

Infrared Remote-control Receiver Module  
Technical Data Sheet

Part No :LL-M6138

## Features:

- ◇ High protection ability against EMI.
- ◇ Circular lens to improve the receive characteristic.
- ◇ Line-up for various center carrier frequencies.
- ◇ Low voltage and low power consumption.
- ◇ High immunity against ambient light.
- ◇ Photodiode with integrated circuit.
- ◇ TTL and CMOS compatibility.
- ◇ Long reception distance.
- ◇ High sensitivity
- ◇ Pb free.
- ◇ RoHS Compliant



## Description:

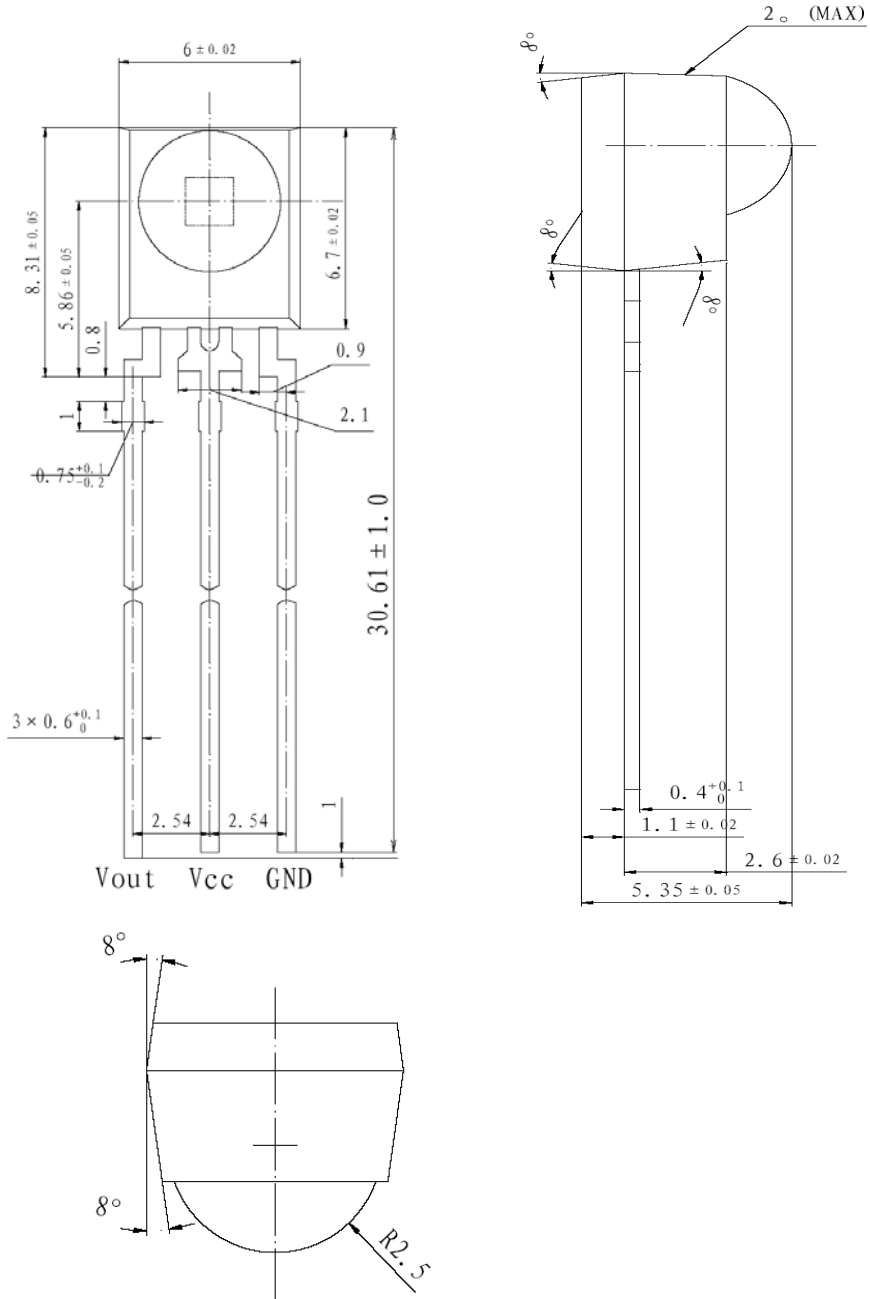
LL-M6138 series are miniaturized receivers for infrared remote control systems. PIN diode and preamplifier are assembled on lead frame, and the epoxy package is designed as IR filter.

The benefit is the reliable function even in disturbed ambient and the protection against uncontrolled output pulses.

## Applications

1. Optical switch
2. Light detecting portion of remote control.
  - AV instruments such as Audio, TV, VCR, CD,MD,etc.
  - Home appliances such as Air-conditioner, Fan. etc.
  - The other equipments with wireless remote control.
  - CATV set top boxes
  - Multi-media Equipment

### Package Dimension



**Notes:**

- 1. All dimensions are in millimeters (inches).
- 2. Tolerance is  $\pm 0.3\text{mm}$  unless otherwise noted.

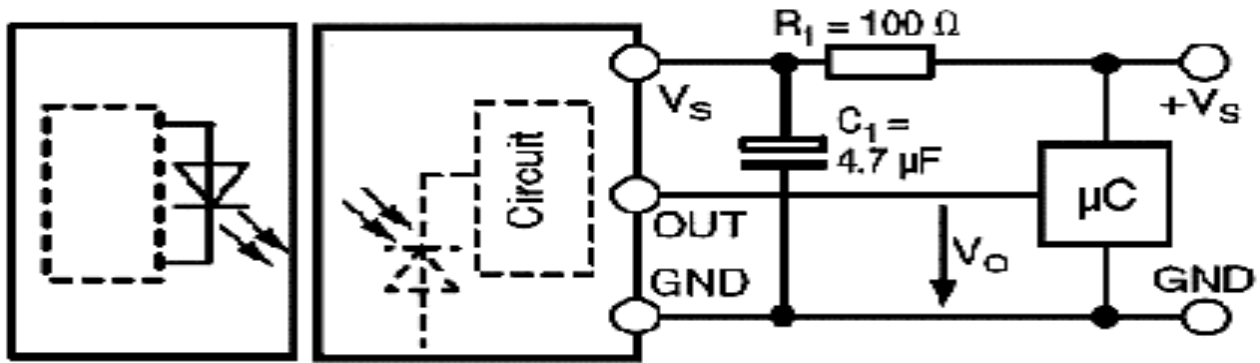
**Absolute Maximum Ratings** ( $T_a=25^{\circ}\text{C}$ ):

Parameters	Symbol	Condition	Value	Unit
Supply voltage	$V_s$	Pin2	-0.3~+6.0	V
Operating current	$I_s$	Pin2	3	mA
Operating Temp.	$T_{OPR.}$		-25~+85	$^{\circ}\text{C}$
Storage Temp.	$T_{stg}$		-40~+100	$^{\circ}\text{C}$
Power Consumption	$P_D$	$T_a \leq 85^{\circ}\text{C}$	30	mW
Soldering Temp. 4mm from mold body	$T_{sd}$	$t \leq 10s$	260	$^{\circ}\text{C}$

**Electro-optical Characteristics** ( $T_a=25^{\circ}\text{C}$ )

Parameters	Symbol	Condition	Min	Type	Max	Unit	
Static current	$I_s$	$V_s=5V, E_v=0$	0.8	1.1	1.3	mA	
Operating voltage	$V_s$		4.5	5	5.5	V	
Receiving distance	L0	$0^{\circ}$	Vs=5V	12	14	---	m
	L1	$30^{\circ}$		10	12	---	m
	L2	$45^{\circ}$		8	10	---	m
Low level output voltage	$V_L$	T=1.2ms Duty=50%			0.25	V	
High level output voltage	$V_H$		$V_s-0.25$		$V_s$	V	
Low output pulse width	$T_{WL}$		400	600	800	$\mu s$	
High output pulse width	$T_{WH}$		400	600	800	$\mu s$	
Peak wavelength	$\lambda_p$			940		nm	
Modulated Frequency	$f_0$			38		KHz	

## Application circuit



## Typical Characteristics (Ta=25°C)

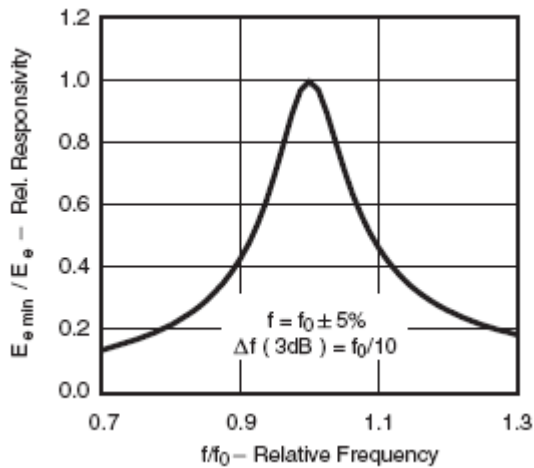


Figure 1: Frequency Dependence of Responsivity( $f_0=38\text{KHz}$ )

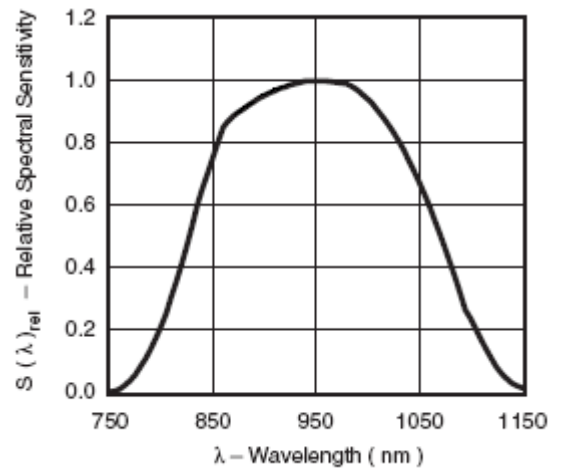


Figure 2: Relative Spectral vs. Wavelength( $\lambda_p=940\text{nm}$ )

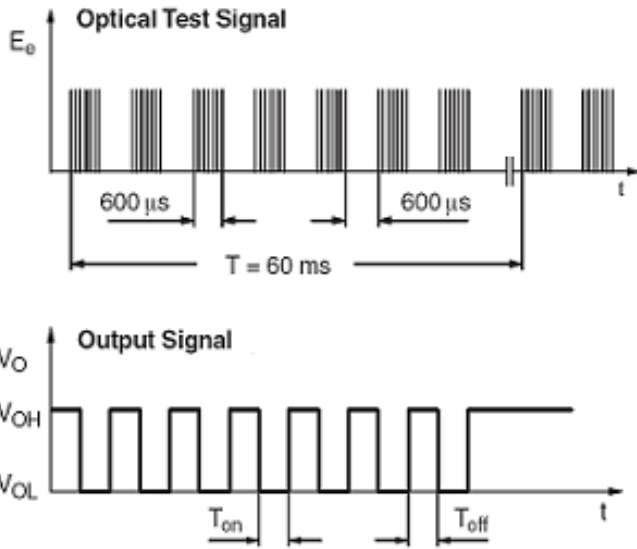


Figure 3: Output Function

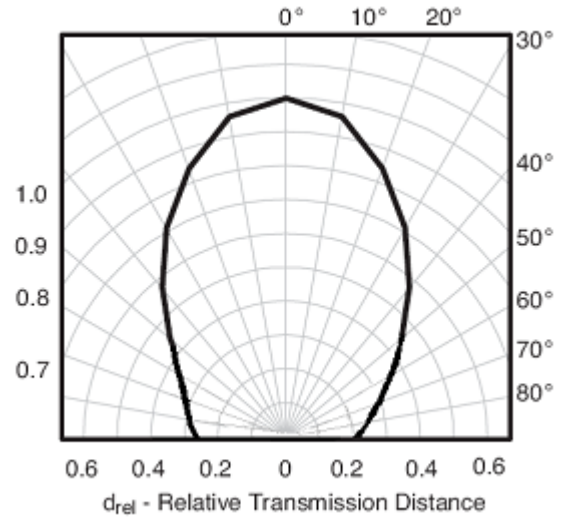


Figure 4: Directivity