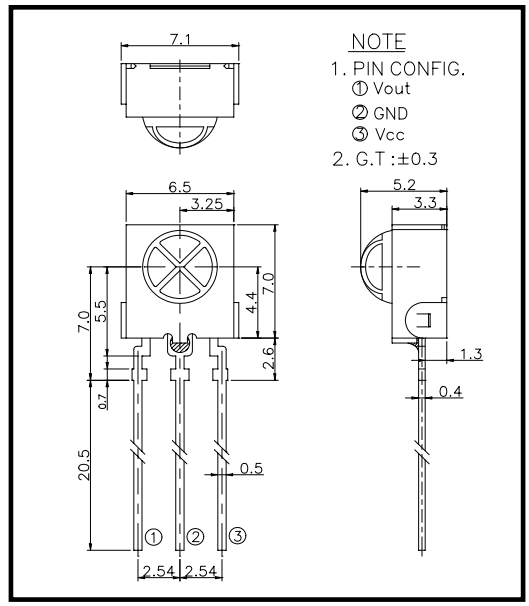
• Description

The **HIR-138...** Series are miniaturized receiver for infrared remote control system.
The PIN Photodiode and preamplifier are assembled on lead frame, The epoxy package is designed as IR filter.
The module has excellent performance even in disturbed ambient light application and provides protection against uncontrolled output pulses.

• Features

- Small size package.
- Wide Operating Supply voltage 2.7V ~ 5.5V
- Maximum interference safety against optical and electrical disturbance.
- Various band pass frequency. (32.7kHz/36.7kHz/37.9kHz/40kHz/56.7kHz)
- Internal filter for a high frequency lighting fluorescent lamp.
- Open collector output.

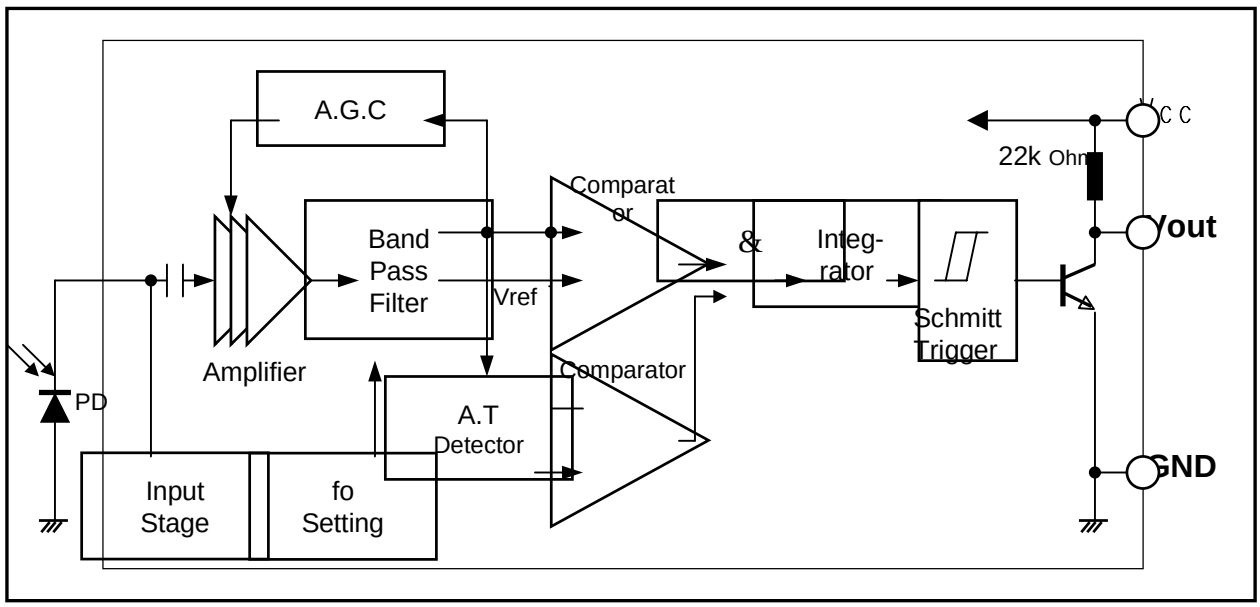
• Outline Dimensions (Unit : mm)



• Application

- AV instruments (VCR, TV, SVR, Audio, CD player)
- Home appliances (Air conditioner, Computer, Camera)
- Remote control for wireless equipment.
- Infrared remote control Toys.

• Block Diagram



Absolute Maximum Ratings

(at 25°C Unless otherwise note)

Parameter	Symbol	Ratings	Unit
Supply Voltage	Vcc	6.0	V
Output Current	Lout	2.5	mA
Operating Temperature	Topr	-10 ~ +60	°C
Storage Temperature	Tstg	-20 ~ +75	°C
Soldering Temperature	Tsol	260, t<5sec	°C

Recommended Operating Conditions

Parameter	Symbol	Ratings	Unit
Operating Voltage	Vcc	2.7 ~ 5.5	V
Input Frequency	Fin	30 ~ 60	kHz

Electro-Optical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	Vcc		2.7	-	5.5	V
Supply Current	Icc	No signal input	-	0.8	1.5	mA
Peak Wavelength(*1)	λp		-	940	-	nm
Arrival Distance(*1)	L	Standard Signal	7	10	-	m
B.P.F Center Frequency(*2)	fo		-	37.9	-	kHz
Half Angle	ø		-	±50	-	deg
High Level Output Voltage(*1)	V_{OH}		Vcc -0.5	-	-	V
Low Level Output Voltage(*1)	V_{OL}		-	0.2	0.4	V
High Level Output Pulse Width(*1)	T_{WH}	Burst Wave =600us Period = 1.2ms	500	600	700	us
Low Level Output Pulse Width(*1)	T_{WL}		500	600	700	us
Output Form	Active Low Output					

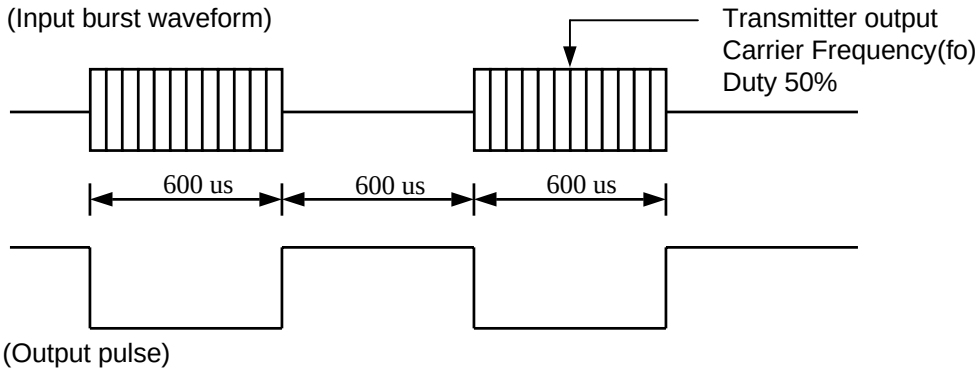
(*1) Distance between emitter and detector specifies maximum distance that output wave form satisfies the standard (fig.2) under the conditions below against the standard transmitter.
ON/OFF pulse width is to be satisfied within 0.3m ~ arrival distance length.

(*2)B.P.F center frequency (fo) for varies with model is show below

Model	B.P.F frequency (kHz)
HIR-132OO	32.7
HIR-136OO	36.7
HIR-138OO	37.9
HIR-140OO	40.0
HIR-156OO	56.7

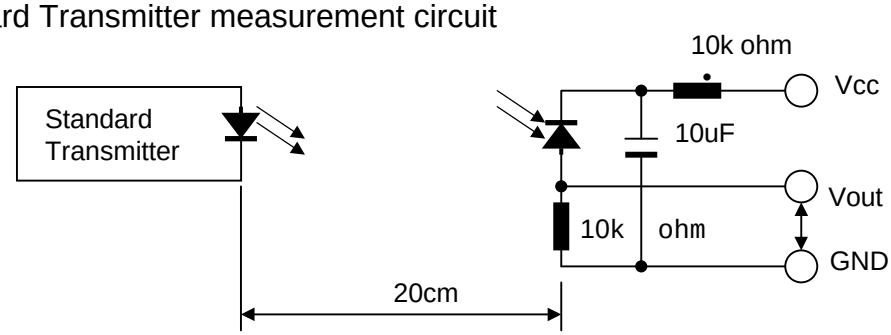
Measurement Conditions

- Output pulse width



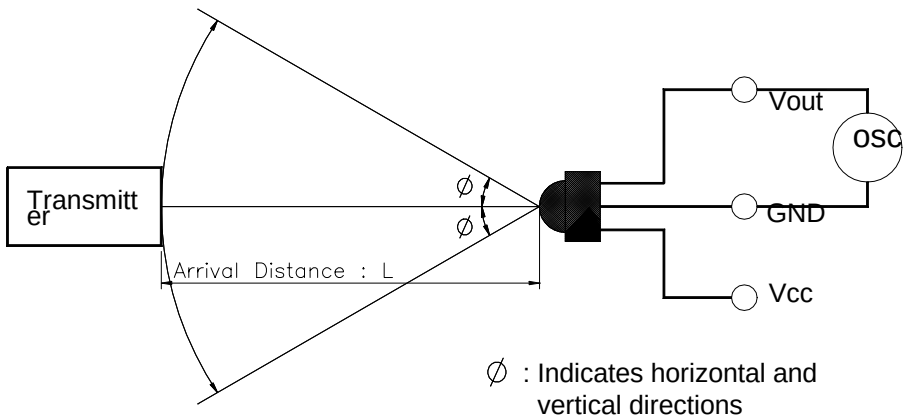
[Fig1. Burst wave, Output wave **]**

- Standard Transmitter measurement circuit



[Fig2. Standard Transmitter **]**

- Test condition of arrival distance



[Fig3. Measurement condition for arrival distance **]**

Ambient light source : Detecting surface illumination shall be irradiate 200±50Lux
under ordinary white fluorescence lamp without high frequency lighting

Reliability Test Items

Parameter	Conditions
High Temperature	Ta=+60 Degree Celsius, Vcc=3.0V t = 240h
High Temperature/High Humidity	Ta=+40 Degree Celsius, 90%RH, Vcc=5.0V t = 240h
Low Temperature	Ta=-10 Degree Celsius, Vcc=5.0V t = 240h
Heat Cycle	Ta=-20 (0.5h)~+75 (0.5h), Degree Celsius 20 cycle

Electro-optical characteristics shall be satisfied after leaving 2 hours in the normal temperature

Typical Characteristics (Tamb = 25ºC)

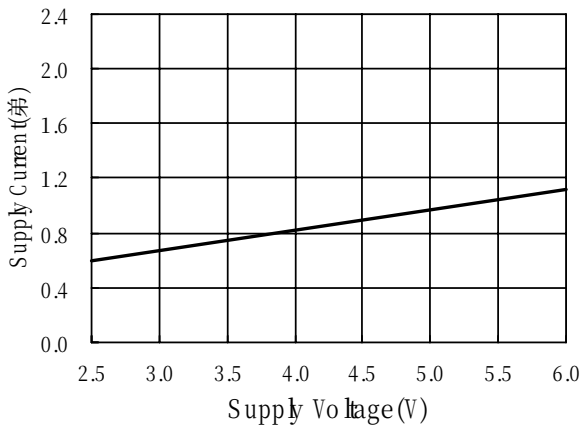


Fig.1 Supply Current vs.

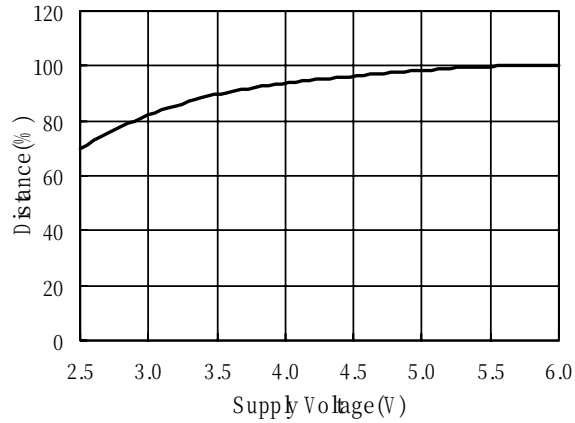


Fig.2 Relative Distance vs. Supply Voltage

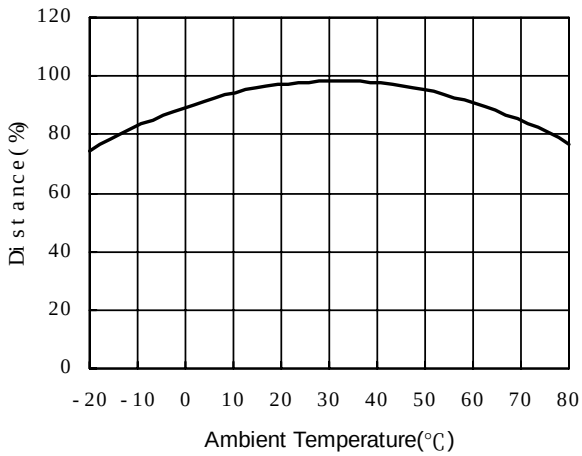


Fig.3 Relative Distance vs. Ambient Temperature

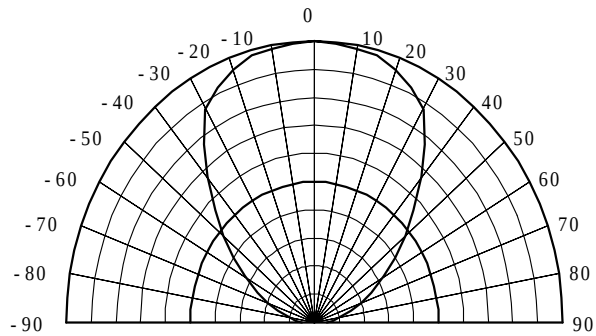


Fig.4 Sensitivity Angle Characteristics for Reference

Standard Inspection

1 Among electrical characteristics, total quantity shall be inspected as below.
  1-1 Front distance between emitter and detector
  1-2 Current consumption
  1-3 High level output voltage
  1-4 Low level output voltage
2 Items except above mentioned are not inspected particularly, but shall fully satisfy.

• Caution

1 The performance of remote control system depends on environments condition and ability of peripheral parts. Customer should evaluate the performance as total system in those conditions after system up with components such as commander, MICOM and this receiver module.
2 Store and use where there is no force causing transformation or change in quality.
3 Store and use when there is no extreme humidity
4 Solder the lead-pin within the condition of ratings.
5 To prevent static electricity damage to the Drive IC make sure that the human body, the soldering iron is connected to ground before using.
6 Put decoupling condenser(47uF~470uF) between Vcc and GND for reduce the noise from power supply line.

• Others

In case where any trouble or questions arise, both parties agree to make full discussion covering the said problem.