



## Photointerrupter

Model No: LBT-133W-JIL

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

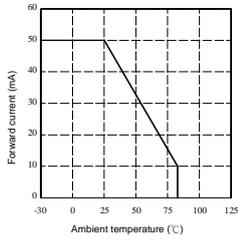
| Item                  |                             | Symbol           | Rating     | Units | Note                             |
|-----------------------|-----------------------------|------------------|------------|-------|----------------------------------|
| Input                 | Forward current             | I <sub>F</sub>   | 50         | mA    |                                  |
|                       | Reverse voltage             | V <sub>R</sub>   | 5          | V     |                                  |
|                       | Peak forward current        | I <sub>FP</sub>  | 1          | A     | T <sub>w</sub> =10 μs,<br>t=10ms |
|                       | Power dissipation           | P <sub>d</sub>   | 75         | mW    |                                  |
| Output                | Collector current           | I <sub>c</sub>   | 50         | mA    |                                  |
|                       | Collector-Emitter voltage   | V <sub>ceo</sub> | 30         | V     |                                  |
|                       | Emitter-Collector voltage   | V <sub>eco</sub> | 5          | V     |                                  |
|                       | Collector power dissipation | P <sub>c</sub>   | 100        | 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    | 5 seconds max.                   |

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

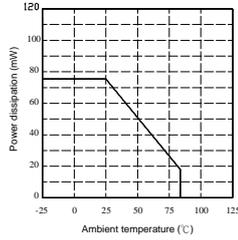
| Item              |                        | Symbol               | MIN. | TYP. | MAX. | Units | Conditions  |
|-------------------|------------------------|----------------------|------|------|------|-------|---|
| Input             | Forward voltage        | V <sub>F</sub>       | 1.0  | 1.15 | 1.3  | 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               |      | 35   |      | Deg.  | I <sub>F</sub> =20mA  |
| Output            | Dark current           | I <sub>ceo</sub>     |      |      | 100  | nA    | V <sub>ce</sub> =20V  |
|                   | C-E saturation voltage | V <sub>ce(sat)</sub> |      | 0.15 | 0.4  | V     | I <sub>c</sub> =2mA, I <sub>B</sub> =0.1mA                        |
| Collector current |                        | I <sub>c(on)</sub>   | 0.5  | 2.0  |      | 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>       |      | 30   |      | μs    | V <sub>ce</sub> =5V<br>I <sub>c</sub> =1mA<br>R <sub>L</sub> =1KΩ |
|                   | Fall Time              | t <sub>f</sub>       |      | 25   |      |       |   |

# Photointerrupter Reference Data

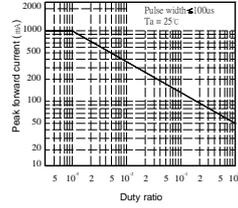
Forward current Vs.  
Ambient temperature



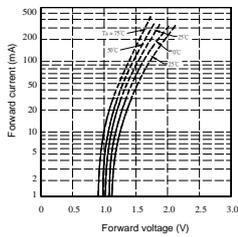
Power dissipation Vs.  
Ambient temperature



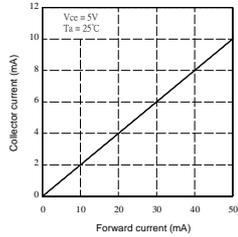
Peak forward current Vs.  
Duty ratio



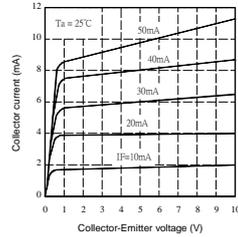
Forward current Vs.  
Forward voltage



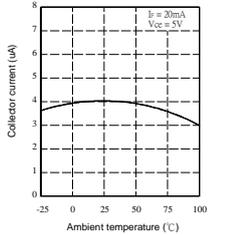
Collector current Vs.  
Forward current



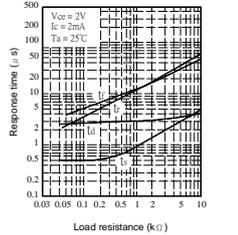
Collector current Vs.  
Collector-Emitter voltage



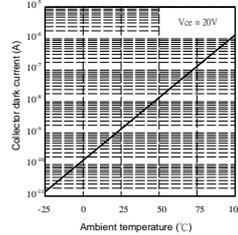
Collector current Vs.  
Ambient temperature



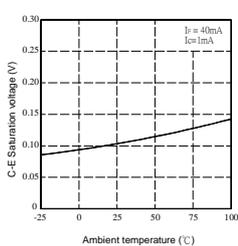
Response time Vs.  
Load resistance



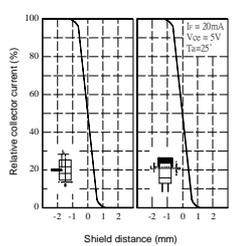
Collector dark current Vs.  
Ambient temperature



C-E Saturation voltage Vs.  
Ambient temperature



Relative collector current Vs.  
Shield distance



Test circuit for response time

