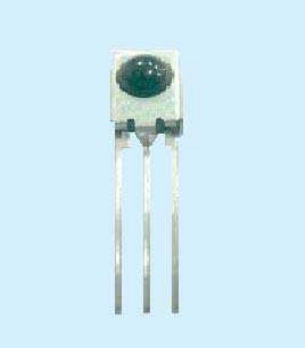
EVERLIGHT ELECTRONICS CO.,LTD.

# Technical Data Sheet

# Infrared Remote-control Receiver Module

**IRM-8601K-1**



## 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

## Device Selection Guide

| PART | MATERIAL | COLOR |
|---|---|---|
| Chip | Silicon | Black |
| shell | Tinplate | Silver-white |

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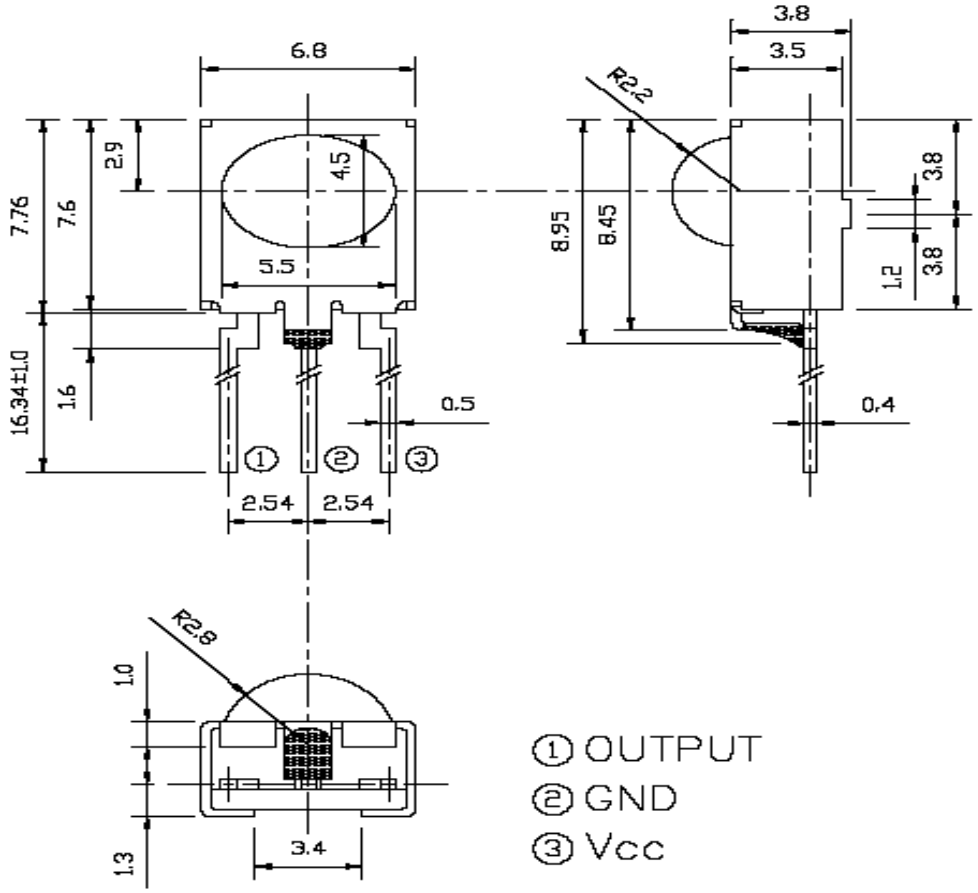
## Package Dimensions




**Notes:** 1.All dimensions are in millimeters.
2.Tolerances unless dimensions ±0.3mm.

## Absolute Maximum Ratings (Ta=25℃)

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

## Recommended Operating Condition

**Supply Voltage Rating: Vcc 4.5V to 5.5V**

## Electro-Optical Characteristics (Ta=25℃, and Vcc=5 V)

| Parameter | Symbol | MIN. | TYP. | MAX. | Unit | Condition |
|---|---|---|---|---|---|---|
| Consumption Current | Icc | --- | --- | 2 | mA | No signal input |
| B.P.F Center Frequency | Fo | --- | 33 | --- | KHz | |
| Peak Wavelength | $\lambda_p$ | --- | 940 | --- | nm | |
| Reception Distance | $L_0$ | 8 | --- | --- | m | At the ray axis Notes 1 |
| | $L_{45}$ | 4 | --- | --- | | |
| Half Angle(Horizontal) | $\Theta_h$ | --- | 45 | --- | deg | |
| Half Angle(Vertical) | $\Theta_v$ | --- | 45 | --- | deg | |
| High Level Pulse Width | $T_H$ | 400 | --- | 800 | μs | At the ray axis Notes 2 |
| Low Level Pulse Width | $T_L$ | 400 | --- | 800 | μs | |
| High Level Output Voltage | $V_H$ | 4.5 | --- | --- | V | |
| Low Level Output Voltage | $V_L$ | --- | 0.2 | 0.5 | V | |

**Notes:**

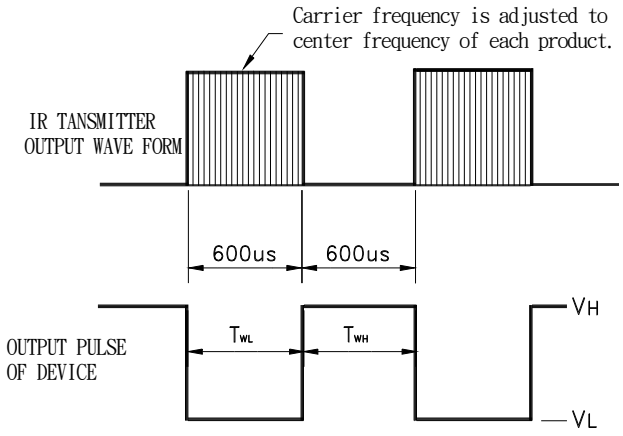
1:The ray receiving surface at a vertex and relation to the ray axis in the range of θ= 0° and θ=45°.

2:A range from 30cm to the arrival distance. Average value of 50 pulses.

Fig.-1

Transmitter Wave Form

D.U.T output Pulse



## Test Method：

The specified electro-optical characteristics is satisfied under the following Conditions at the controllable distance.

①Measurement place

A place that is nothing of extreme light reflected in the room.

②External 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)

③Standard 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).

④Measuring system

According to the measuring system shown in Fig.-3

Fig.-2 Measuring Method

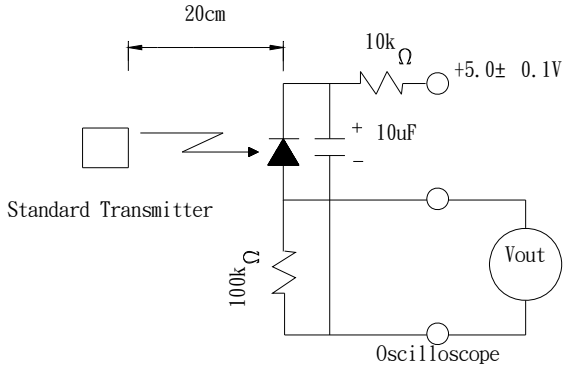
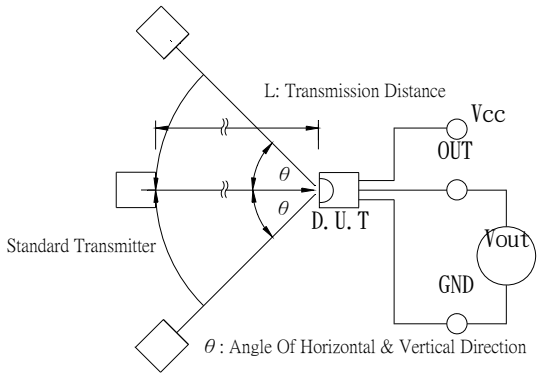
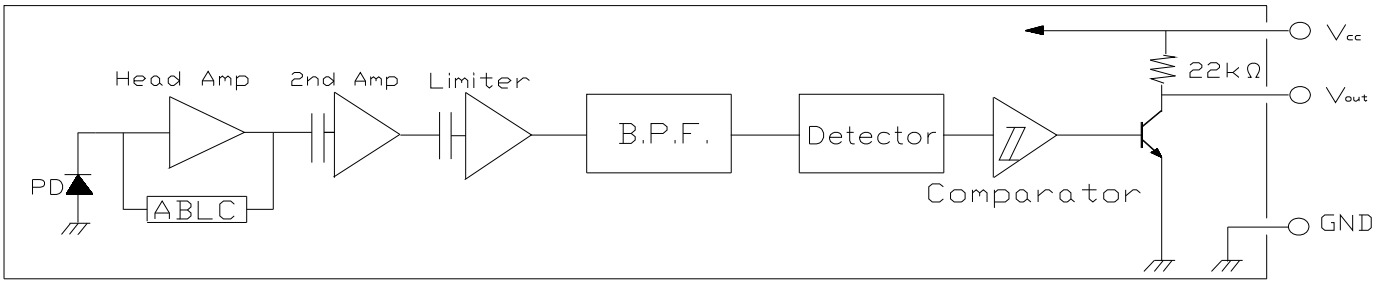


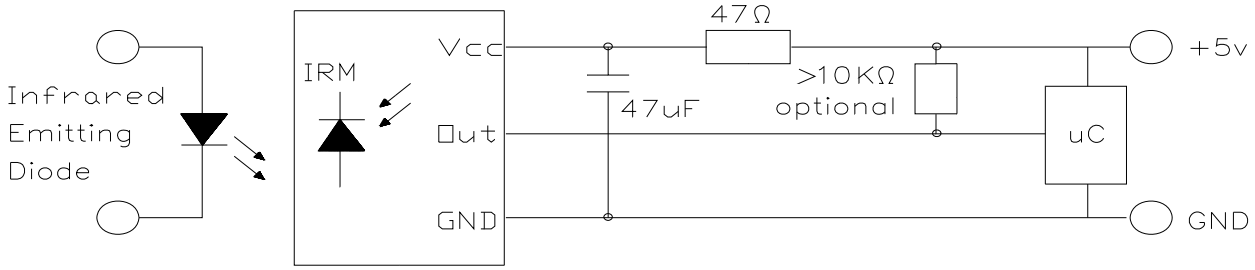

Fig.-3 Measuring System




## Block Diagram：




## Application Circuit：




RC Filter should be connected closely between Vcc pin and GND pin.

## Typical Electro-Optical Characteristics Curves

Fig.-4 Relative Spectral Sensitivity vs. Wavelength

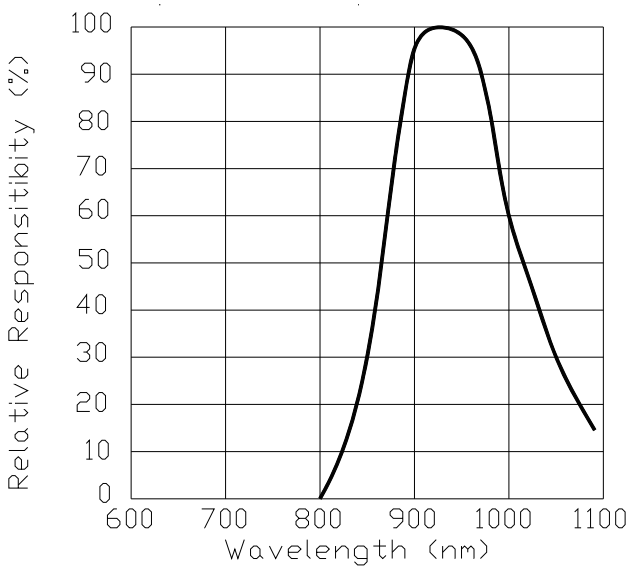



Fig.-5 Relative Transmission Distance vs. Direction

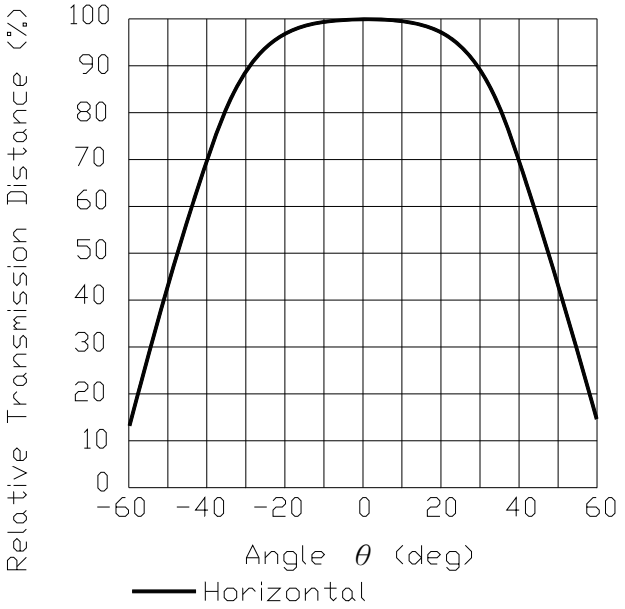



Fig.-6 Output Pulse Length vs. Arrival Distance

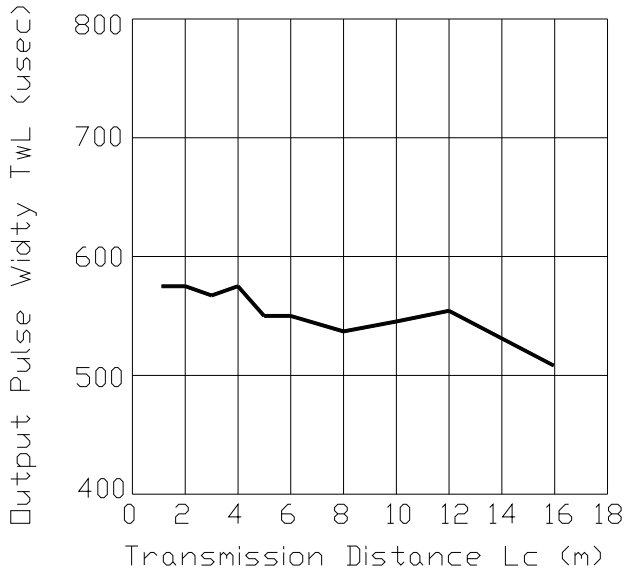
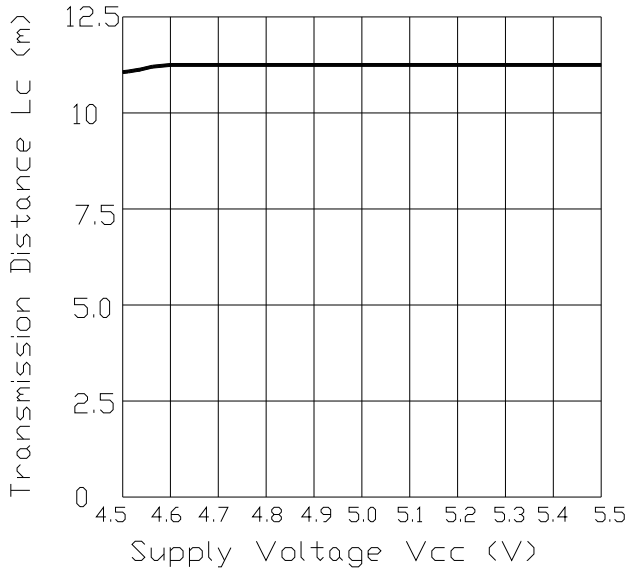



Fig.-7 Arrival Distance vs. Supply Voltage



## Typical Electro-Optical Characteristics Curves

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

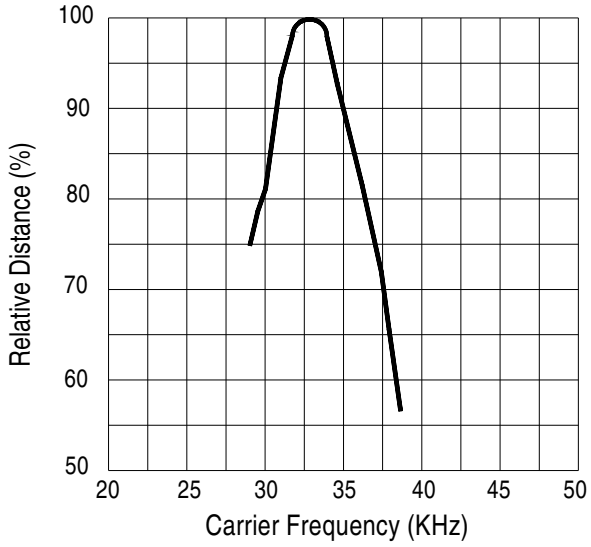
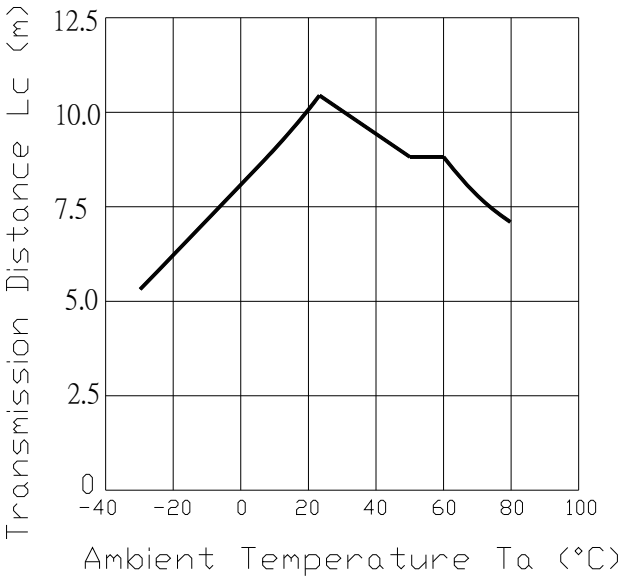



Fig.-9 Arrival Distance vs. Ambient Temperature



## 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) Defective(c) |
|---|---|---|---|
| Temperature cycle | 1 cycle -40℃ ⟷ +100℃ (15min)(5min)(15min) 300 cycle test | $L_0 \leqq L \times 0.8$ $L_{45} \leqq L \times 0.8$ L: Lower specification limit | n=22,c=0 |
| High temperature test | Temp: +100℃ Vcc:6V 1000hrs | | n=22,c=0 |
| Low temperature storage | Temp: -40℃ 1000hrs | | n=22,c=0 |
| High temperature High humidity | Ta: 85℃,RH:85% 1000hrs | | n=22,c=0 |
| Solder heat | Temp: 260±5℃ 10sec 4mm From the bottom of the package. | | n=22,c=0 |

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## Packing Quantity Specification

1. 1200 PCS/1Box
2. 10 Boxes/1Carton

## Label Form Specification


CPN: Customer's Production Number
P/N : Production Number
QTY: Packing Quantity
CAT: Ranks of Luminous Intensity
HUE: Rank of Dominant 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.
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