



# Photointerrupter Product Data Sheet LTH-209-01

Spec No.: DS-55-92-0007

Effective Date: 06/15/2000

Revision: -

**LITE-ON DCC**

**RELEASE**

BNS-OD-FC001/A4

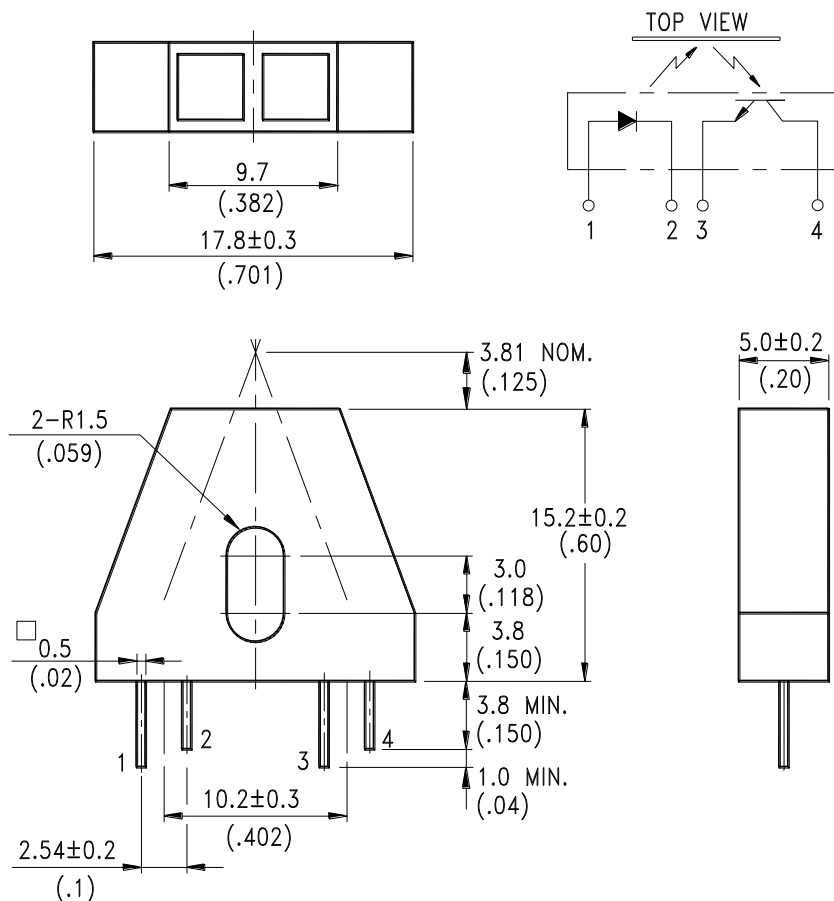
# LITEON LITE-ON TECHNOLOGY CORPORATION

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## FEATURES

- \* NON-CONTACT SWITCHING.
- \* FOR DIRECT PC BOARD OR DUAL-IN-LINE SOCKET MOUNTING.
- \* FAST SWITCHING SPEED.
- \* REFLECTIVE OBJECT SENSOR.

## PACKAGE DIMENSIONS



### NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25 \text{ mm}$  ( $.010 \text{ inches}$ ) unless otherwise noted.
3. Specification are subject to change without notice.

## **ABSOLUTE MAXIMUM RATINGS AT TA=25°C**

| PARAMETER                                                         | MAXIMUM RATING      | UNIT        |
|-------------------------------------------------------------------|---------------------|-------------|
| IR Diode Continuous Forward Current                               | 50                  | mA          |
| IR Diode Reverse Voltage                                          | 5                   | V           |
| Transistor Collector Current                                      | 20                  | mA          |
| Transistor Power Dissipation                                      | 100                 | mW (Note 1) |
| IR Diode Peak Power Current<br>(Pulse Wide = 10 $\mu$ S, 300 pps) | 3                   | A           |
| Diode Power Dissipation                                           | 75                  | mW (Note 1) |
| Phototransistor Collector-Emitter Voltage                         | 30                  | V           |
| Phototransistor Emitter-Collector Voltage                         | 5                   | V           |
| Operating Temperature Range                                       | -35°C to + 65°C     |             |
| Storage Temperature Range                                         | -40°C to + 100°C    |             |
| Lead Soldering Temperature<br>[1.6mm(.063") From Case]            | 260°C for 5 Seconds |             |

Note 1: Derate Linearly 1.33 mW /°C from 25°C

## ELECTRICAL OPTICAL CHARACTERISTICS AT TA=25°C

| PARAMETER                               | SYMBOL                | MIN. | TYP. | MAX. | UNIT | TEST CONDITION                                 |
|-----------------------------------------|-----------------------|------|------|------|------|------------------------------------------------|
| INPUT LED                               |                       |      |      |      |      |                                                |
| Forward Voltage                         | V <sub>F</sub>        |      | 1.2  | 1.6  | V    | I <sub>F</sub> = 20mA                          |
| Reverse Current                         | I <sub>R</sub>        |      |      | 100  | μA   | V <sub>R</sub> =5V                             |
| OUTPUT PHOTOTRANSISTOR                  |                       |      |      |      |      |                                                |
| Collector-Emitter<br>Breakdown Voltage  | V(BR) <sub>CEO</sub>  | 30   |      |      | V    | I <sub>C</sub> =1mA                            |
| Emitter-Collector<br>Breakdown Voltage  | V(BR) <sub>ECO</sub>  | 5    |      |      | V    | I <sub>E</sub> =0.1mA                          |
| Collector-Emitter<br>Dark Current       | I <sub>CEO</sub>      |      |      | 100  | nA   | V <sub>CE</sub> =10V                           |
| COUPLER                                 |                       |      |      |      |      |                                                |
| Collector-Emitter<br>Saturation Voltage | V <sub>CE</sub> (SAT) |      |      | 0.4  | V    | I <sub>C</sub> =0.08mA<br>I <sub>F</sub> =20mA |
| On State Collector Current (Note 1)     | I <sub>C</sub> (ON)   | 0.16 |      |      | mA   | V <sub>CE</sub> =5V<br>I <sub>F</sub> =20mA    |

Note 1: Reflective surface is Eastman Kodak (or Equivalent) neutral white paper  
with 90% diffused reflectance placed 3.81 mm (0.15 inch) from read head.

## TYPICAL ELECTRICAL / OPTICAL CHARACTERISTICS CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

Fig.1 Power Dissipation vs. Ambient Temperature

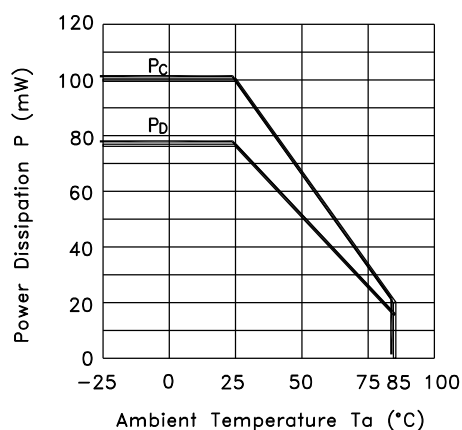


Fig.2 Forward Current vs. Forward Voltage

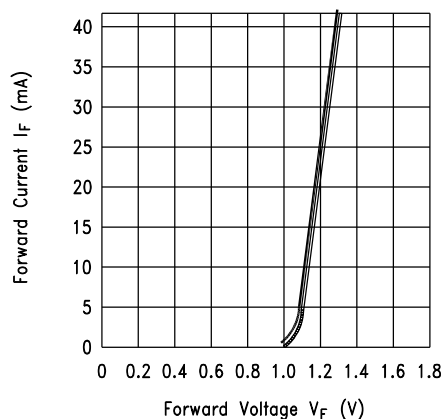


Fig.3 Collector Current vs. Collector-emitter Voltage

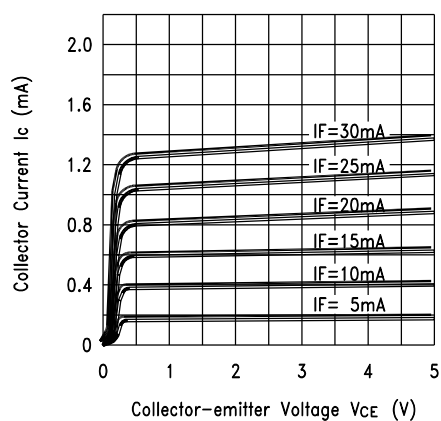
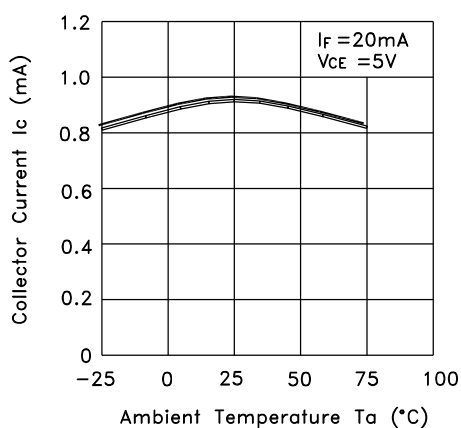


Fig.4 Collector Current vs. Ambient Temperature



## TYPICAL ELECTRICAL / OPTICAL CHARACTERISTICS CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

Fig.5 Collector-emitter Saturation vs. Voltage Ambient Temperature

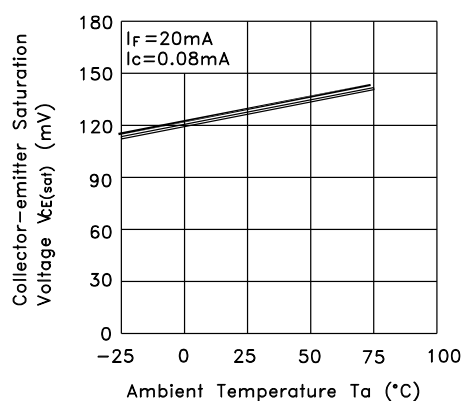


Fig.6 Relative Collector Current vs. Object Distance

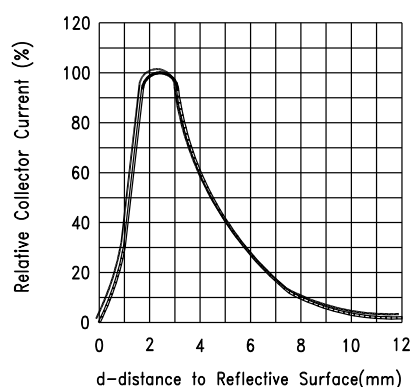
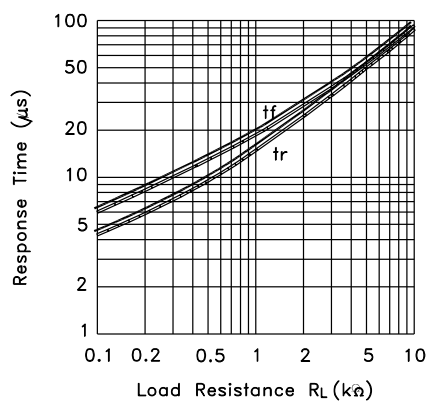


Fig.7 Response Time vs. Load Resistance



Test Circuit for Response Time

