td>
<td>Temp: 260±5°C 5sec 4mm Form the bottom of the package</td>
<td></td>
<td>n=22, c=0</td>
<td></td>
</tr>
<tr>
<td>Solderability</td>
<td>Temp: 230± 5°C 5sec 4mm Form the bottom of the package</td>
<td>More than 90% of Lead to be covered by soldering</td>
<td>n=22, c=0</td>
<td></td>
</tr>
</tbody>
</table>
Packing Specifications

1. Plastic Case

2. Box

3. Carton

Packing Quantity Specification

1. 40 Pcs/1Plastic Case, 4Plastic Cases/1Box
2. 10 Boxes/1Carton

CPN: Customer’s Production Number
P/N: Production Number
QTY: Packing Quantity
CAT: Ranks
HUE: Peak Wavelength
REF: Reference
LOT NO: Lot Number
MADE IN TAIWAN: Production place