

Infrared Receiver Module

3-02-04-03 Preliminary

Module No.: PIC-1023SMB

High immunity against noise

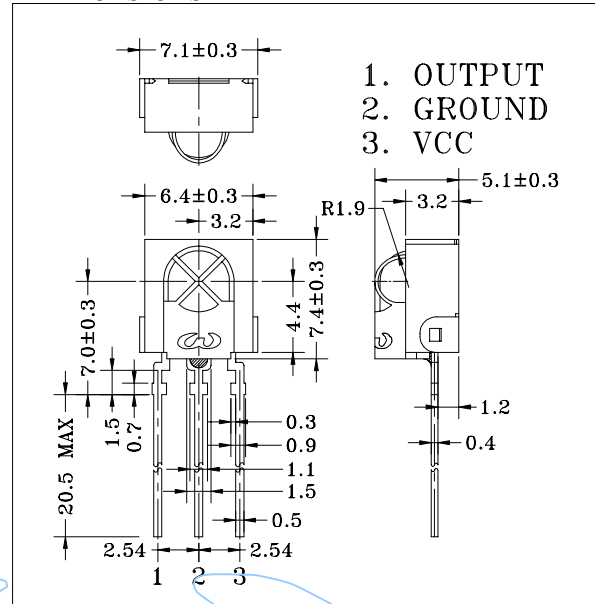
1. Features:

- 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
- Side view
- Mesh
- Wide voltage operating: 2.4V ~ 6.5V

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	7.0	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		2.4	3.0	6.5	V
Current Consumption	Icc	Input Signal = 0		0.8	1.5	mA
Reception Distance	d	200±5Lux	Vcc=3V	10	16	m
			Vcc=2.4V	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

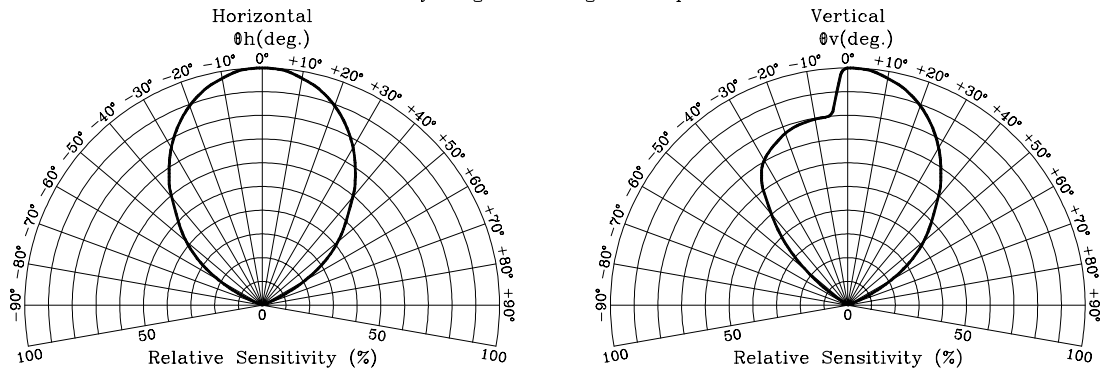
(Ta=25°C)

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.

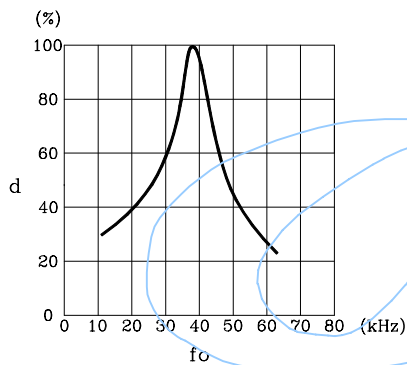
Infrared Receiver Module

Module No.: PIC-1023SMB

Sensitivity Diagram – Angular Displacement



Relative Reception Distance vs Transmitter Carrier Frequency

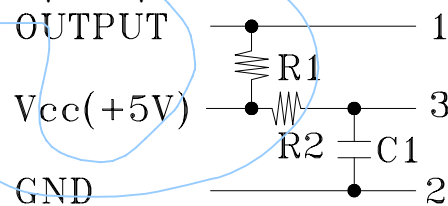


In case of noisy power supply, please serially insert 100Ω resistor and about $47\mu\text{F}$ electrolytic capacitor in V_{cc} line and ground as follows:-

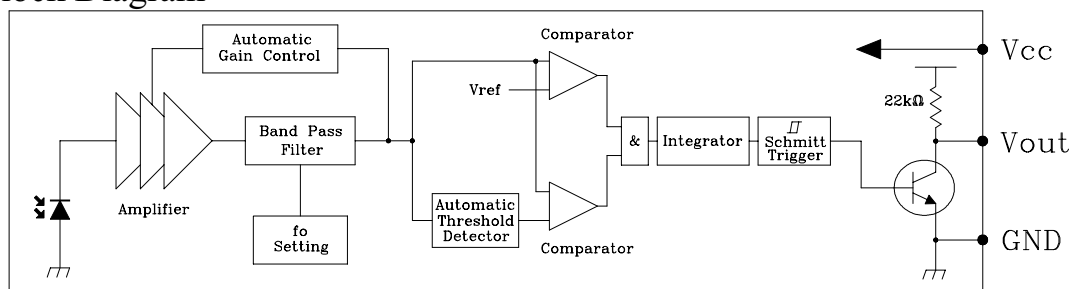
$R1=22\text{k}\Omega$

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

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



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

Infrared Receiver Module

Module No.: PIC-1023SMB

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.

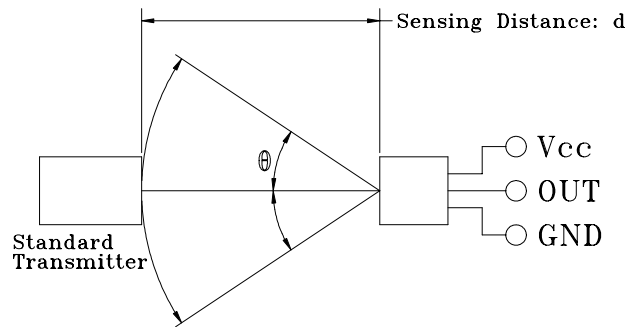


FIG-1

a. Measuring place

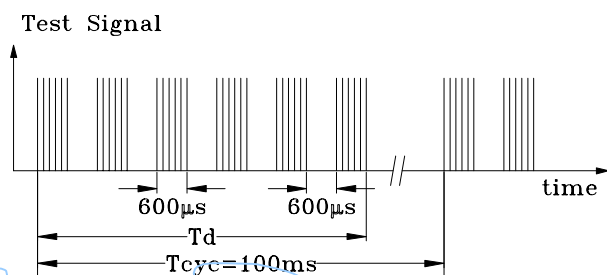
Indoor without extreme reflection of light.

b. Ambient light source

Detecting surface illumination is $200 \pm 5 \text{ Lux}$ 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 $V_o \geq 50 \text{ mVp-p}$ under the measuring circuit specified in FIG-3



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

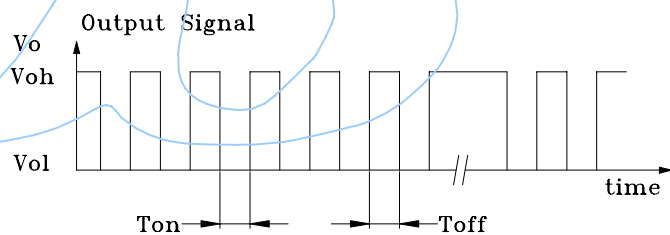


FIG-2

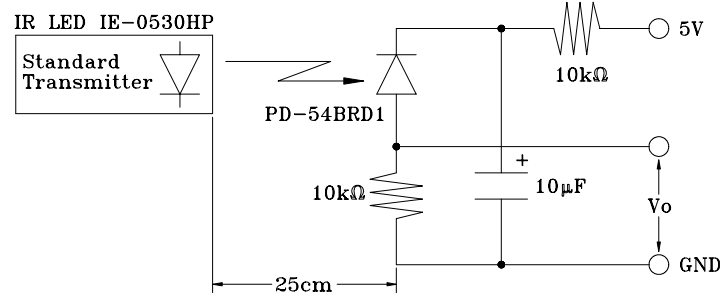


FIG-3 Power Output Measurement Circuit

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.