

# GD Dongyi Optoelectronics Co.Ltd.

## SPECIFICATION FOR APPROVAL

|                            |  |
|----------------------------|--|
| <b>Customer</b>            |  |
| <b>Product Name</b>        |  |
| <b>Version number</b>      |  |
| <b>Dimension</b>           |  |
| <b>Texture of material</b> |  |
| <b>Number</b>              |  |
| <b>Date</b>                |  |

### Product confirm and sign

|                               |                            |                           |                |                  |
|-------------------------------|----------------------------|---------------------------|----------------|------------------|
| <b>Engineering Department</b> | <b>Prepared Department</b> | <b>Quality Department</b> | <b>Checked</b> | <b>Signature</b> |
|                               |                            |                           |                |                  |

INSPECT RESULT

☐ ACCEPT☐ REJECT

### Customer confirm and sign

|                               |                           |                |                 |                  |
|-------------------------------|---------------------------|----------------|-----------------|------------------|
| <b>Engineering Department</b> | <b>Quality Department</b> | <b>Checked</b> | <b>Approved</b> | <b>Signature</b> |
|                               |                           |                |                 |                  |

INSPECT RESULT

☐ ACCEPT☐ REJECT

REMARK:

■ sample

**Product Name :** \_\_\_\_\_ **Product Name :** \_\_\_\_\_**Quality :** \_\_\_\_\_ **Date :** \_\_\_\_\_

## IR Receiver Modules for Remote Control Systems

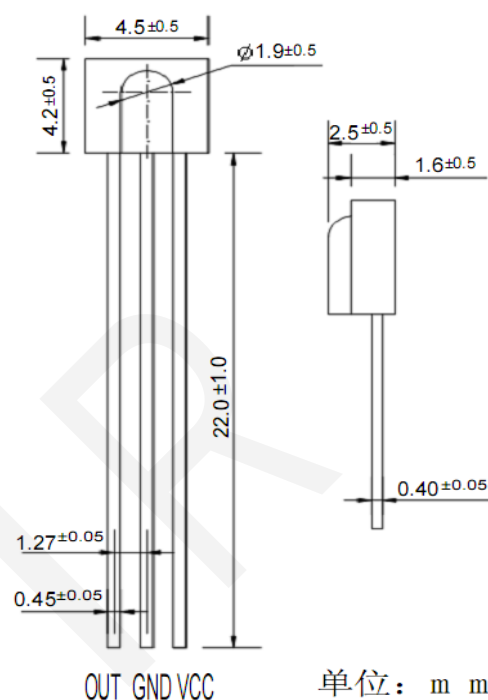
### Description

The IR Receiver is remote control receiver modules. Pin diode and receiver IC are assembled on one module. Small-sized, light-weight, and low current consumption. modules have been achieved by using resin mold. The demodulated output signal can directly be decoded by a microprocessor. The main benefit is the reliable function even in disturbed ambient and the protection against uncontrolled output pulses.

### Features

- ◆ Supply Voltage Range: 2.5V to 6.0 V
- ◆ TTL and CMOS compatibility
- ◆ Photo detector and preamplifier in one package.
- ◆ Internal filter for PCM frequency
- ◆ Output active low
- ◆ Enhanced Immunity against all kinds of disturbance light
- ◆ No occurrence of disturbance pulses at output pin with in nominal conditions.
- ◆ Short settling time after power On.
- ◆ Meet RoHS

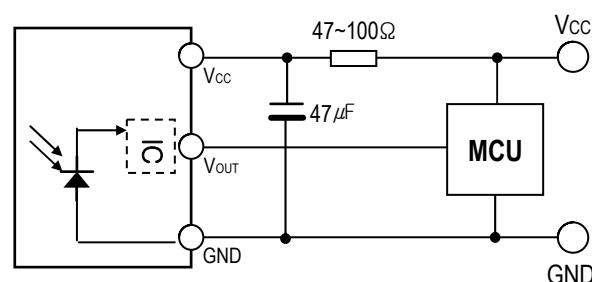
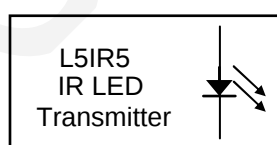
### Dimensions



### Applications

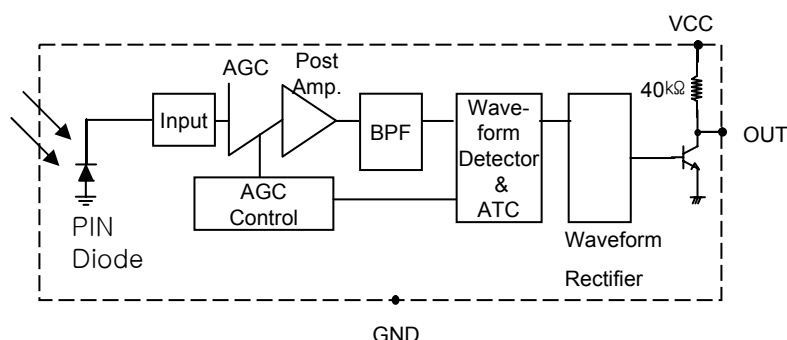
- ◆ Audio video applications
- ◆ Home appliances
- ◆ Toy applications
- ◆ Remote control equipment

### Application Circuit



R-C filter recommended to suppress power supply disturbances.  
R-C filter should be connected closely between Vcc pin and GND pin.

### Block Diagram



**Recommended Operating Conditions**

(Ta = 25°C)

| Parameter             | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------------|--------|------|------|------|------|------------|
| Operating Voltage     | Vcc    | 2.5  |      | 6.0  | V    |            |
| Input Frequency       | fin    |      | 37.9 |      | kHz  |            |
| Operating Temperature | Top    | -20  | 25   | 80   |      |            |

**Absolute Maximum Ratings**

(Ta = 25°C)

| Parameter             | Symbol | Min.      | Max. | Unit | Conditions |
|-----------------------|--------|-----------|------|------|------------|
| Supply Voltage        | Vcc    | 0         | 6.0  | V    |            |
| Output Voltage        | Vout   | 0         | 6.0  | V    |            |
| Output Current        | Iout   | 0         | 2.5  | mA   |            |
| Storage Temperature   | Tst    | -20       | 80   | °C   |            |
| Soldering Temperature | Tsd    | 260°C±5°C |      | °C   | Max 5 sec  |

**Electro-optical Characteristics**

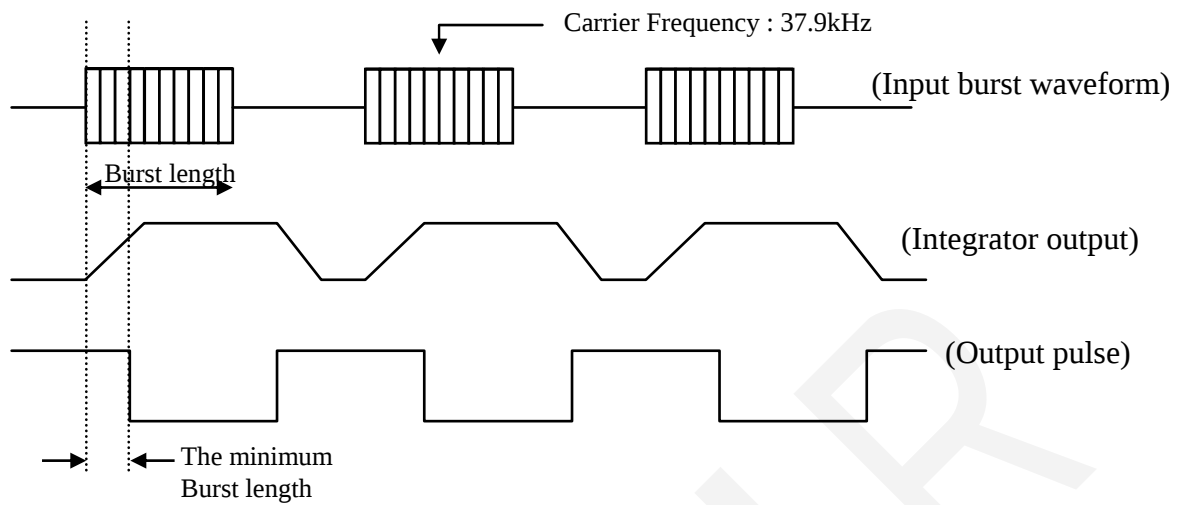
Specifications hold over the Recommended Operating Conditions, unless otherwise noted herein.

All values are at 25 °C and Vcc=3.0V/5.0V

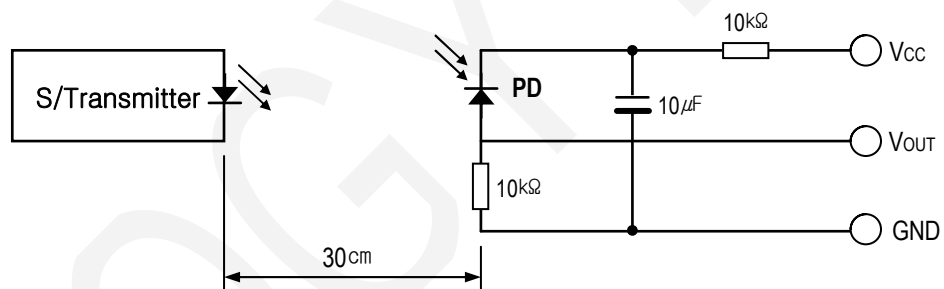
(Ta = 25°C)

| Parameter                 | Symbol | Min. | Typ. | Max. | Unit | Conditions                                         |
|---------------------------|--------|------|------|------|------|----------------------------------------------------|
| Supply Current            | Icc    | --   | 250  | 330  | uA   | Iin=0 uA, Vcc=3V                                   |
|                           |        |      | 270  | 350  | uA   | Iin=0 uA, Vcc=5V                                   |
| Max. Voltage gain         | Av     | 75   | 80   | 85   | dB   | fin=37.9kHz, Vin=30uVp-p                           |
| BPF Bandwidth             | fBW    | 3.5  | 6.0  | 8.5  | kHz  | -3dB Bandwidth<br>Vin=30uVp-p                      |
| Output pulse width        | tpW1   | 500  | -    | 800  | μs   | fin=37.9kHz, burst wave<br>Vin=500 μVp-p<br>note*1 |
|                           | tpW2   | 500  | -    | 800  | μs   | fin=37.9kHz, burst wave<br>Vin= 50mVp-p<br>note*1  |
| Low level output voltage  | VOL    | -    | 0.2  | 0.4  | V    | Isink=2.0mA                                        |
| High level output voltage | VOH    | 2.7  | 3.0  | -    | V    | Vcc=3V                                             |
|                           |        | 4.7  | 5.0  | -    | V    | Vcc=5V                                             |

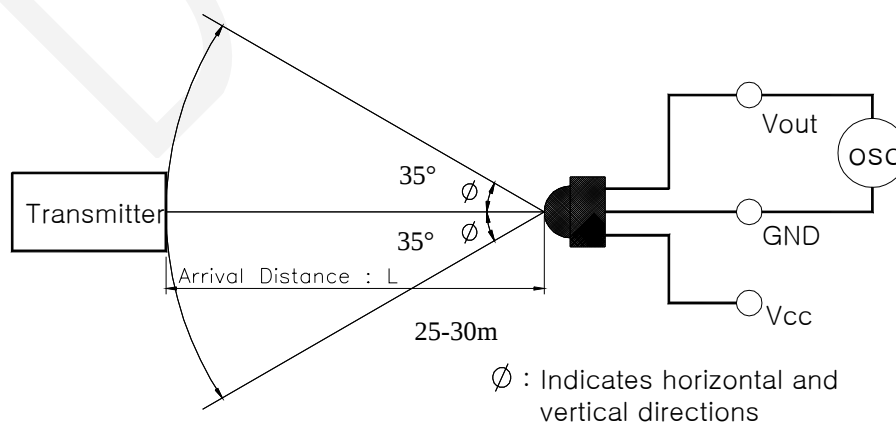
[ Fig. 1 ] Data Signal diagram



[ Fig.2 ] Transmitter



[ Fig.3 ] Test condition of arrival distance

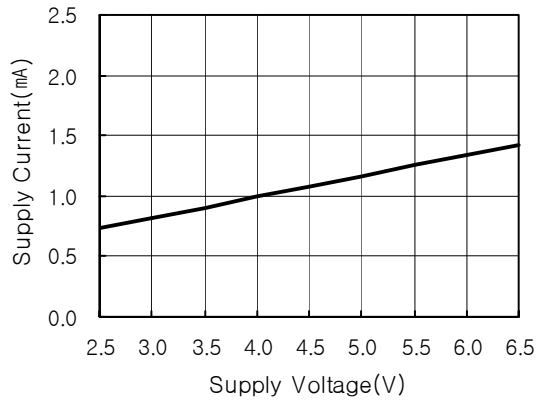


[ Measurement condition for arrival distance ]

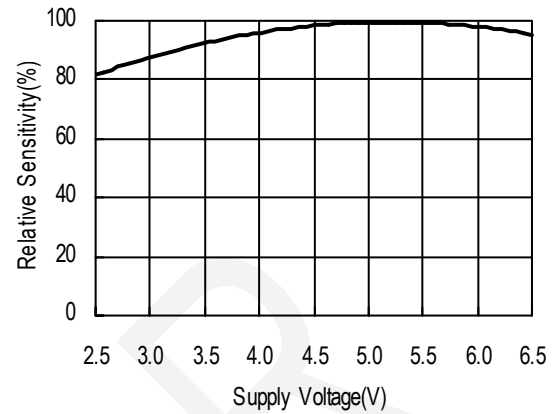
Ambient light source : Detecting surface illumination shall be irradiate  $200 \pm 50$  Lux under ordinary white fluorescence lamp without high frequency lighting

## Electrical/Optical Characteristics

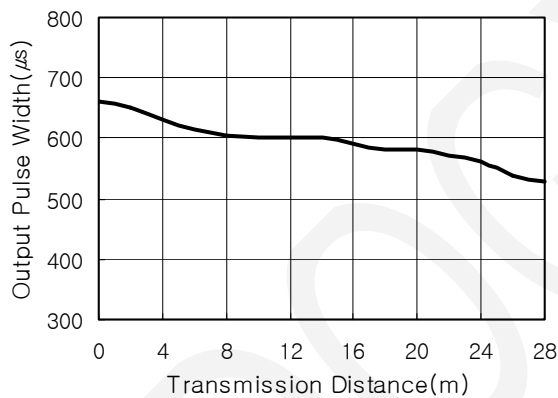
[ Fig.4 ] Supply Current vs. Voltage



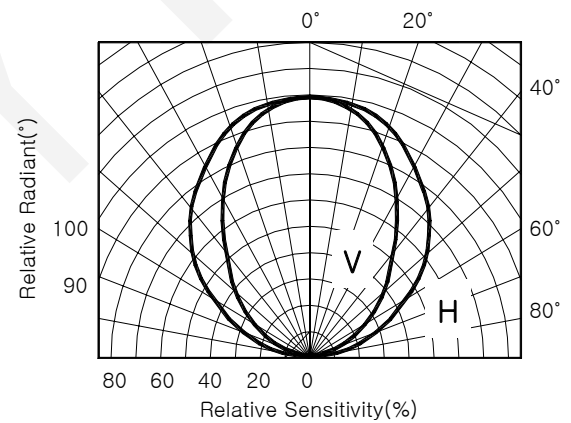
[ Fig.5 ] Sensitivity vs. Supply Voltage



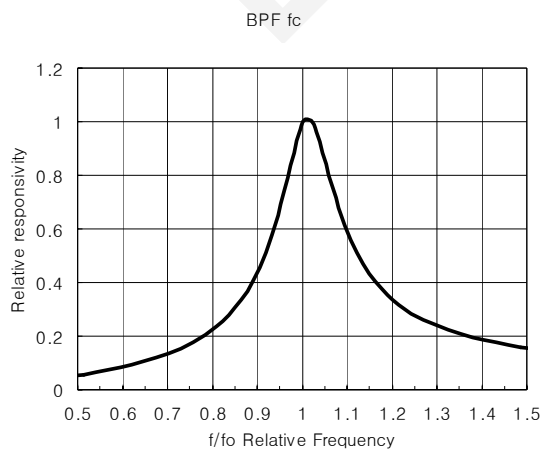
[ Fig.6 ] Output Pulse Width vs. Distance



[ Fig.7 ] Directivity (Horizontal)



[ Fig.8 ] BPF Fc Curve



## ESD Test Results

| Parameter            | Conditions          | Specification | Results |
|----------------------|---------------------|---------------|---------|
| Machine Model        | C=200pF,<br>R=0Ω    | Min ±200V     | >±200V  |
| Human Body Model     | C=100pF,<br>R=1.5kΩ | Min ±2000V    | >±2000V |
| Charged Device Model | R=100MΩ, 1Ω         | Min ±800V     | >±800V  |

## Decoding Protocol

| Data Format                   |   |
|-------------------------------|---|
| Toshiba                       | √ |
| X-Sat/Mitsubishi              | √ |
| NEC                           | √ |
| Sharp                         | × |
| RC5_Philips                   | √ |
| RC6_Philips                   | × |
| RCA_Thomson                   | √ |
| Sony 12bit                    | √ |
| Sony 15bit/20bit              | √ |
| XMP/RCMM                      | × |
| Continuous code               | √ |
| Powermeter code(standard)     | √ |
| Powermeter code(>200 “0” bit) | √ |

## Precautions

### 1.Keep in storage

Storage environment of Infrared receiver head with temperature not exceeding 30℃ and relative humidity not exceeding 70%.It is recommended that Infrared receiver head be used in the original box for no more than three months. If longer storage time is required, put it in the drying box and add desiccant or filled with nitrogen.

### 2.Clean

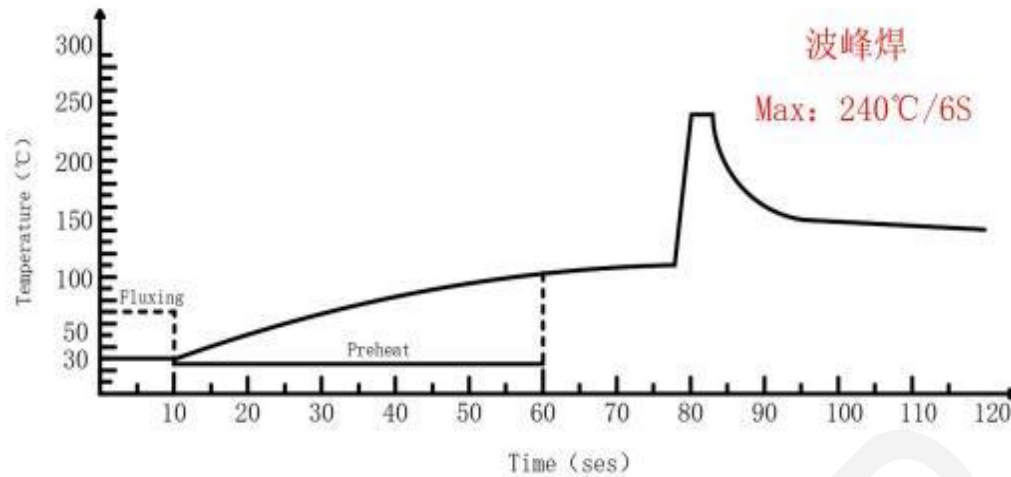
Special care must be taken when cleaning colloids with chemicals, as some chemicals have damage to the colloidal surface and cause fading such as trichloroethylene, propylene, ketone, etc.It can be wiped and soaked with ethanol for no more than 3 minutes at room temperature.

### 3.Feet assembly

- (1) It must be 2 mm from the colloid to bend the bracket.
- (2) Support forming must be done with fixtures or by a professional.
- (3) Support forming must be completed before welding.
- (4) The pins and spacing are the same as on the circuit board.
- (5) Welding must be performed at normal temperature and when Infrared receiver head is normally welded to the PCB plate, avoid applying mechanical pressure at LED pins at a minimum.

### 4. Weld

When welding, welding must be conducted below 2mm of colloid bottom. When welding, try to avoid soaking Infrared receiver head colloid. After welding, avoid adding external force on the pin or shaking Infrared receiver head colloid.



### 5. Electrostatic protection

High increase of static electricity and current will damage Infrared receiver head. Use antistatic devices such as protective belts and gloves. Note: human discharge mode HBM <1000V; machine discharge mode <100V.

### 6. Other

Do not apply unnecessary external force to the pins of the infrared receiver head; Pay attention to protecting the receiving surface of the infrared receiver head, Staining can affect reception function.