

## Micro Embedded Infrared Receiver Module

0-05-07-07 Preliminary

Module No.: PIC-8102ASE

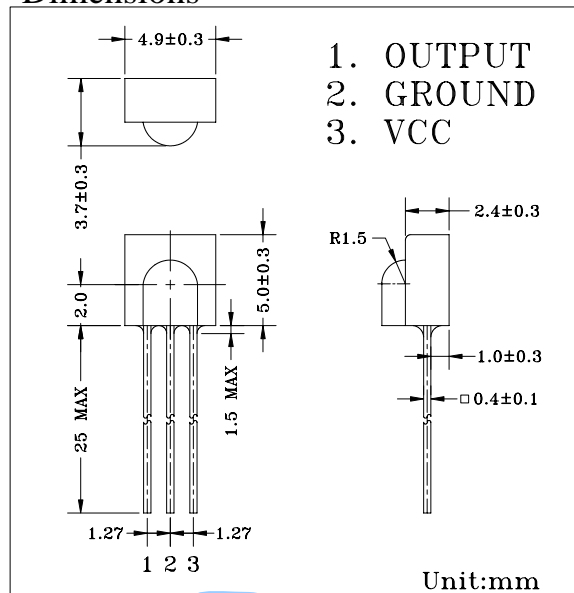
### 1. Features:

- Microminiature size
- Embedded protection
- Built-in exclusive IC
- Wide half angle & long reception distance
- Continuous Signal Acceptable
- Suitable for R-C oscillating transmitter
- High protection ability to EMI
- Side view
- Wide voltage operating: 2.7V ~ 5.5V

### 2. Applications

- ▣ AV instruments (Audio, TV, VCR, CD player)
- ▣ Home appliances (Air-conditioner, Fan, Light.)
- ▣ Remote control for wireless devices

### Dimensions



### 3. Absolute Maximum Ratings

(Ta=25°C)

| Parameter                | Symbol | Ratings   | Unit |
|--------------------------|--------|-----------|------|
| Supply Voltage           | Vcc    | 6.0       | V    |
| Operating Temperature    | Topr   | -10 ~ +60 | °C   |
| Storage Temperature      | Tstg   | -20 ~ +75 | °C   |
| Soldering Temperature *1 | Tsol   | 240       | °C   |

\*1 At the position of 2mm from the bottom of the package within 5 seconds.

### 4. Electro-optical Characteristics

(Ta=25°C)

| Parameter                 | Symbol | Conditions         | Min.               | Typ.    | Max. | Unit |
|---------------------------|--------|--------------------|--------------------|---------|------|------|
| Supply Voltage            | Vcc    |                    | 2.7                |         | 5.5  | V    |
| Current Consumption       | Icc    | Input Signal = 0   |                    | 1.0     | 1.5  | mA   |
| Reception Distance        | d      | 200±5Lux, Vcc=3.0V | 7                  | 10      |      | m    |
| Half Angle (Horizontal)   | Δθh    |                    |                    | ±45     |      | deg  |
| Half Angle (Vertical)     | Δθv    |                    |                    | +45/-40 |      | deg  |
| B.P.F. Center Frequency   | Fo     |                    |                    | 37.9    |      | kHz  |
| Peak Wavelength           | λp     |                    |                    | 940     |      | nm   |
| Signal Output             | So     |                    | --- Active Low --- |         |      |      |
| High Level Output Voltage | Voh    |                    | Vcc-0.5            |         |      | V    |
| Low Level Output Voltage  | Vol    |                    |                    | 0.2     | 0.4  | V    |
| High Level Pulse Width    | Twh    | Burst Wave = 600μs | 500                | 600     | 700  | μs   |
| Low Level Pulse Width     | Twl    |                    | 500                | 600     | 700  | μs   |

### 5. Reliability Test Items

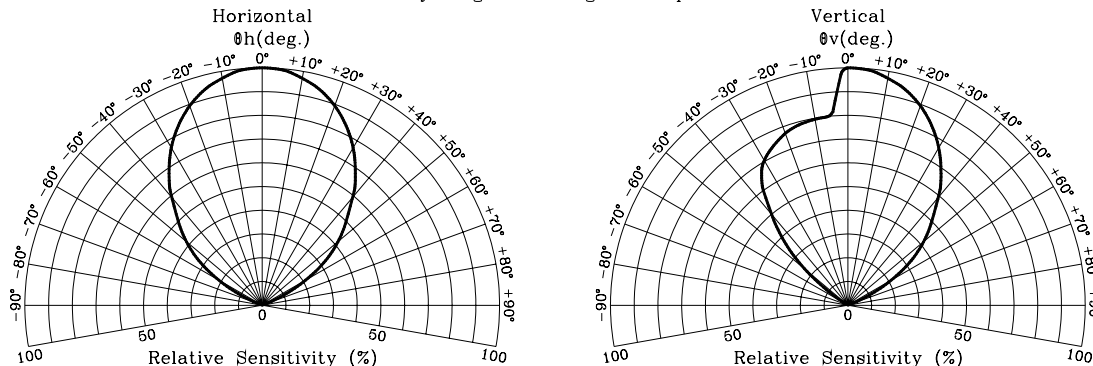
(Ta=25°C)

| Test Items                          | Test Conditions               | Ratings   |
|-------------------------------------|-------------------------------|-----------|
| High Temperature Storage            | Ta=60°C, Vcc=3.0V             | t=240hr.  |
| Low Temperature Storage             | Ta=-10°C, Vcc=3.0V            | t=240hr.  |
| High Temperature High Humid Storage | Ta=40°C, 90%RH, Vcc=3.0V      | t=240hr.  |
| Temperature Cycling                 | -20°C (30min) ~ +70°C (30min) | 20 cycles |
| Soldering Heat                      | 240±5°C                       | 5 sec.    |

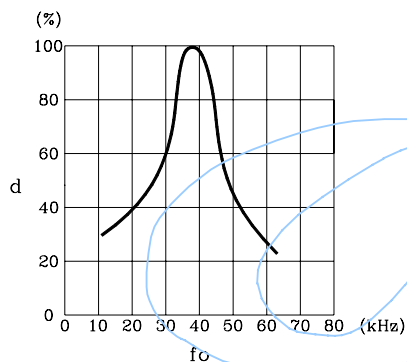
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Sensitivity Diagram – Angular Displacement



Relative Reception Distance vs Transmitter Carrier Frequency

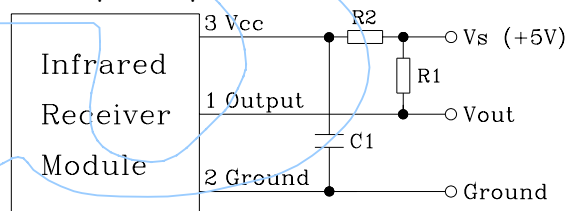


In case of noisy power supply, please serially insert  $100\Omega$  resistor and about  $47\mu\text{F}$  electrolytic capacitor in  $V_{cc}$  line and ground as follows:-

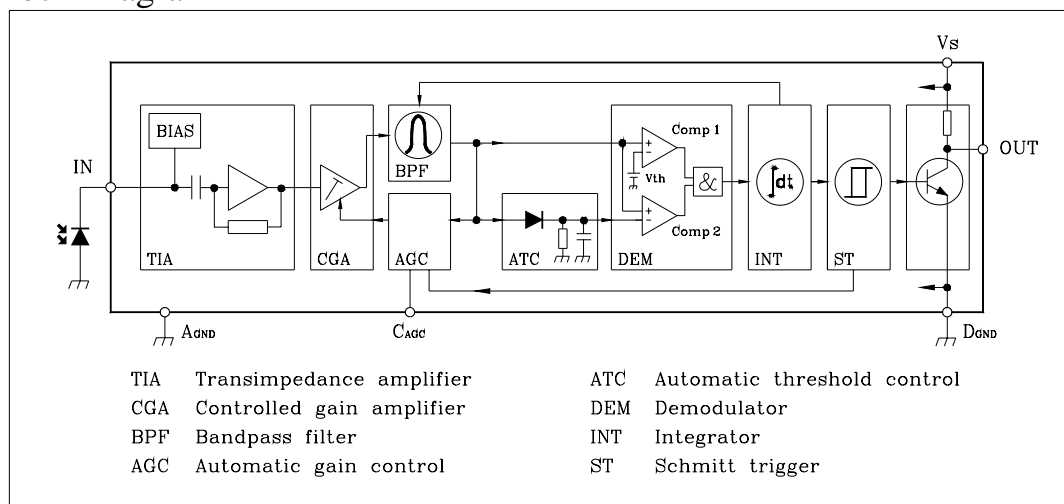
$R1=22\text{k}\Omega$

$R2=47\Omega\sim 100\Omega$

$C1=47\mu\text{F}\sim 100\mu\text{F}$



## Block Diagram



## Standard Inspection

Among electrical characteristics, total quantity will be inspected as below:-

- ⊙ Distance between emitter and detector
- ⊙ Current consumption
- ⊙ H level output voltage
- ⊙ L level output voltage

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### Testing Method

Distance between emitter and detector specifies maximum distance that output waveform satisfies the standard (FIG-3) under the conditions below against the standard transmitter.

- Measuring place  
Indoor without extreme reflection of light.
- Ambient light source  
Detecting surface illumination is  $200 \pm 5$  Lux under ordinary white fluorescence lamp of no high frequency lightning.
- Standard transmitter  
Transmitter wave indicated in FIG-2 of standard transmitter is arranged to satisfy  $V_o \geq 50$  mVp-p under the measuring circuit specified in FIG-3

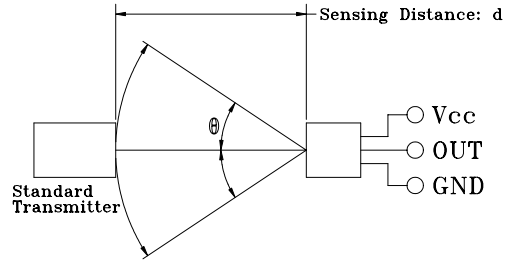
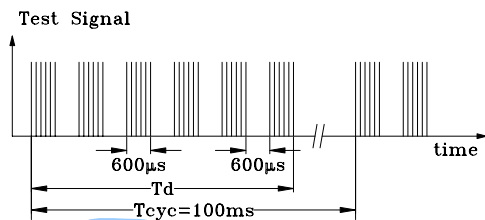


FIG-1



$T_{cyc} - T_d > 25$  ms is recommended for optimal function

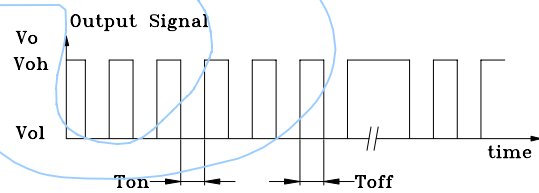


FIG-2

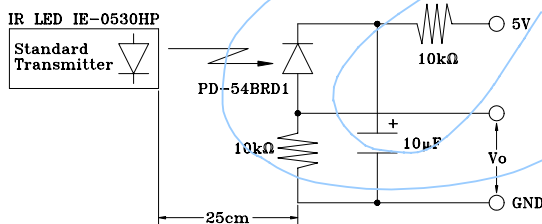


FIG-3 Power Output Measurement Circuit

### Embedded Design

This design (Fig-4) is to install a metal case on the carrier lead frame to cover the semiconductor components, in order to shield it electromagnetically within the epoxy resin encapsulation.

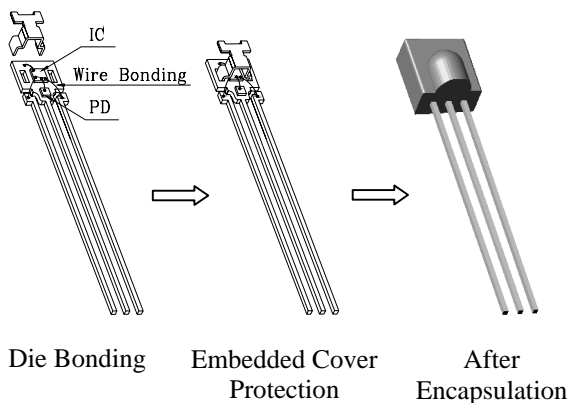


FIG-4 Embedded Design

### Precautions for Use

- Store and use where there is no force causing transformation or change in quality.
- Store and use where there is no corrosive gas or sea (salt) breeze.
- Store and use where there is no extreme humidity.
- Solder the lead pin within the condition of ratings. After soldering, do not add exterior force.
- Do not wash this device. Wipe the stains of diode side with a soft cloth. You can use the solvent, ethyl alcohol, or methyl alcohol only.
- To prevent static electricity damage to the pre-amp, make sure that the human body, the soldering iron are connected to ground before using.