# Reflective Object Sensor
## Model No: LBR-127HLD

## Description

The **LBR-127HLD** consist of an infrared emitting diode and an NPN silicon phototransistor, encased side-by-side on converging optical axis in a black thermoplastic housing. The phototransistor receives radiation from the IRED only. This is the normal situation. But when an object is in between, phototransistor could not receive the radiation.

Lead-free lead wire is tin-plated to prevent oxidation through the pollution of Sulfide in the air. Security ball is added into wire-bonding procedure in order to increase bonding strength.

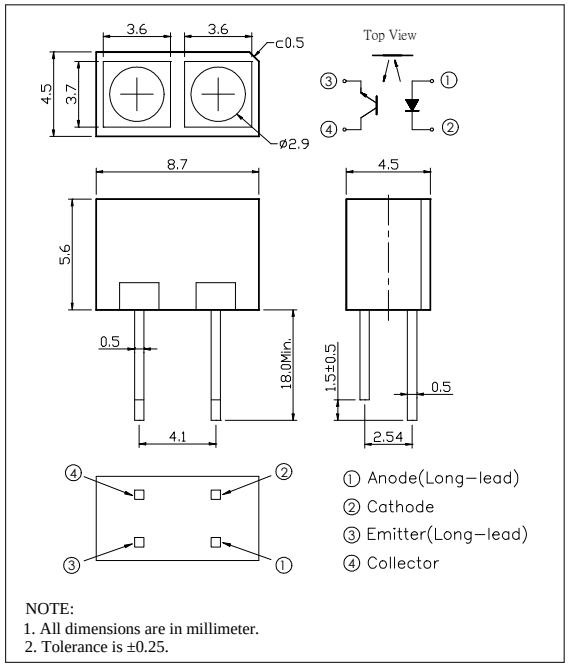
## Features

- Fast response time
- High sensitivity
- Cut-off visible wavelength λ=840nm
- High analytic

## Applications

- For Direct PC Board
- Mouse Copier
- Non-contact Switching
- Switch Scanner

## Outline dimensions




NOTE:
1. All dimensions are in millimeter.
2. Tolerance is ±0.25.

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Absolute Maximum Ratings (Ambient Temperature: 25℃)

| Item | | Symbol | Rating | Units | Note |
|---|---|---|---|---|---|
| Input | Forward current | $I_F$ | 60 | mA | |
| | Reverse voltage | $V_R$ | 5 | V | |
| | Peak forward current | $I_{FP}$ | 1 | A | Tw=10 μs, t=10ms |
| | Power dissipation | Pd | 160 | mW | |
| Output | Collector current | Ic | 20 | mA | |
| | Collector-Emitter voltage | Vceo | 30 | V | |
| | Emitter-Collector voltage | Veco | 5 | V | |
| | Collector power dissipation | $P_c$ | 100 | mW | |
| Storage Temperature | | Tstg | -40 to +85 | ℃ | |
| Operating Temperature | | Top | -25 to +85 | ℃ | |
| Soldering Temperature | | Tsol | 260 | ℃ | 5 seconds max. |

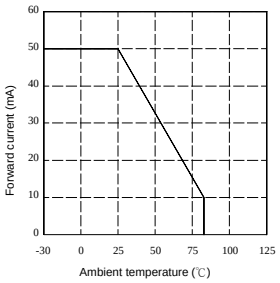
Electrical Specifications (Ambient Temperature: 25℃)

| Item | | Symbol | MIN. | TYP. | MAX. | Units | Conditions |
|---|---|---|---|---|---|---|---|
| Input | Forward voltage | $V_F$ | | 1.2 | 1.5 | V | IF=20mA |
| | Reverse current | $I_R$ | | | 10 | μA | VR=5V |
| | Peak wavelength | λp | | 940 | | nm | |
| | View angle | 2θ1/2 | | 35 | | Deg. | IF=20mA |
| Output | Dark current | Iceo | | | 100 | nA | Vce=20V |
| | C-E saturation voltage | Vce(sat) | | | 0.4 | V | Ic=2mA, IB=0.1mA |
| Light current | | Ic(on) | 0.2 | | | mA | Vce=5V IF=20mA |
| Leakage current | | $I_{Leak}$ | | | 1 | μA | |
| Speed | Rise Time | tr | | 15 | | μs | Vce=5V Ic=1mA RL=1KΩ |
| | Fall Time | tf | | 15 | | | |

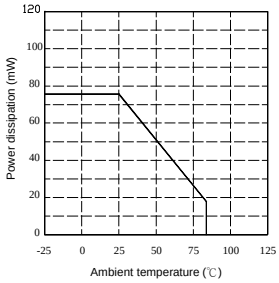
# Reflective Object Sensor

## Reference Data

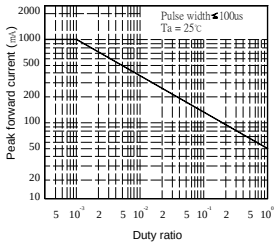
Forward current Vs. Ambient temperature



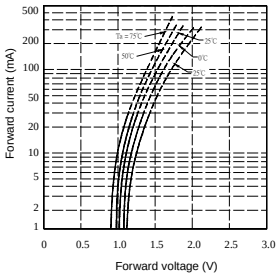

Power dissipation Vs. Ambient temperature



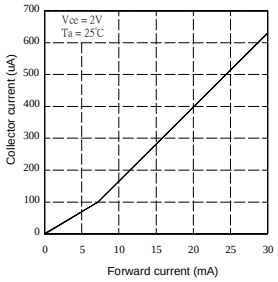

Peak forward current Vs. Duty ratio



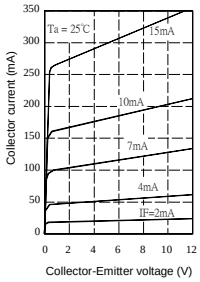

Forward current Vs. Forward voltage



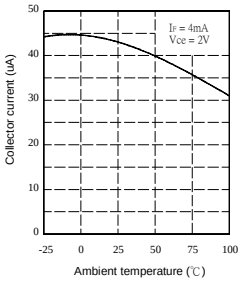

Collector current Vs. Forward current



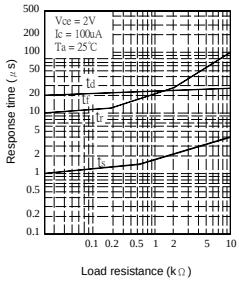

Collector current Vs. Collector-Emitter voltage



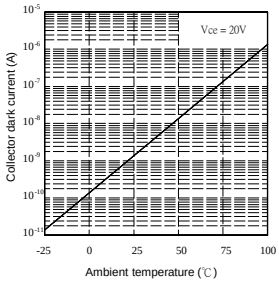

Collector current Vs. Ambient temperature



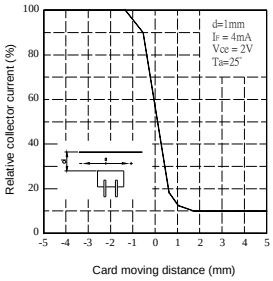

Response time Vs. Load resistance



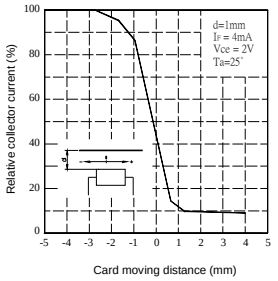

Collector dark current Vs. Ambient temperature




Relative collector current Vs. Card moving distance(1)




Relative collector current Vs. Card moving distance(2)




Test circuit for resopnse time