

### INFRARED RECEIVER MODULE

#### Description

The HL-7838 is miniaturized infrared receivers for remote control and other applications requiring improved ambient light rejection.

The separate PIN diode and preamplifier IC are assembled on a single leadframe.

The epoxy package contains a special IR filter.

This module has excellent performance even in disturbed ambient light applications and provides protection against uncontrolled output pulses.



#### Features

- Photo detector and preamplifier in one package .
- Internal filter for PCM frequency.
- Inner shield,good anti-interference ability.
- High immunity against ambient light.
- Improved shielding against electric field disturbance
- 3.0V or 5.0V supply voltage; low power consumption.
- TTL and CMOS compatibility.
- Suitable transmission code:NEC code,RC5 code.

#### Applications:

1. Optical switch
2. Light detecting protion of remote contol
  - AV instruments such as Audio,TV,VCR,CD,MD,DVD,etc.
  - Home appliances such as Air-conditioner,Fan,etc.
  - CATV set top boxes
  - Multi-media Equipment

#### ● Absolute Maximum Ratings(Ta=25 )

Parameter	Symbol	Ratings	Unit	Notice
Supply Voltage	Vs	2.4-5.5	V	—
Operating Temperature	Topr	-20~+65		—
Storage Temperature	Tstg	-40~+85		—
Soldering Temperature	Tsd	260		4mm from mold body less than 5 sec

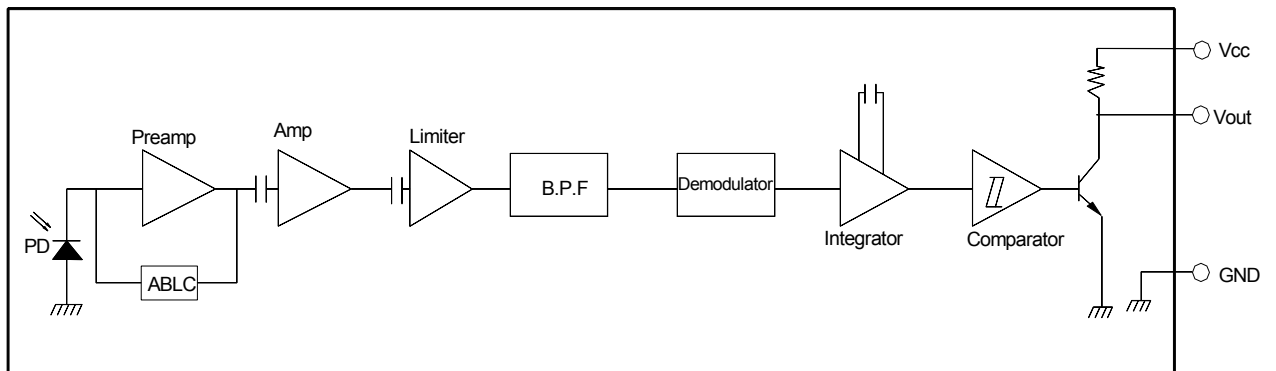
● **Electrical And Optical Characteristics**( $T_a=25$  )

Parameter	Symbol	Ratings			Unit	Condition
		Min.	Typ.	Max.		
Supply Voltage	$V_s$	2.4	-	5.5	V	
Supply Current	$I_{cc}$	—	—	1.5	mA	No signal input
Reception Distance	$L_0$	12	—	—	m	At the ray axis* 1
	$L_{45}$	6	—	—		
B.P.F Center Frequency	$f_o$	—	38	—	KHz	
Peak Wavelength	$\lambda_p$	—	940	—	nm	
Half Angle	$\theta$	—	45	—	deg	At the ray axis * 1
High Level Pulse Width	$T_H$	400	—	800	$\mu S$	At the ray axis * 2
Low Level Pulse Width	$T_L$	400	—	800	$\mu S$	
High Level Output Voltage	$V_H$	4.5	—	—	V	
Low Level Output Voltage	$V_L$	—	—	0.5	V	

\* 1: The ray receiving surface at a vertex and relation to the ray axis in the range of  $\theta=0^\circ$  and  $\theta=45^\circ$

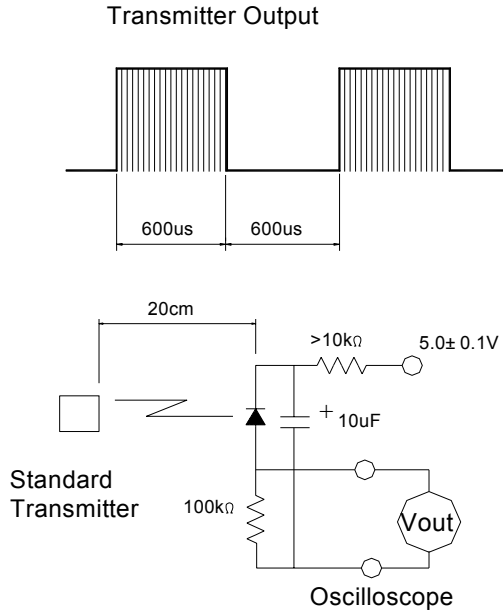
\* 2: A range from 30cm to the arrival distance. Average value of 50 pulses

**BLOCK DIAGRAM**

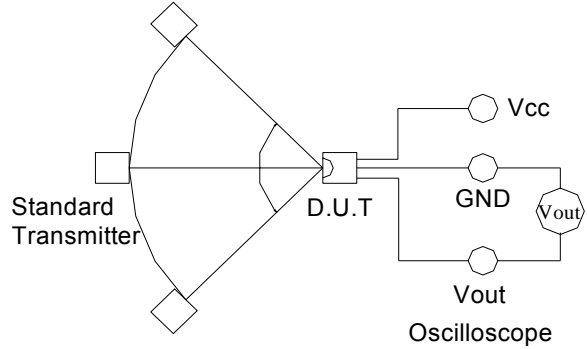


## ● Test Method

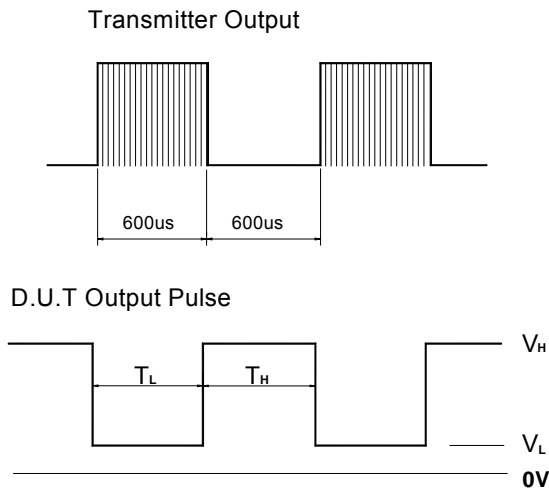
### A. Standard Transmitter



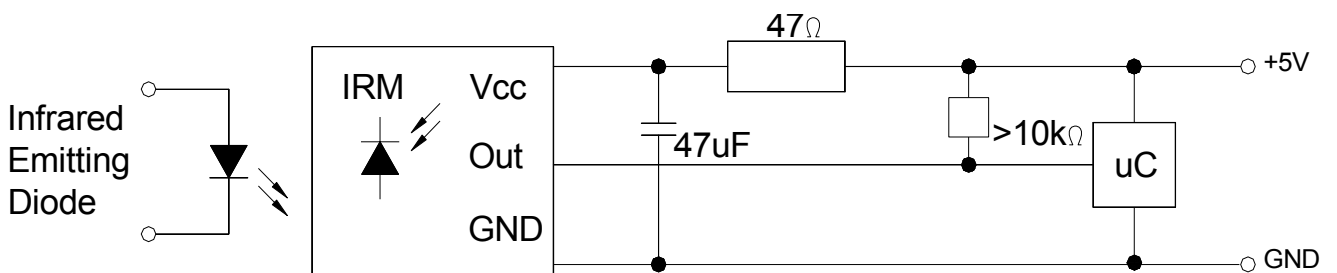
### B. Detection Length Test



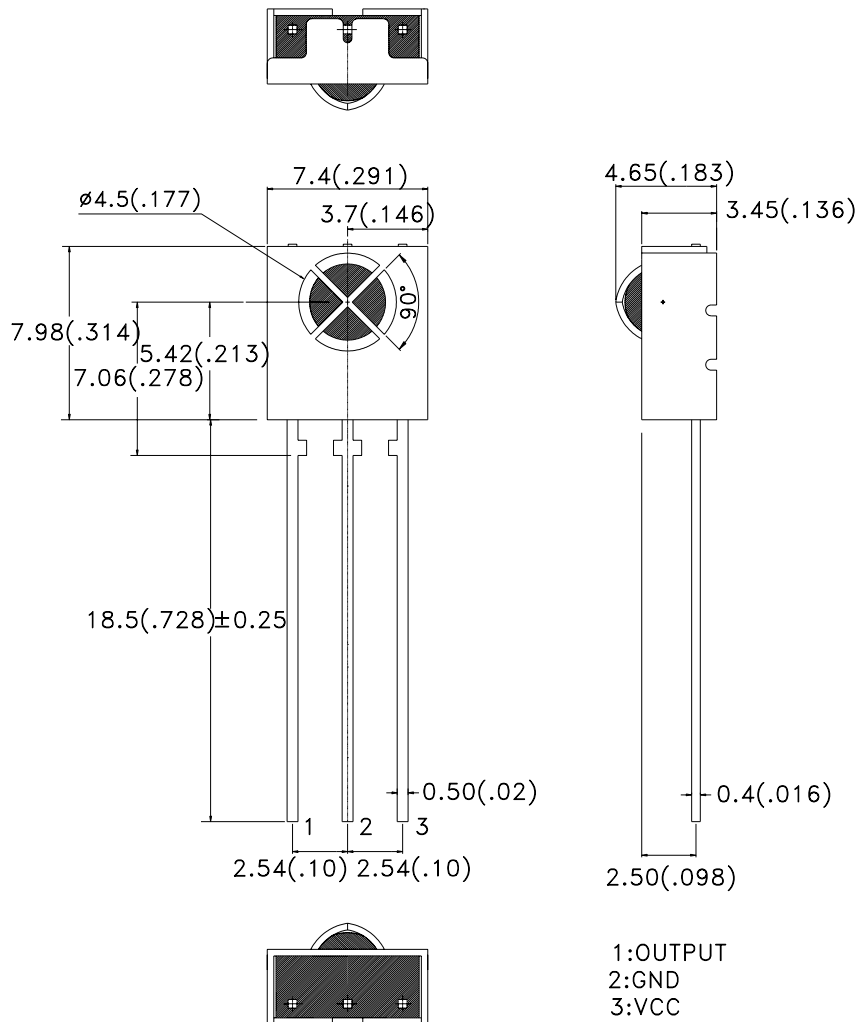
### C. Pulse Width Test



## ● Application Circuit



### Package Dimensions:



### NOTES:

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

● Electrical And Optical Curves(Ta=25 )

Fig.1 Relative Spectral Sensitivity vs. Wavelength

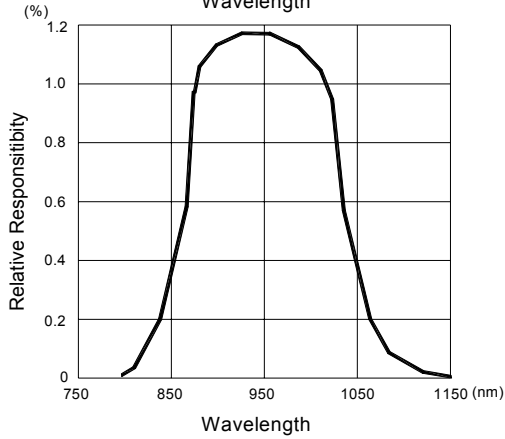


Fig.2 Relative Transmission Distance Vs. Direction

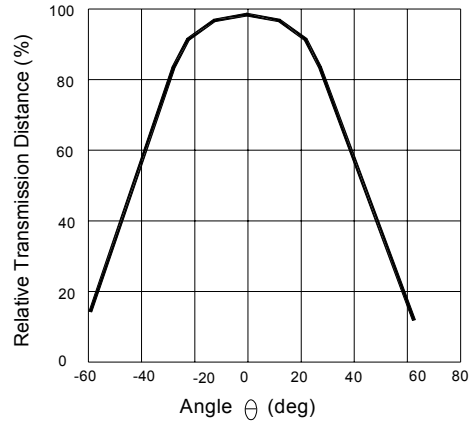


Fig.3 Frequency Dependence of Responsivity

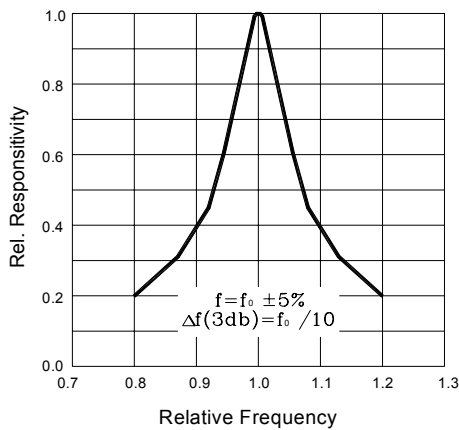


Fig.4 Supply Current vs. Ambient Temperature

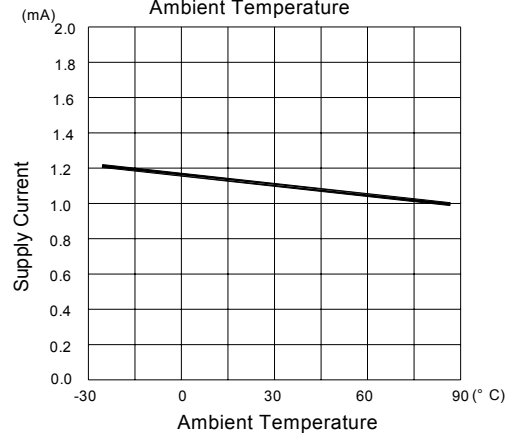


Fig.5 Relative Transmission Distance vs. Direction

