

SMD Micro Embedded Infrared Receiver Module

0-05-07-08 Preliminary

Module No.: PIC-9002ATE

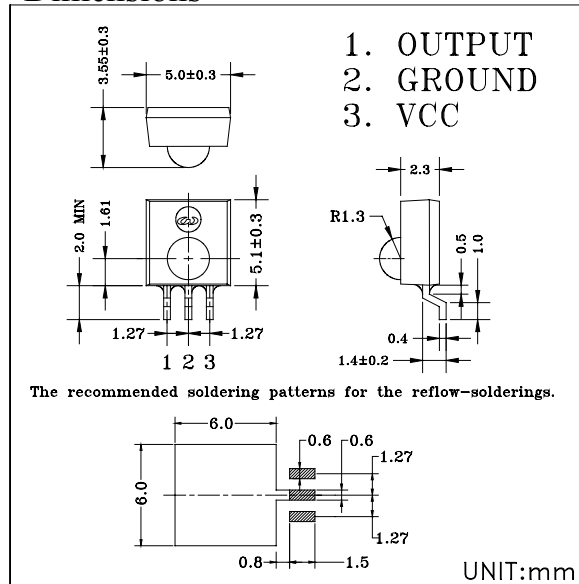
1. Features:

- 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
- Top 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	1.2	mA
Reception Distance	d	200±5Lux, Vcc=3.0V	7	10		m
Half Angle	Δθh			±45		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

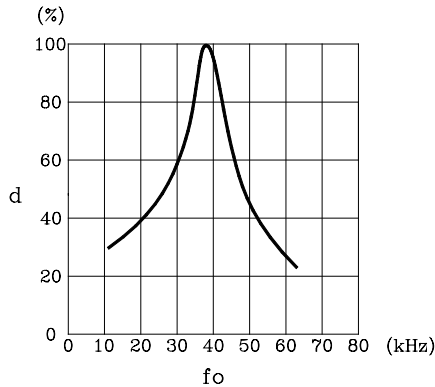
(Ta=25°C)

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.

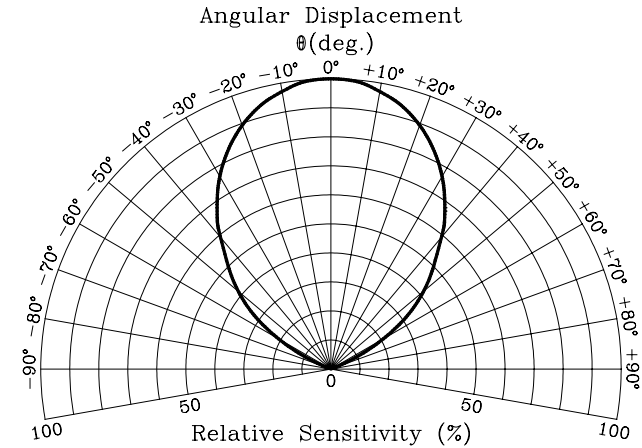
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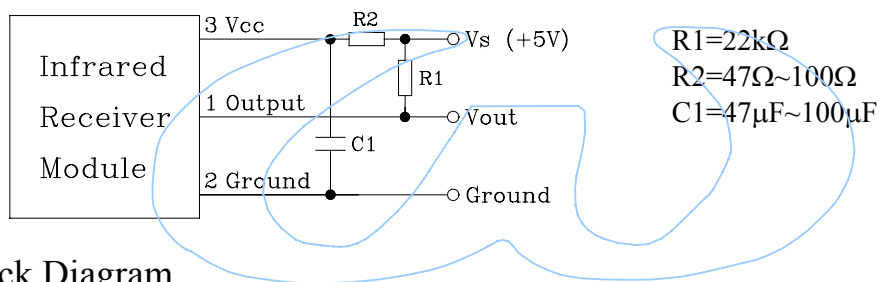
Relative Reception Distance vs Transmitter Carrier Frequency



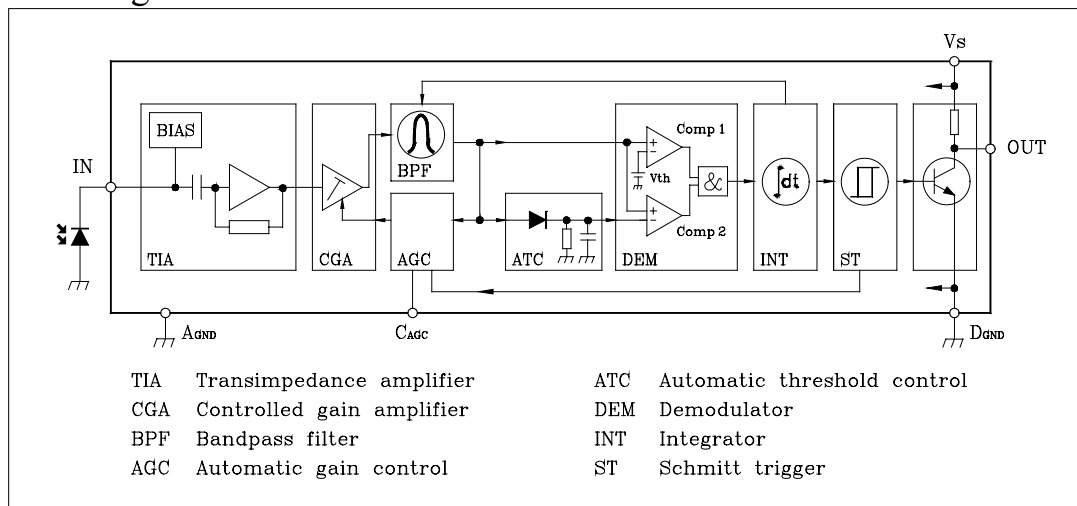
Sensitivity Diagram



In case of noisy power supply, please serially insert 100 Ω resistor and about 47 μ 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.

- Measuring place
Indoor without extreme reflection of light.
- Ambient light source
Detecting surface illumination is 200 ± 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

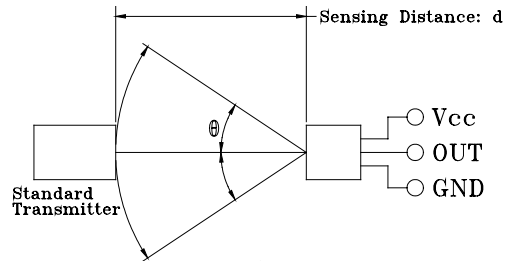


FIG-1

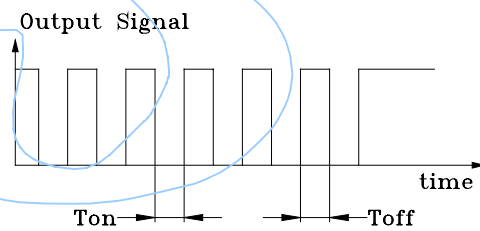
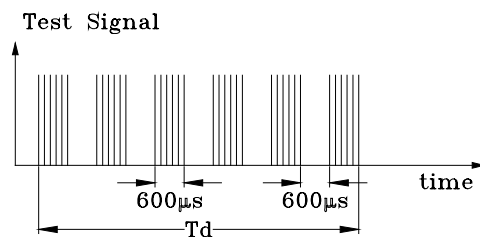


FIG-2

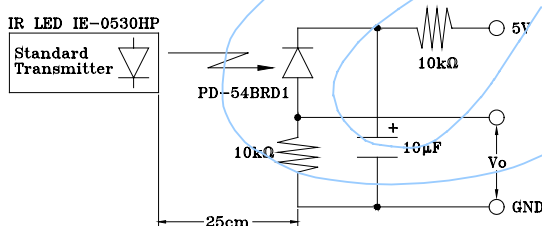


FIG-3 Power Output Measurement Circuit

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.

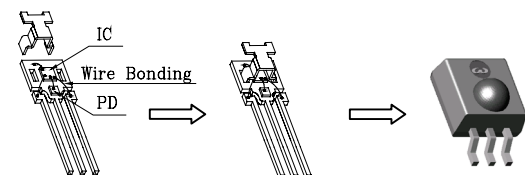


FIG-4 Embedded Design

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.