

## Infrared Receiver Module

0-05-03-15 Preliminary

Module No.: PIC-2031TMB-THA

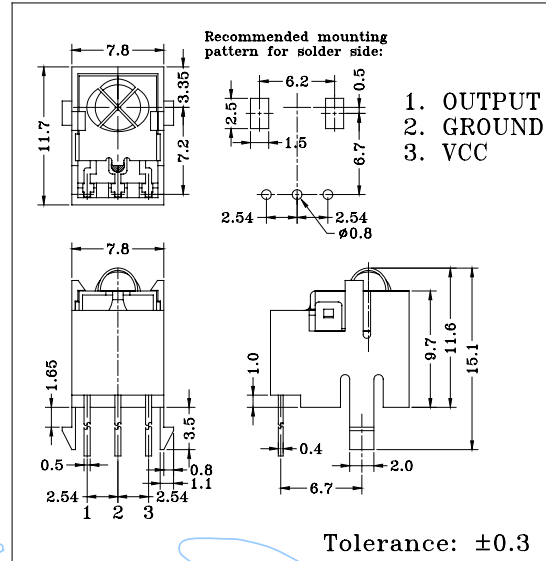
### 1. Features:

- Miniature size
- Built-in exclusive IC
- Wide half angle & long reception distance
- Good noise-proof capability
- High immunity against ambient light
- High protection ability to EMI
- Back Metal Cover
- Top view and Mesh
- Case Holder

### 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

( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Ratings	Unit
Supply Voltage	Vcc	6.0	V
Operating Temperature	Topr	-10 ~ +60	$^\circ\text{C}$
Storage Temperature	Tstg	-20 ~ +75	$^\circ\text{C}$
Soldering Temperature *1	Tsol	240	$^\circ\text{C}$

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

### 4. Electro-optical Characteristics

( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply voltage	Vcc		4.5		5.5	V
Current Consumption	Icc	Input Signal = 0	0.7	1.0	1.5	mA
Reception Distance	d	Standard Signal	7	15		m
Half Angle	$\Delta\theta$			$\pm 45$		deg
B.P.F. Center Frequency	Fo			37.9		kHz
Peak Wavelength	$\lambda_p$			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 = 600 $\mu\text{s}$	500	600	700	$\mu\text{s}$
Low Level Pulse Width	Twl		500	600	700	$\mu\text{s}$

### 5. Reliability Test Items

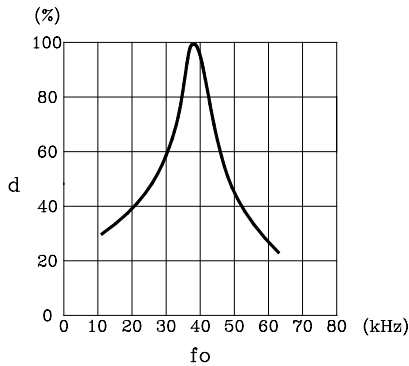
( $T_a=25^\circ\text{C}$ )

Test Items	Test Conditions	Ratings
High Temperature Storage	$T_a=60^\circ\text{C}$ , Vcc=5.0V	t=240hr.
Low Temperature Storage	$T_a=-10^\circ\text{C}$ , Vcc=5.0V	t=240hr.
High Temperature High Humid Storage	$T_a=60^\circ\text{C}$ , 90%RH, Vcc=5.0V	t=240hr.
Temperature Cycling	$-20^\circ\text{C}$ (30min) ~ $+75^\circ\text{C}$ (30min)	20 cycles
Soldering Heat	$240\pm 5^\circ\text{C}$	5 sec.

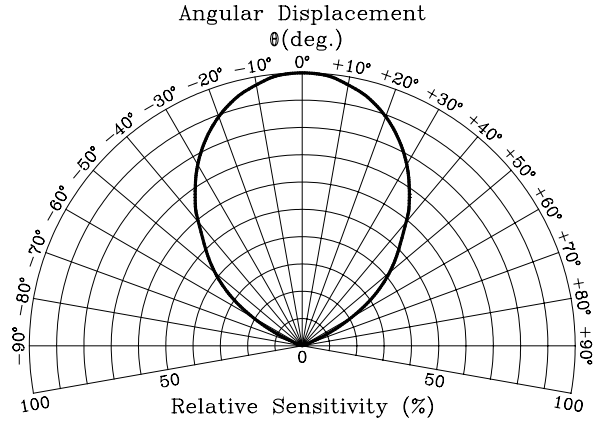
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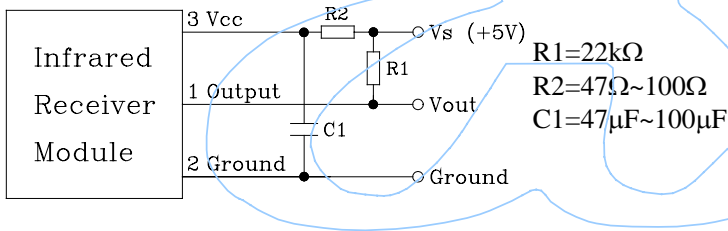
Relative Reception Distance vs Transmitter Carrier Frequency



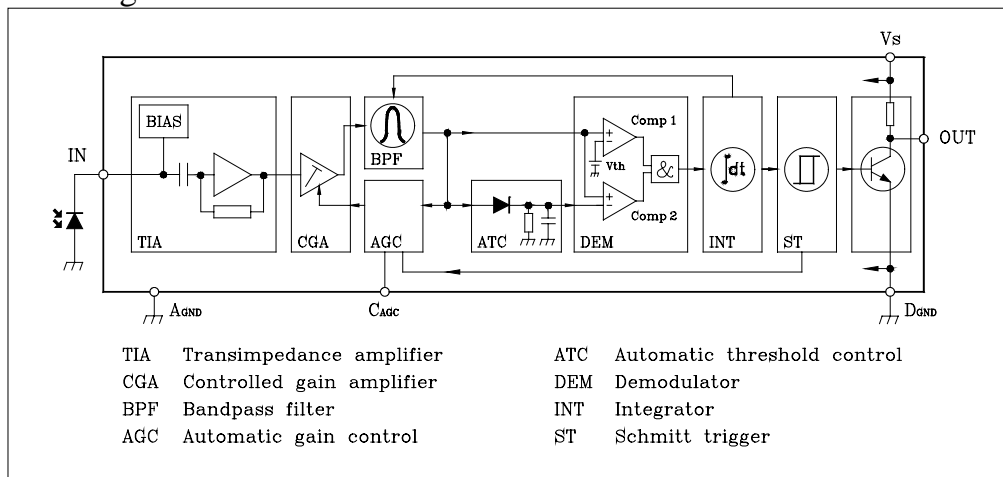
Sensitivity Diagram



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



### Block Diagram



### Standard Inspection

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

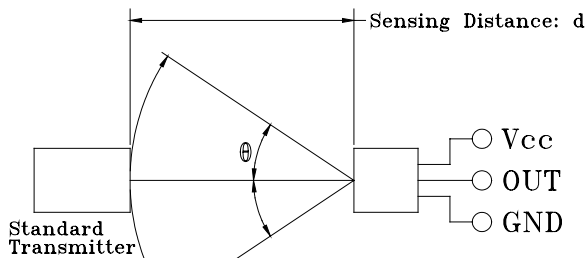
- ⊙ Distance between emitter and detector
- ⊙ Current consumption
- ⊙ H level output voltage
- ⊙ L level output voltage

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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.

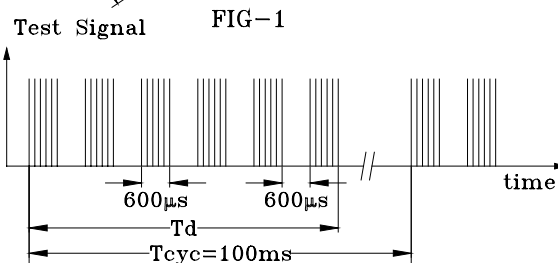


a. Measuring place  
Indoor without extreme reflection of light.

b. Ambient light source  
Detecting surface illumination is  $200 \pm 5$  Lux under ordinary white fluorescence lamp of no high frequency lightning.

c. Standard transmitter

Transmitter wave indicated in FIG-2 of standard transmitter is arranged to satisfy  $V_o \geq 50mV_{p-p}$  under the measuring circuit specified in FIG-3



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

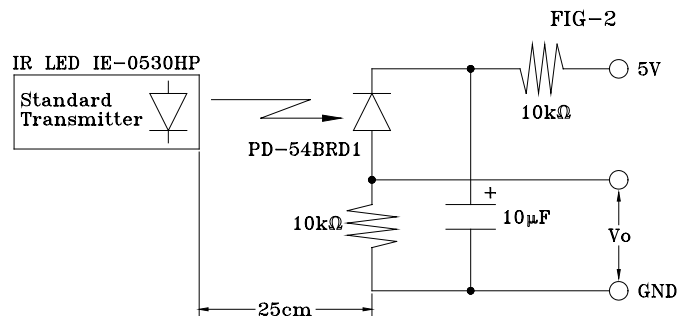
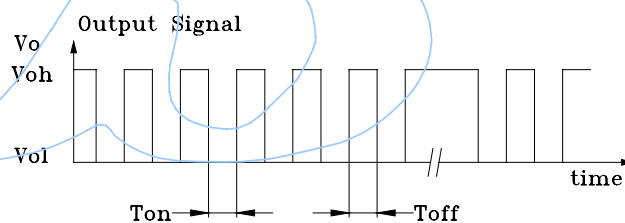


FIG-3 Power Output Measurement Circuit

### 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.