

EVERLIGHT

ISO9001 QS9000
APPROVED

Miniature Type IRM(Lateral)

IRM-8608S

Features:

- LOW VOLTAGE AND LOW POWER CONSUMPTION.
- PHOTODIODE WITH INTEGRATED CIRCUIT.
- HIGH SENSITIVITY.
- TTL AND CMOS COMPATIBILITY.
- HIGH IMMUNITY AGAINST AMBIENT LIGHT.
- HIGH PROTECTION AGAINST EMI.
- METAL CASE CAN BE CUSTOMIZED.
- LONG RECEPTION DISTANCE.

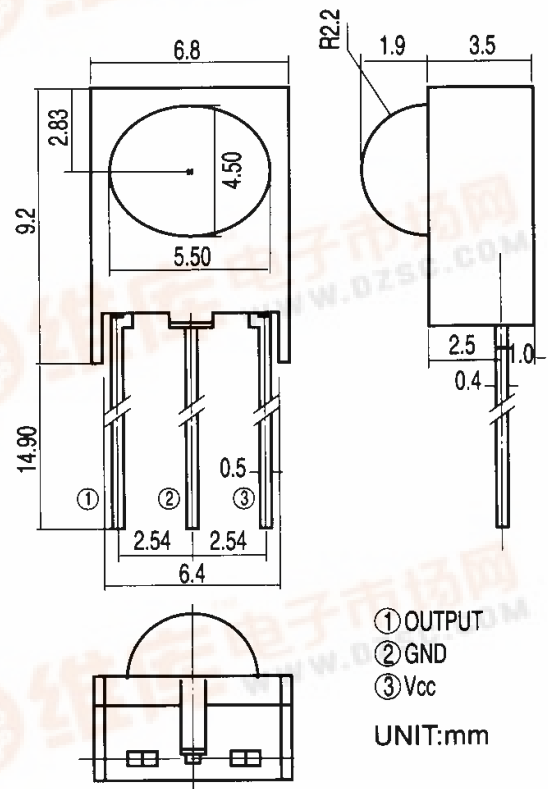
Descriptions:

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 a 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.
- TV.
- VCR.
- Audio equipment.
- Air conditioner.
- CATV set top box.
- Electric fan.
- Multi-media equipment.
- Optical switch.

Package Dimensions:



Absolute Maximum Ratings (Ta=25°C)

| PARAMETER | SYMBOL | RATING | UNIT |
|-------------------------|--------|-----------|------|
| Supply Voltage | Vcc | 0 ~ 6.3 | V |
| Operating Temperature | Topr | -30 ~ +85 | °C |
| Storage Temperature | Tstg | -40 ~ +85 | °C |
| Soldering Temperature * | Tsol | 260 | °C |

*4mm from body, < 5 sec





ISO9001 QS9000
APPROVED

Electro-Optical Characteristics (Ta=25°C)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITION |
|---------------------------|-------------|------|------|------|---------|------------------------|
| Supply Voltage | Vcc | 4.5 | 5 | 5.5 | V | DC Voltage |
| Supply Current | Icc | - | - | 3 | mA | No Signal Input |
| B.P.F Center Frequency | fo | - | 38 | - | KHz | - |
| Peak Wavelength | λ_p | - | 940 | - | nm | - |
| Reception Distance | d | 8 | - | - | m | At The Ray Axis *1 |
| | | 4 | - | - | | |
| Half Angle (Horizontal) | θ_h | - | 45 | - | deg | - |
| Half Angle (Vertical) | θ_v | - | 35 | - | deg | - |
| High Level Pulse Width | TH | 400 | - | 800 | μs | *2 |
| Low Level Pulse Width | TL | 400 | - | 800 | μs | |
| High Level Output Voltage | VH | 4.5 | - | - | V | 30cm Over The Ray Axis |
| Low Level Output Voltage | VL | - | 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 45° .

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

NOTE:

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 reflect in the room.

2. External light

Project the light of ordinary white fluorescent lamps which are not high frequency lamps, they must be less than 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 waveform shown in Fig.-1.

According to the measuring method shown in Fig.-2. the standard transmitter is specified.

However, the infrared photodiode to be used for the transmitter should be $\lambda_p=940\text{nm}$, $\Delta\lambda=50\text{nm}$. The photodiode used is PD438B ($V_r=5\text{V}$). (Standard light/Light source temperature 2856°K).

The carrier frequency differs depending on the items and details shown in table-1.

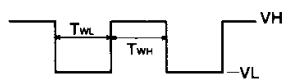
4. Measuring system

According to the measuring system shown in Fig.-3

Fig.-1 Transmitter Output



D.U.T. Output Pulse



Block Diagram:

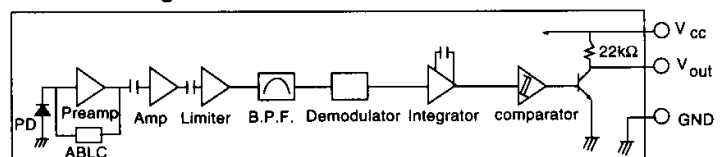


Fig.-2 Measuring Method

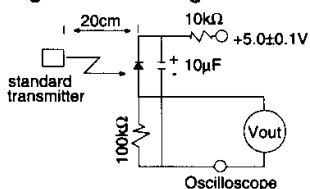
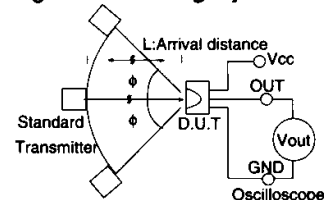


Fig.-3 Measuring System



Application Circuit:

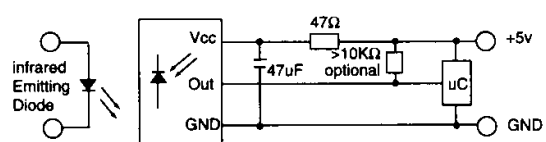


Fig-1 RELATIVE SPECTRAL SENSITIVITY VS. WAVELENGTH

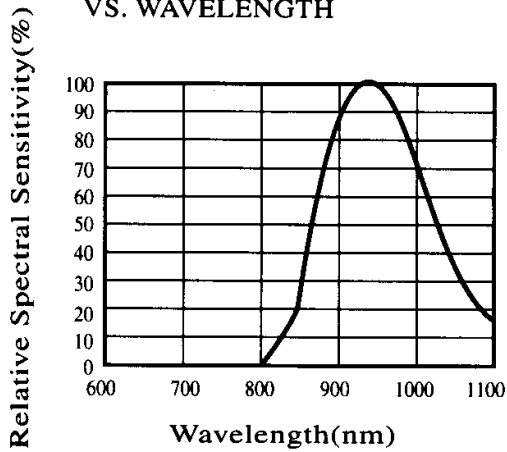


Fig-2 RELATIVE TRANSMISSION DISTANCE VS. DIRECTION

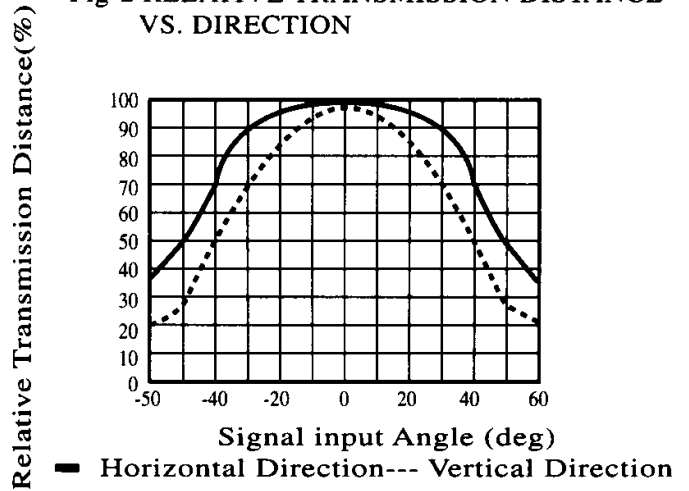


Fig-3 OUTPUT PULSE LENGTH VS. ARRIVAL DISTANCE

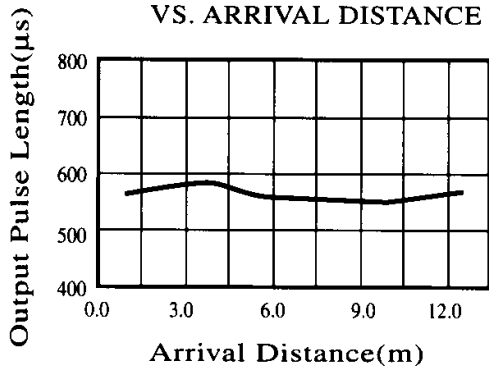


Fig-4 ARRIVAL DISTANCE VS. SUPPLY VOLTAGE

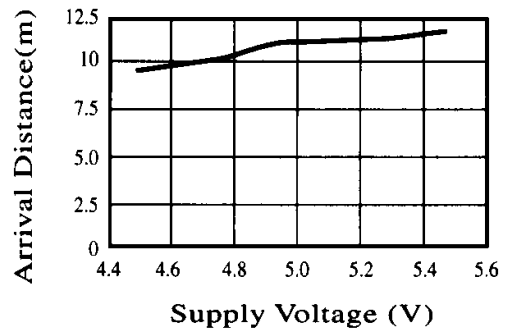


Fig-5 RELATIVE TRANSMISSION DISTANCE VS. CENTER CARRIER FREQUENCY

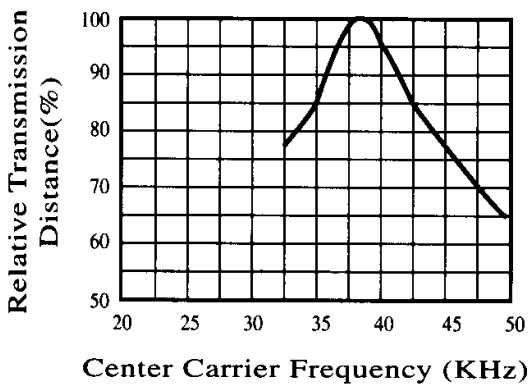
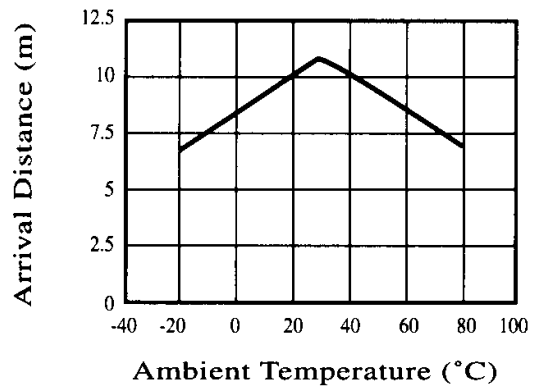


Fig-6 ARRIVAL DISTANCE VS. AMBIENT TEMPERATURE





ISO9001 QS9000
APPROVED

Reliability Test Item and Condition

| NO | ITEM | TEST CONDITION | DEVICE HOURS/CYCLE | SAMPLE SIZE | AC/RE |
|----|---------------------------------|---|--------------------|-------------|-------|
| 1 | Solder Heat | TEMP.:260°C±5°C | 5 SEC | 22PCS/each | 0/1 |
| 2 | Temperature Cycling | H: +85°C 30MIN. +25°C↓ 5MIN. L:-40°C 30MIN. | 50 CYCLE | 22PCS/each | 0/1 |
| 3 | Thermal Shock | H:+85°C 5MIN. ↓ 10SEC L:-10°C 5MIN | 50 CYCLE | 22PCS/each | 0/1 |
| 4 | High Temperature Storage | TEMP:85°C | 1000 HRS | 22PCS/each | 0/1 |
| 5 | Low Temperature Storage | TEMP:-40°C | 1000 HRS | 22PCS/each | 0/1 |
| 6 | DC Operating Life | Vcc=5V | 1000 HRS | 22PCS/each | 0/1 |
| 7 | High Temperature/ High Humidity | TA:85°C RH:85% | 1000 HRS | 22PCS/each | 0/1 |

Inspection standard

Among electrical characteristics, total numbers shall be inspected on items blow.

@ Front distance between emitter & detector.

@ Supply current.

@ H level output voltage.

@ L level output voltage.

Items except above mentioned are not inspected particularly, but shall fully satisfy the standard value.

| | CRITICAL DEFECT(CR) | MAJOR DEFECT(MA) | MINOR DEFECT(MI) |
|-----|---------------------|------------------|------------------|
| AQL | 0.1 | 0.65 | 1.5 |