

# Reflective Object Sensor

## Model No: LBR-123F

### Description

The **LBR-123F** is a light reflection switch that includes a GaAs IRLED transmitter and a NPN photo-transistor with a high photosensitive receiver for short distance, operating in the infrared range. Both components are mounted side-by-side in a plastic package.

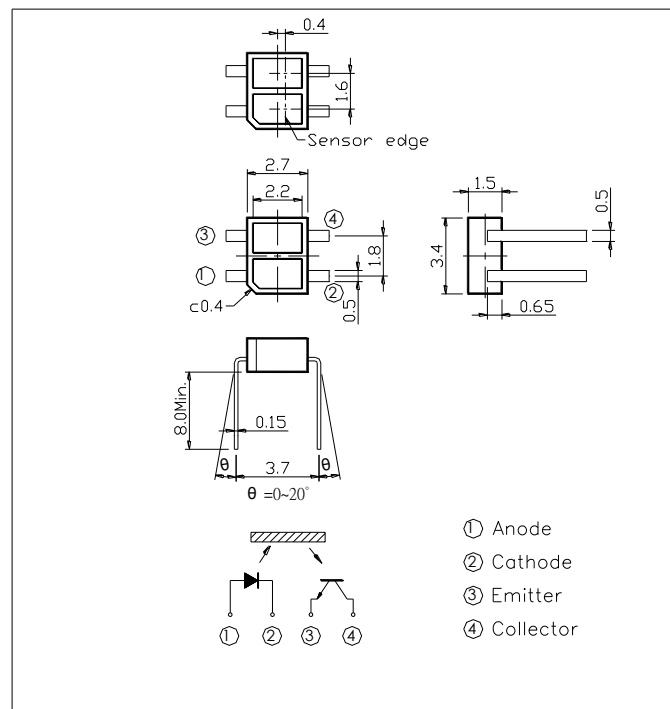
### Features

- Fast response time
- High sensitivity
- Cutting wavelength  $\lambda = 840\text{nm}$
- Thin
- Compact

### Applications

- Camera
- VCR
- Floppy disk driver
- Cassette type recorder
- Various microcomputer control equipment

### Outline dimensions



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#### Absolute Maximum Ratings (Ambient Temperature: 25°C)

| Item                  |                             | Symbol            | Rating     | Units | Note                                   |
|-----------------------|-----------------------------|-------------------|------------|-------|--|
| Input                 | Forward current             | I <sub>F</sub>    | 50         | mA    |  |
|                       | Reverse voltage             | V <sub>R</sub>    | 5          | V     |  |
|                       | Peak forward current        | I <sub>FP</sub>   | 1          | A     | Pulse width ≤ 100μ s,<br>Duty cycle=1% |
|                       | Power dissipation           | P <sub>d</sub>    | 75         | mW    |  |
| Output                | Collector current           | I <sub>c</sub>    | 50         | mA    |  |
|                       | Collector-Emitter voltage   | BV <sub>ceo</sub> | 30         | V     |  |
|                       | Emitter-Collector voltage   | BV <sub>eco</sub> | 5          | V     |  |
|                       | Collector power dissipation | P <sub>c</sub>    | 75         | mW    |  |
| Storage Temperature   |                             | T <sub>stg</sub>  | -40 to +85 | °C    |  |
| Operating Temperature |                             | T <sub>op</sub>   | -25 to +85 | °C    |  |
| Soldering Temperature |                             | T <sub>sol</sub>  | 260        | °C    | 5seconds max.                          |

#### Electrical Specifications (Ambient Temperature: 25°C)

| Item            |                        | Symbol               | MIN. | TYP. | MAX. | Units | Conditions   |
|-----------------|------------------------|----------------------|------|------|------|-------|--|
| Input           | Forward voltage        | V <sub>F</sub>       |      | 1.2  | 1.4  | V     | I <sub>F</sub> =20mA                                   |
|                 | Reverse current        | I <sub>R</sub>       |      |      | 10   | μA    | V <sub>R</sub> =5V                                     |
|                 | Peak wavelength        | λ <sub>p</sub>       |      | 940  |      | nm    |  |
|                 | View angle             | 2θ 1/2               |      | 110  |      | Deg.  | I <sub>F</sub> =20mA                                   |
| Output          | Dark current           | I <sub>ceo</sub>     |      |      | 100  | nA    | V <sub>ce</sub> =10V                                   |
|                 | C-E saturation voltage | V <sub>ce(sat)</sub> |      |      | 0.4  | V     | I <sub>c</sub> =2mA, I <sub>B</sub> =0.1mA             |
| Light current   |                        | I <sub>c(on)</sub>   | 0.1  |      |      | mA    | V <sub>ce</sub> =5V<br>I <sub>F</sub> =20mA            |
| Leakage current |                        | I <sub>leak</sub>    |      |      | 1    | μA    |  |
| Speed           | Rise Time              | t <sub>r</sub>       |      | 20   |      | μs    | V <sub>ce</sub> =2V<br>I <sub>c</sub> =100uA<br>RL=1KΩ |
|                 | Fall Time              | t <sub>f</sub>       |      | 20   |      |       |  |

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## Reference Data

