



## Technical Data Sheet

### Infrared Remote-Control Receiver Module

#### IRM-8601S-P

#### Features :

- High protection ability to EMI and metal case can be customized.
- Mold type and metal case type to meet the design of front panel.
- Elliptic lens to improve the characteristic against.
- 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
- Low power consumption
- High sensitivity
- Pb free
- The product itself will remain within RoHS compliant version



#### Descriptions

- The device is a 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.

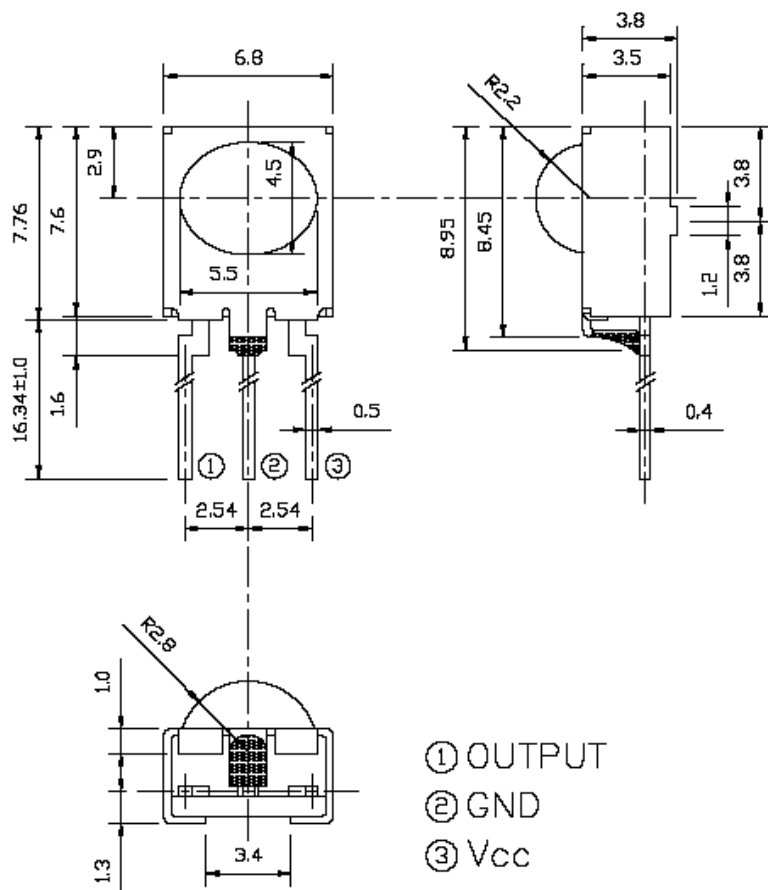
#### Applications

- 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

| PART  | MATERIAL | COLOR        |
|-------|----------|--------------|
| Chip  | Silicon  | Black        |
| Shell | SK7      | Silver-white |

## IRM-8601S-P

### Package Dimensions



- Notes:** 1.All dimensions are in millimeters.  
2.Tolerances unless dimensions  $\pm 0.3\text{mm}$ .

### Absolute Maximum Ratings (Ta=25°C)

| Parameter             | Symbol | Rating    | Unit | Notice                                    |
|-----------------------|--------|-----------|------|-------------------------------------------|
| Supply Voltage        | Vcc    | 0~6       | V    |                                           |
| Operating Temperature | Topr   | -20 ~ +80 | °C   |                                           |
| Storage Temperature   | Tstg   | -40~ +85  | °C   |                                           |
| Soldering Temperature | Tsol   | 260       | °C   | 4mm from mold body<br>less than 5 seconds |

## IRM-8601S-P

### Recommended Operating Condition

Supply Voltage Rating: Vcc 4.5V to 5.5V

### Electro-Optical Characteristics (Ta=25°C, and Vcc=5.0V)

| Parameter                 | Symbol          | MIN. | TYP. | MAX. | Unit    | Condition             |
|---------------------------|-----------------|------|------|------|---------|-----------------------|
| Consumption Current       | I <sub>cc</sub> | ---  | ---  | 3    | mA      | No signal input       |
| B.P.F Center Frequency    | F <sub>o</sub>  | ---  | 38   | ---  | KHz     |                       |
| Peak Wavelength           | $\lambda_p$     | ---  | 940  | ---  | nm      |                       |
| Reception Distance        | L <sub>0</sub>  | 8    | ---  | ---  | m       | At the ray axis<br>*1 |
|                           | L <sub>45</sub> | 4    | ---  | ---  |         |                       |
| Half Angle(Horizontal)    | $\Theta_h$      | ---  | 45   | ---  | deg     |                       |
| Half Angle(Vertical)      | $\Theta_v$      | ---  | 35   | ---  | deg     |                       |
| High Level Pulse Width    | T <sub>H</sub>  | 400  | ---  | 800  | $\mu s$ | At the ray axis<br>*2 |
| Low Level Pulse Width     | T <sub>L</sub>  | 400  | ---  | 800  | $\mu s$ |                       |
| High Level Output Voltage | V <sub>H</sub>  | 4.5  | ---  | ---  | V       |                       |
| Low Level Output Voltage  | V <sub>L</sub>  | ---  | 0.2  | 0.5  | V       |                       |

\*1:The ray receiving surface at a vertex and relation to the ray axis in the range of  $\theta = 0^\circ$  and  $\theta = 45^\circ$ .

\*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.  
( $E_e \leq 10\text{Lux}$ )

### ③ Standard transmitter

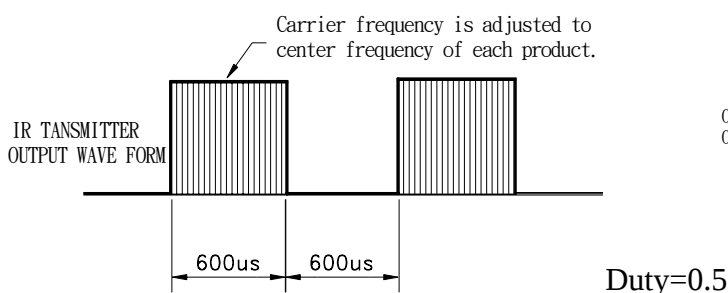
A transmitter whose output is so adjusted as to  **$V_o=400\text{mVp-p}$**  and the output Wave form shown in Fig.-1. According to the measurement method shown in Fig.-2 the standard transmitter is specified.

However , the infrared photodiode to be used for the transmitter should be  $\lambda_p=940\text{nm}$ ,  $\Delta\lambda=50\text{nm}$ . Also, photodiode is used of PD438B( $V_r=5\text{V}$ ).

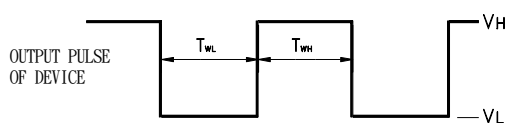
### ④ Measuring system

According to the measuring system shown in Fig.-3

Fig.-1 Transmitter Wave Form



D.U.T output Pulse



## IRM-8601S-P

Fig.-2 Measuring Method

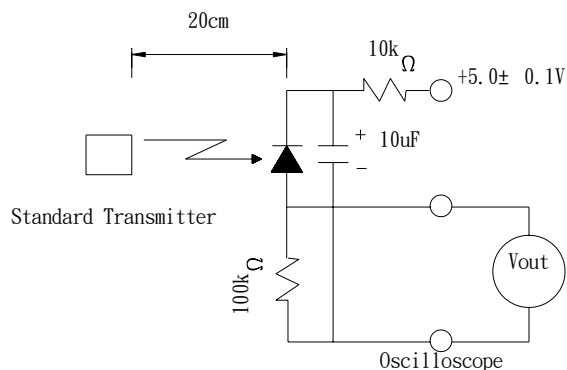
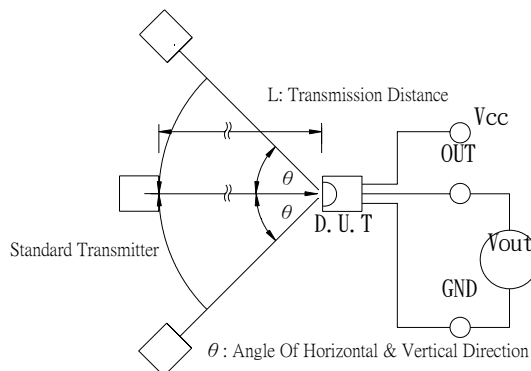
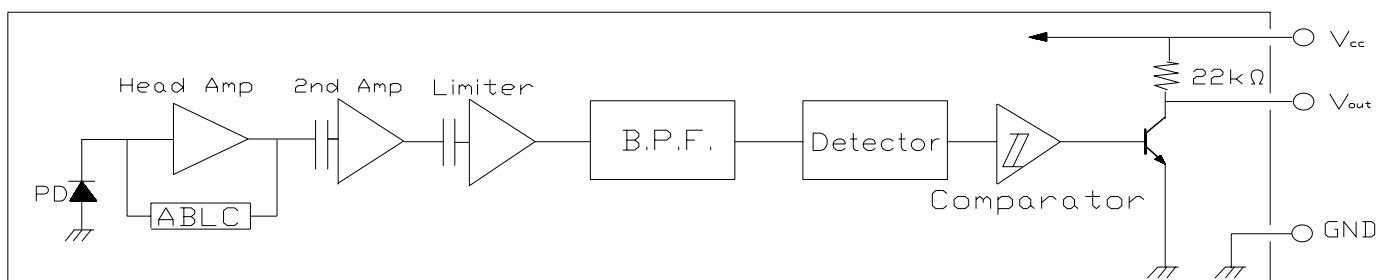


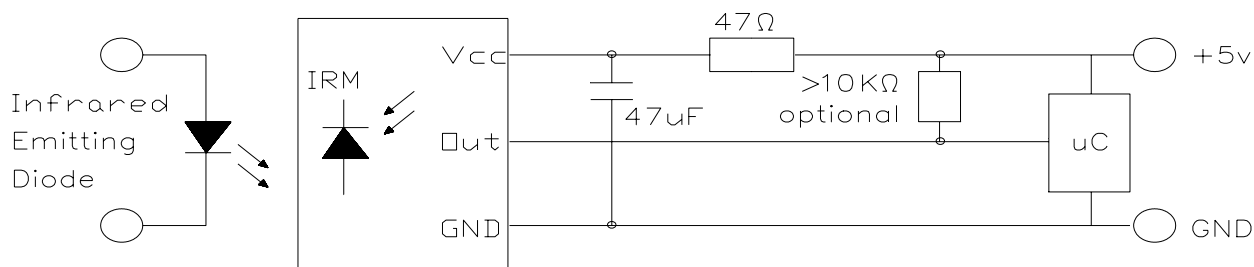
Fig.-3 Measuring System



### Block Diagram :



### Application Circuit :



RC Filter should be connected closely between  $V_{cc}$  pin and GND pin.

## Typical Electro-Optical Characteristics Curves

Fig.-4 Relative Spectral Sensitivity vs.

Wavelength

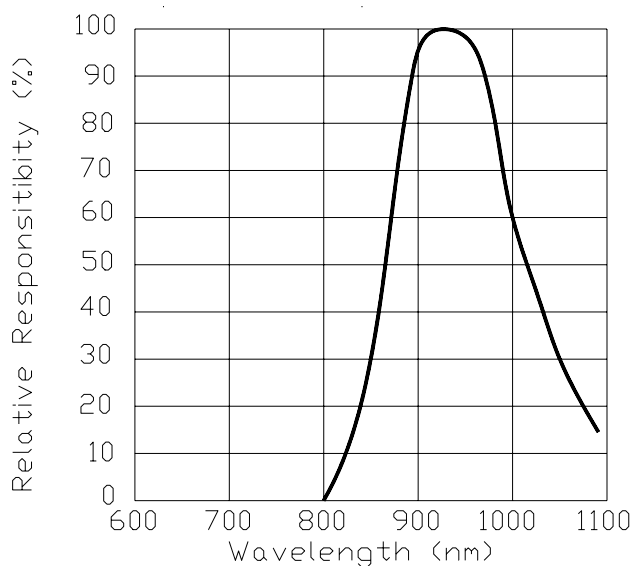


Fig.-5 Relative Transmission Distance vs.

Direction

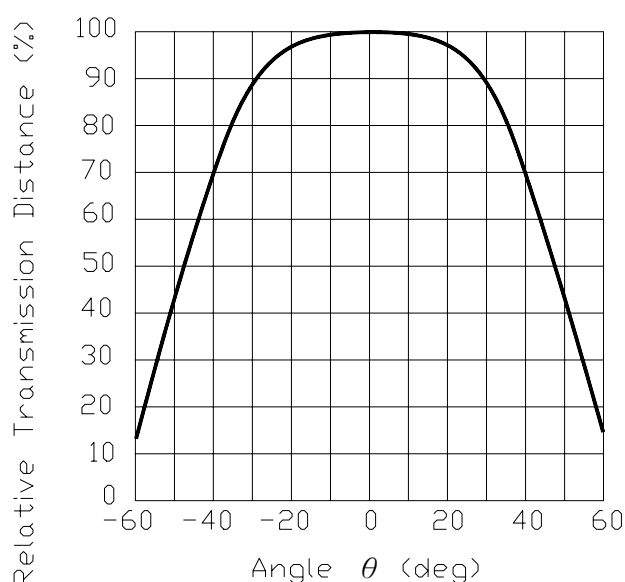


Fig.-6 Output Pulse Length vs. Arrival Distance

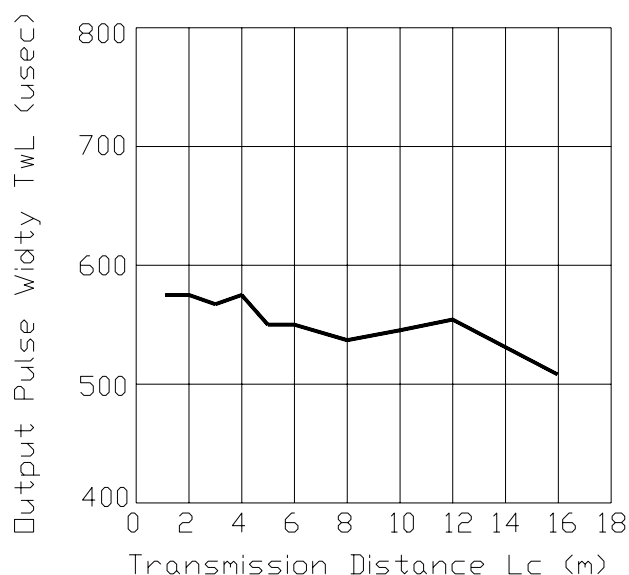
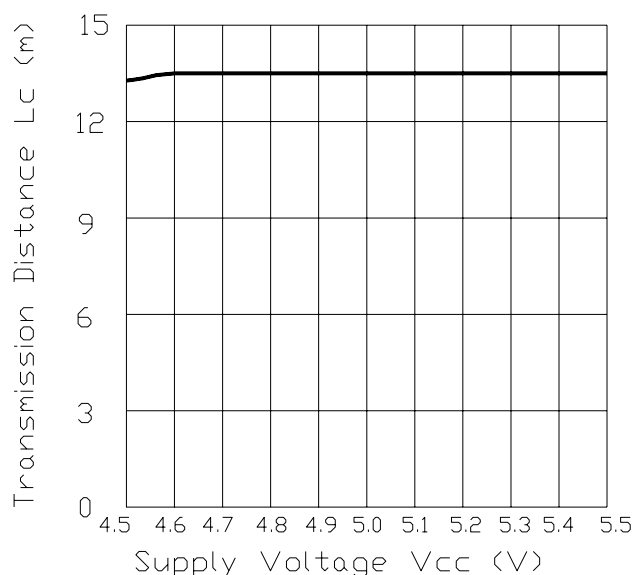


Fig.-7 Arrival Distance vs. Supply Voltage



## Typical Electro-Optical Characteristics Curves

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

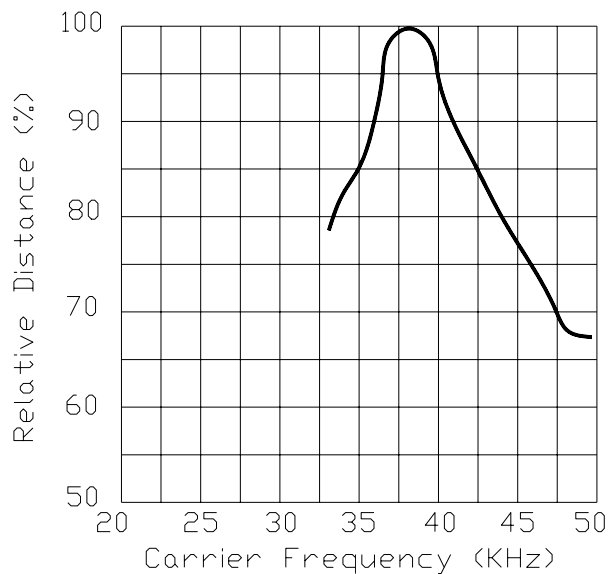
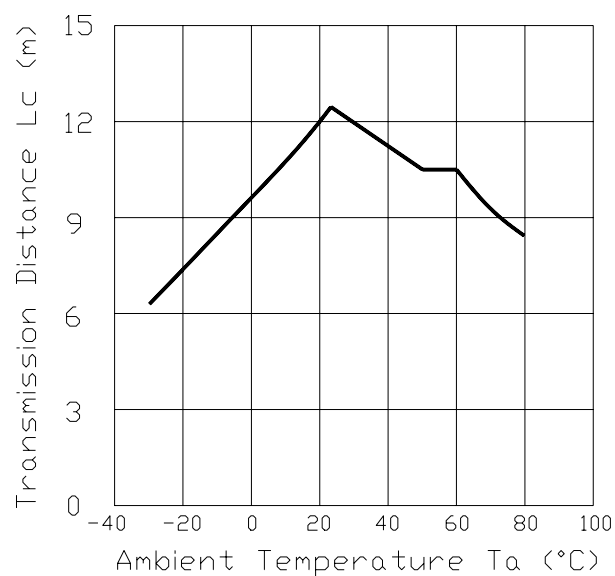


Fig.-9 Arrival Distance vs. Ambient Temperature



### Reliability Test Item And Condition

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

Confidence level : 90%

LTPD : 10%

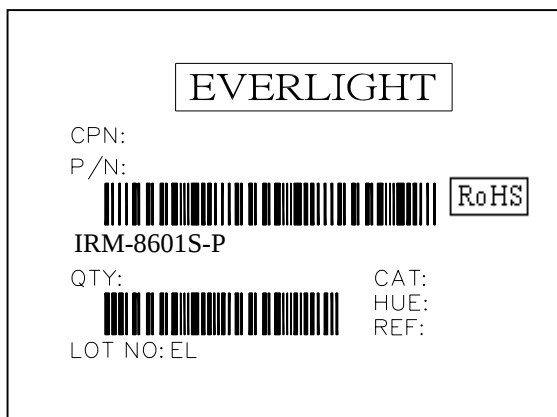
| Test Items                     | Test Conditions                                                  | Failure Judgement Criteria                                                                | Samples(n)<br>Defective(c) |
|--------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------|
| Operation life                 | Vcc=5V,Ta:25℃<br>1000hrs                                         | $L_0 \leq L \times 0.8$<br>$L_{45} \leq L \times 0.8$<br><br>L: Lower specification limit | n=22,c=0                   |
| Temperature cycle              | 1 cycle -40℃ +25℃ +100℃<br>(15min)(5min)(15min)<br>50 cycle test |                                                                                           | n=22,c=0                   |
| Thermal shock                  | -10℃ to +100 +℃<br>(5min)(10sec)(5min)<br>50 cycle test          |                                                                                           | n=22,c=0                   |
| High temperature test          | Temp: +100℃<br>1000hrs                                           |                                                                                           | n=22,c=0                   |
| Low temperature storage        | Temp: -40℃<br>1000hrs                                            |                                                                                           | n=22,c=0                   |
| High temperature High humidity | Ta: 85℃,RH:85%<br>1000hrs                                        |                                                                                           | n=22,c=0                   |
| Solder heat                    | Temp: 260±5℃ 5sec<br>4mm From the bottom of the package.         |                                                                                           | n=22,c=0                   |
| Solderability                  | Temp: 230±5℃ 5sec<br>4mm From the bottom of the package.         | More than 90% of lead to be covered by soldering                                          | n=22,c=0                   |



## Packing Quantity Specification

1. 250pcs/1Bag
2. 10Boxes/1Carton

## Label Form Specification



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

## Notes

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using 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.
3. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.

**EVERLIGHT ELECTRONICS CO., LTD.**

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

Tel: 886-2-2267-2000, 2267-9936

Fax: 886-2267-6244, 2267-6189, 2267-6306  
<http://www.everlight.com>