

GD Dongyi Optoelectronics Co.Ltd.

SPECIFICATION FOR APPROVAL

Customer	
Product Name	
Version number	
Dimension	
Texture of material	
Number	
Date	

Product confirm and sign

Engineering Department	Prepared Department	Quality Department	Checked	Signature

INSPECT RESULT

☐ ACCEPT☐ REJECT

Customer confirm and sign

Engineering Department	Quality Department	Checked	Approved	Signature

INSPECT RESULT

☐ ACCEPT☐ REJECT

REMARK:

■ sample

Product Name : _____ **Product Name :** _____**Quality :** _____ **Date :** _____

Description

The infrared receiver module is a miniature infrared receiving device suitable for sensing, reflection detection, and light curtain applications. A PIN photodiode and preamplifier IC are integrated within the same lead frame, and the epoxy package incorporates an infrared filter structure, enabling the reception and detection of specific modulated infrared signals.

Due to its AGC-less control architecture, this device offers a more direct response to input pulses, making it suitable for applications requiring high signal timing consistency, detection stability, and deterministic response.

Features

- Supply voltage range: 2.7V~5.5V
- TTL/CMOS level compatible output
- PIN photodiode and preamplifier integrated package
- Applicable carrier frequency range: 32.7kHz~40kHz
(Typical frequencies: 32.7kHz / 36.7kHz / 37.9kHz / 40kHz)
- Built-in PCM frequency filter
- No AGC control architecture, suitable for sensing and light curtain detection applications
- Direct response to input pulses, stable output pulse width
- Suitable for system designs with high requirements for detection timing and consistency



Applications

- Reflective sensing in devices such as hand dryers and faucets
- Liquid level detection in vending machines
- Human or object detection sensors
- Grating and light curtain systems
- High-speed proximity sensors for toys, robots, and other consumer products

Precautions

- Store and use in an environment free from external forces that could cause deformation or performance changes.
- Store and use in a dry, clean environment, avoiding high temperature and humidity.
- To prevent electrostatic damage, ensure proper grounding of personnel and welding equipment before use.
- Power supply ripple noise may affect detection distance and output stability. It is recommended to add an RC filter ($R=100$, $C=47$) between VCC and GND.
- External interference signals may cause a decrease in sensitivity. It is recommended to perform full-device testing in a real-world application environment.
- Avoid direct interference from strong DC light sources, strong sunlight, and continuous high-frequency noise.
- This device is suitable for detecting specific modulated infrared signals and is not suitable for general remote control decoding receiver applications.

● **Absolute Maximum Ratings**($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Min.	Max.	Unit	Conditions
Supply Voltage	V _{cc}	0	5.5	V	
Output Voltage	V _{out}	0	5.5	V	
Output Current	I _{out}	0	2.0	mA	
Storage Temperature	T _{st}	-20	80	°C	
Soldering Temperature	T _{sd}	260°C±5°C		°C	Max 5 sec

● **Electrical And Optical Characteristics**($T_a=25^{\circ}\text{C}$)

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

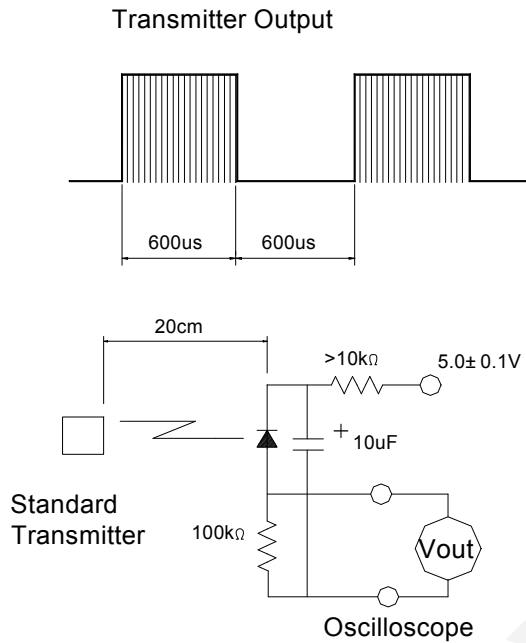
All values are at 25 and V_{cc}=3.0V/5.0V

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

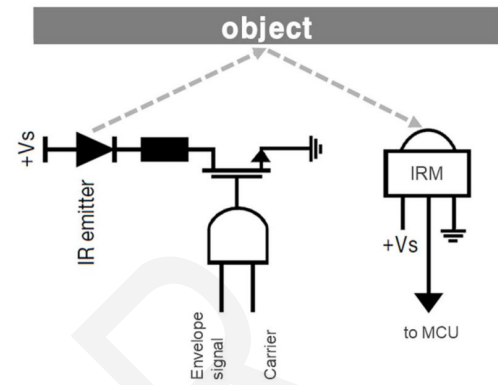
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Supply Current	I _{cc}	--	270	350	uA	I _{in} =0 uA, V _{cc} =3V
			300	400	uA	I _{in} =0 uA, V _{cc} =5V
Max. Voltage gain	A _v	75	80	85	dB	f _{in} =37.9kHz, V _{in} =30uVp-p
BPF Bandwidth	f _{BW}	3.5	6.0	8.5	kHz	-3dB Bandwidth V _{in} =30uVp-p
Output pulse width	t _{PW1}	400	-	800	μs	f _{in} =37.9kHz, burst wave V _{in} =500 uVp-p note*1
	t _{PW2}	400	-	800	μs	f _{in} =37.9kHz, burst wave V _{in} = 50mVp-p note*1
Low level output voltage	V _{OL}	-	0.2	0.4	V	I _{sink} =2.0mA
High level output voltage	V _{OH}	2.7	3.0	-		V _{cc} =3V
		4.7	5.0	-	V	V _{cc} =5V

● Test Method

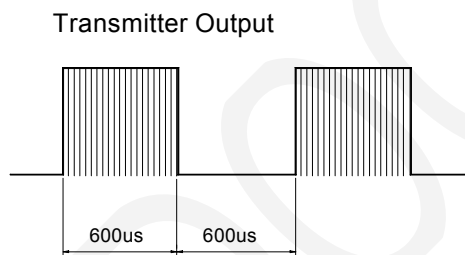
A. Standard Transmitter



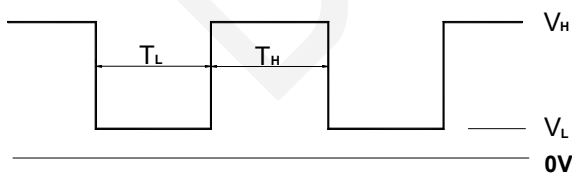
B. Detection Length Test



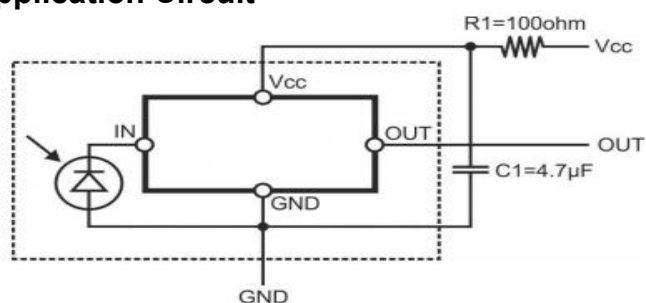
C. Pulse Width Test



D.U.T Output Pulse

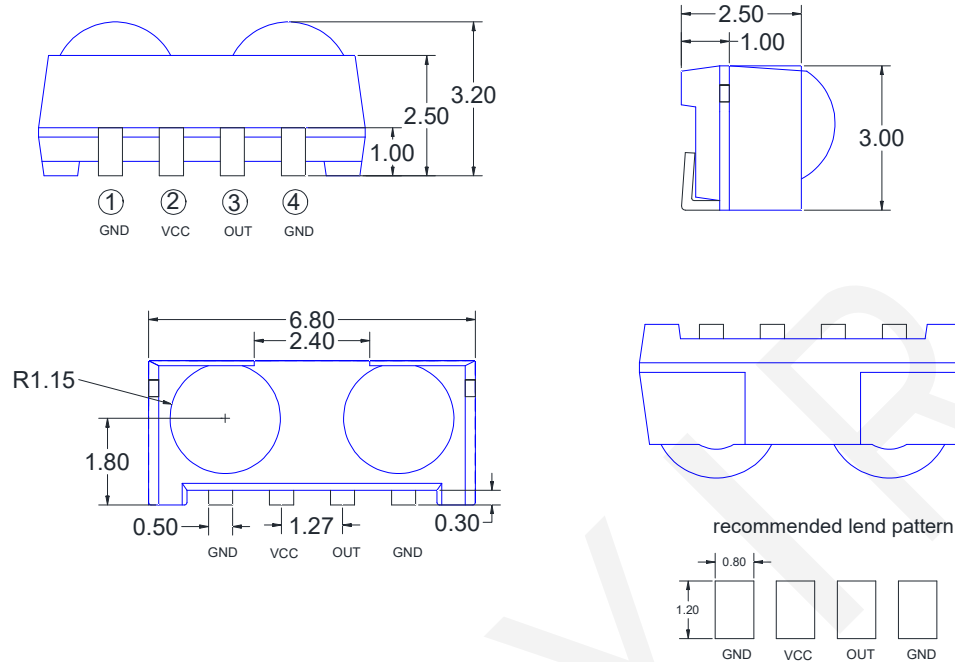


● Application Circuit



● Package Dimensions:

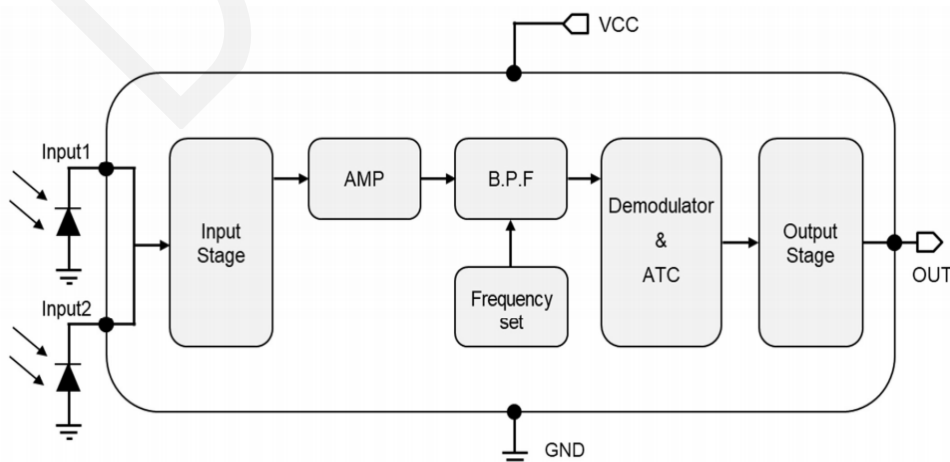
单位：MM



NOTES:

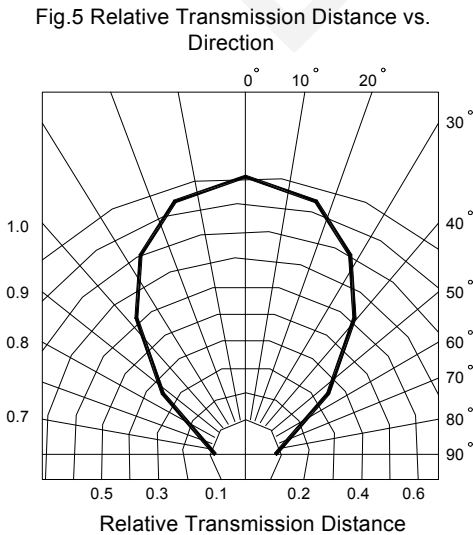
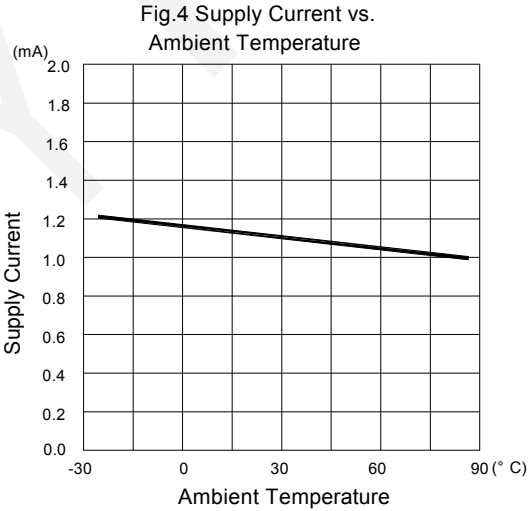
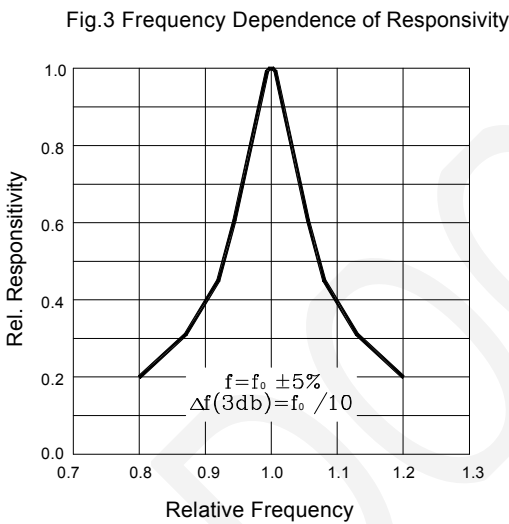
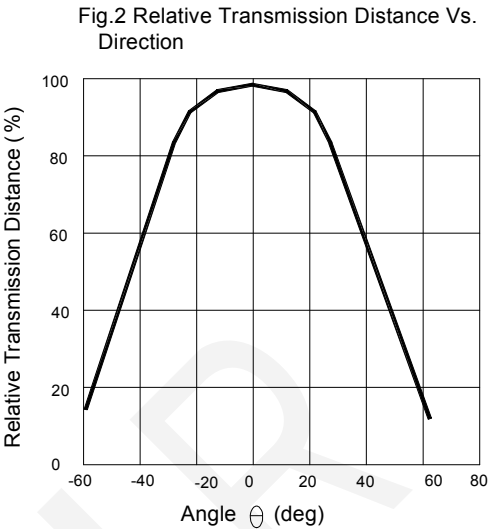
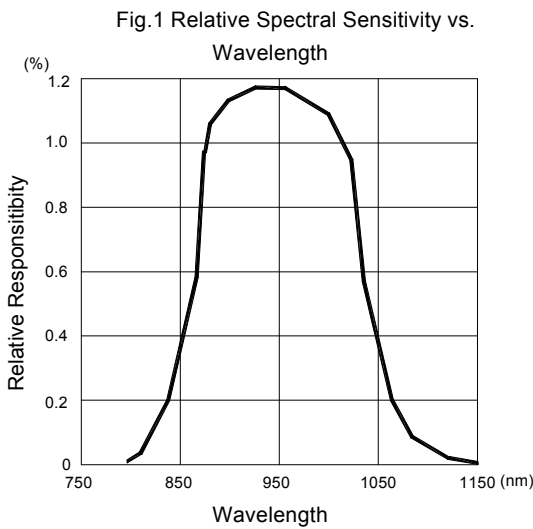
- 1.All dimensions are in millimeters (inches).
- 2.Tolerance is $\pm 0.30\text{mm}$ (0.012") unless otherwise specified.
- 3.Specifications are subject to change without notice.

● Function block diagram



* This product is designed in a fixed gain type for sensor applications.

● Electrical And Optical Curves(Ta=25°C)



ESD Test Results

Parameter	Specification	Results
Machine Model	Min ±200V	> ±400V
Human Body Model	Min ±2000V	> ±4000V
Charged Device Model	Min ±400V	> ±600V

● Suitable Data format

Item	Symbol	Time
Minimum burst length	t_{Burst}	300us
Minimum gap time after each burst	t_{Gap}	300us
-----	-----	-----

● Reliability Test Items

Parameter	Test conditions	Remark
High Temperature	Ta=+85, VCC=5.0V t=240h	※1, ※2
Low Temperature	Ta=-30, VCC=5.0V t=240h	※1, ※2
High Temp./ High Humidity	Ta=+85℃ 85%RH, VCC=5.0V t=240h	※1, ※2
Heat Cycle	Ta=-20℃(0.5h) to +85℃(0.5h) 20 cycle	※2, ※3
Fall Test	Height=75cm, 3 times	※4

※ 1. Supply voltage of load test is 5V.

※ 2. Electro-optical characteristics shall be satisfied after leaving 2 hours in the normal condition.

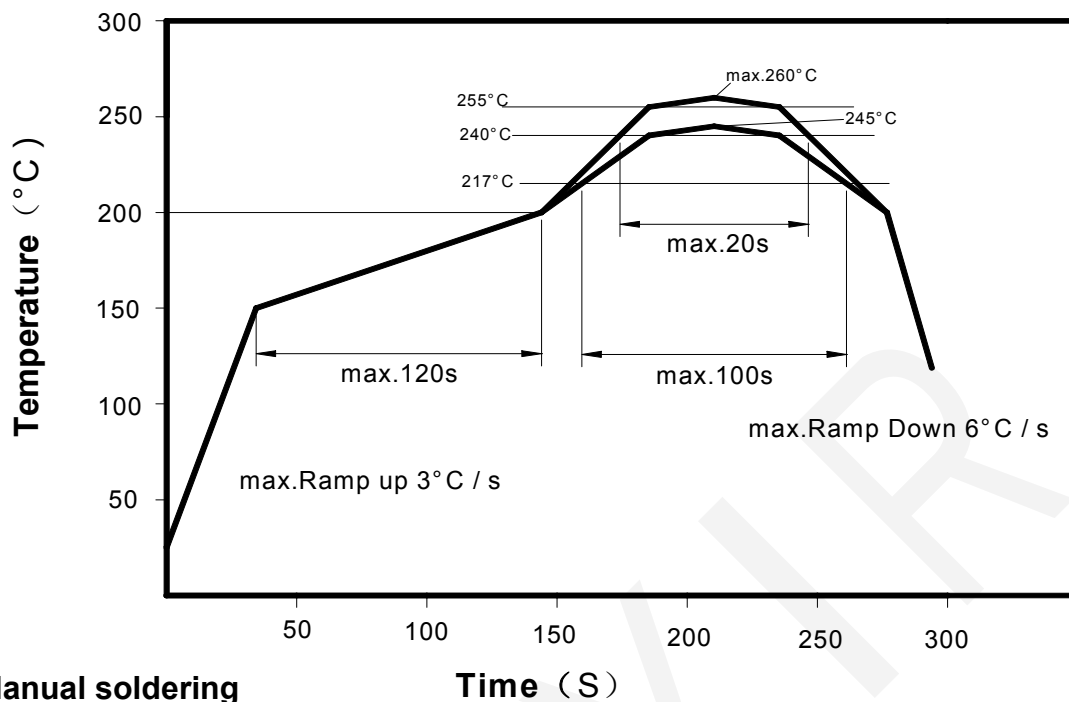
※ 3. Heat cycle test shall repeat above condition 20 times under no load.

※ 4. The test devices shall be dropped three time on the hard wooden board from a height of 75cm.

● Material Configuration

Parameter	Configuration	Remark
IC	Silicon(99%)	
Photo diode	Silicon(99%)	
Rubber cake	Resin(55.5%), Hardener(45.5%)	
Silver epoxy	Silver(80%), Resin(10%), Hardener(10%)	
Bond wire	Gold(99.99%)	

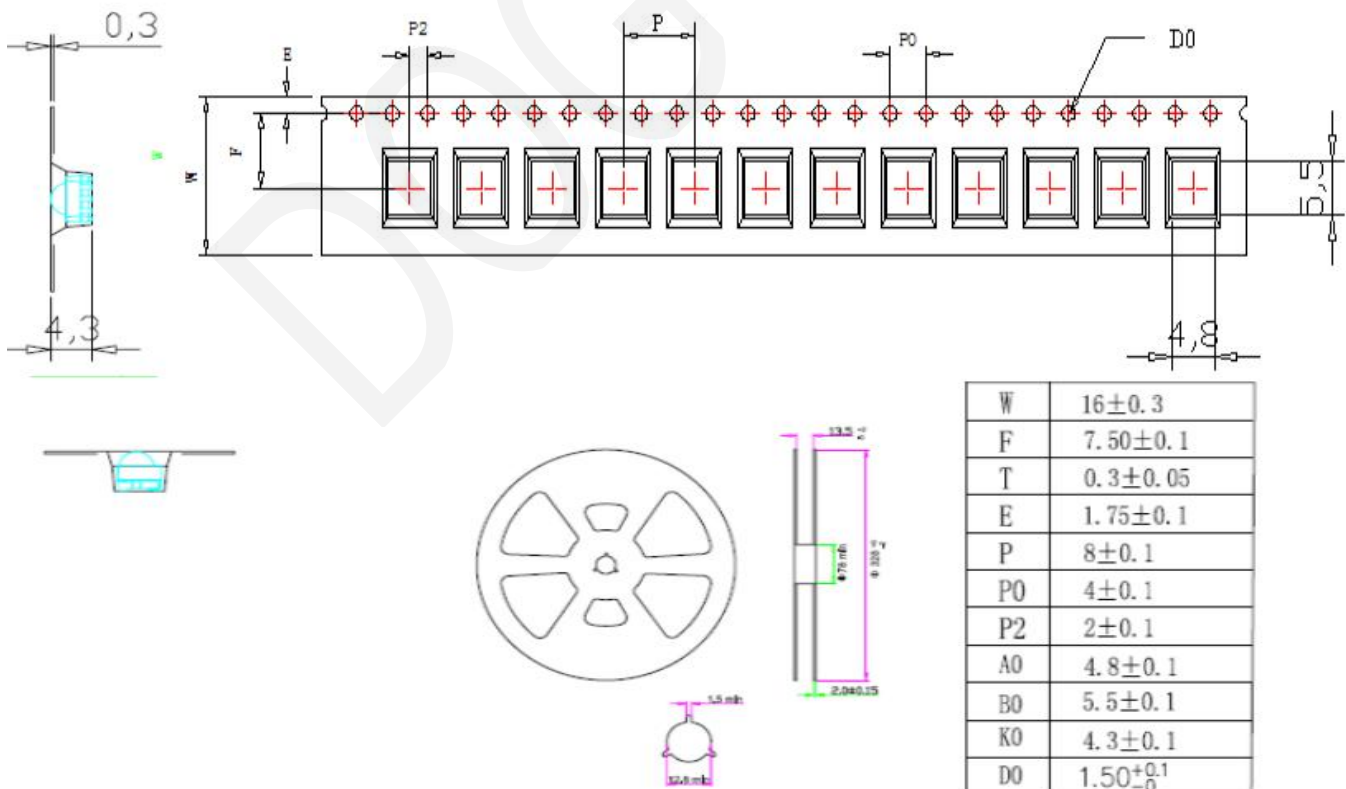
● Lead(Pb)-Free Reflow Solder Profile



● Manual soldering

Use a soldering iron of 25W or less. Adjust the temperature of the soldering iron below 260°C.

● Taping and reel dimensions in millimeters



● Use matters needing attention

- store and use where there is no force causing transformation or change in quality
- store and use where there is no extreme humidity
- in order to prevent damage from static electricity make sure that the human body and the Soldering iron are connected to ground before using
- Please from the bottom of the resin for welding for more than 2 mm
- Dip soldering: please below 260 degrees, 5 seconds to complete welding
- Soldering iron: please below 350 degrees, 3 seconds to complete welding
- Please avoid correct position after welding
- When welding in the lead frame please don't put pressure on the heated condition
- When the circuit board is installed, the mounting hole distance is consistent With the lead frame