



**Photointerrupter**  
**Product Data Sheet**  
LTH-301-07

Spec No. :DS-55-92-0003  
Effective Date: 08/23/2024  
Revision: B

**LITE-ON DCC**

**RELEASE**

**BNS-OD-FC001/A4**



## Photo-Interrupter LTH-301-07

### 3. Absolute Maximum Ratings at TA=25°C

| Parameter  | Maximum Rating      | Unit |
|--|---------------------|------|
| INPUT LED  |                     |      |
| Power Dissipation                                    | 80                  | mW   |
| Peak Forward Current ( 300 pps , 10 $\mu$ S pulse)   | 1                   | A    |
| Continuous Forward Current                           | 50                  | mA   |
| Reverse Voltage                                      | 5                   | V    |
| OUTPUT PHOTOTRANSISTOR                               |                     |      |
| Power Dissipation                                    | 100                 | mW   |
| Collector-Emitter Voltage                            | 30                  | V    |
| Emitter-Collector Voltage                            | 5                   | V    |
| Collector Current                                    | 20                  | mA   |
| Operating Temperature Range                          | -25°C to + 85°C     |      |
| Storage Temperature Range                            | -40°C to + 100°C    |      |
| Lead Soldering Temperature [1.6mm (.063") From Case] | 260°C for 5 Seconds |      |

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### 4. Electrical / Optical Characteristics at TA=25°C

| Parameter                            | Symbol        | Min.  | Typ. | Max. | Unit          | Test Condition  |
|--------------------------------------|---------------|-------|------|------|---------------|---|
| INPUT LED                            |               |       |      |      |               |   |
| Forward Voltage                      | $V_F$         | -     | 1.2  | 1.6  | V             | $I_F = 20\text{mA}$   |
| Reverse Current                      | $I_R$         | -     | -    | 100  | $\mu\text{A}$ | $V_R = 5\text{V}$   |
| OUTPUT PHOTOTRANSISTOR               |               |       |      |      |               |   |
| Collector-Emitter Dark Current       | $I_{CEO}$     | -     | -    | 100  | nA            | $V_{CE} = 10\text{V}$   |
| Collector-Emitter Voltage            | $BV_{CEO}$    | 30    | -    | -    | V             | $I_{CE} = 1\text{mA}$   |
| Emitter-Collector Voltage            | $BV_{ECO}$    | 5     | -    | -    | V             | $I_{EC} = 100\mu\text{A}$   |
| COUPLER                              |               |       |      |      |               |   |
| Collector Emitter Saturation Voltage | $V_{CE(SAT)}$ | -     | -    | 0.4  | V             | $I_C = 0.25\text{mA}$<br>$I_F = 20\text{mA}$  |
| On State Collector Current           | $I_{C(ON)}$   | 0.6   | -    | -    | mA            | $V_{CE} = 5\text{V}$<br>$I_F = 20\text{mA}$   |
| Response Time                        | Rise Time     | $T_r$ | -    | 3    | $\mu\text{S}$ | $R_L = 100\Omega$ , $F = 10\text{KHZ}$ ,<br>$I_C = 2\text{mA}$ , $V_{ce} = 5\text{V}$ |
|                                      | Fall Time     | $T_f$ | -    | 4    |               |   |

#### NOTE:

1. Forward voltage of tolerance +/-0.1V; Others of tolerance ±10%.

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### 5. Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

Fig.1 Power Dissipation vs. Ambient Temperature

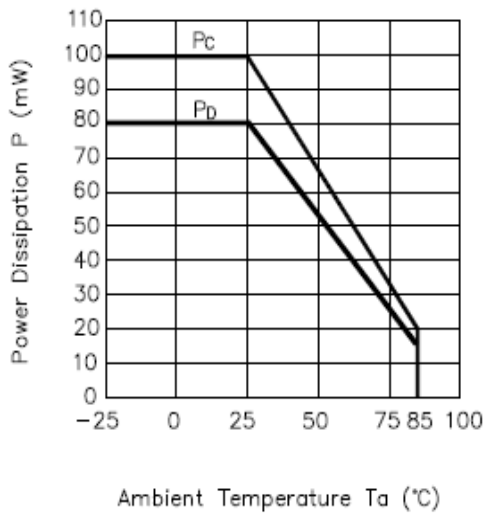


Fig.2 Forward Current vs. Forward Voltage

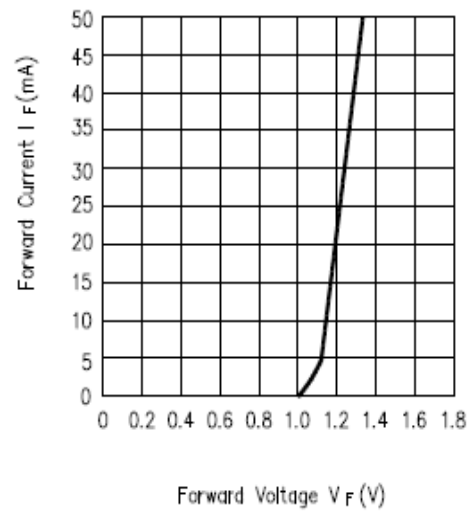


Fig.3 Collector Current vs. Forward Current

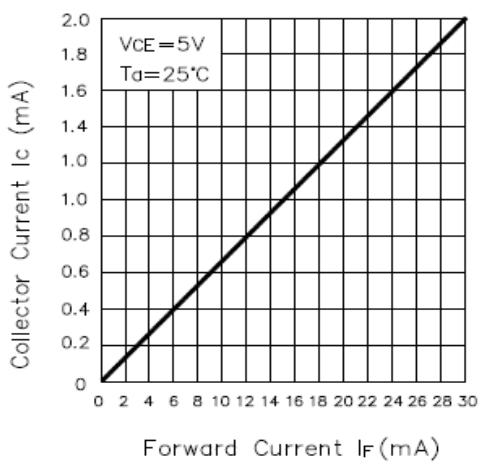
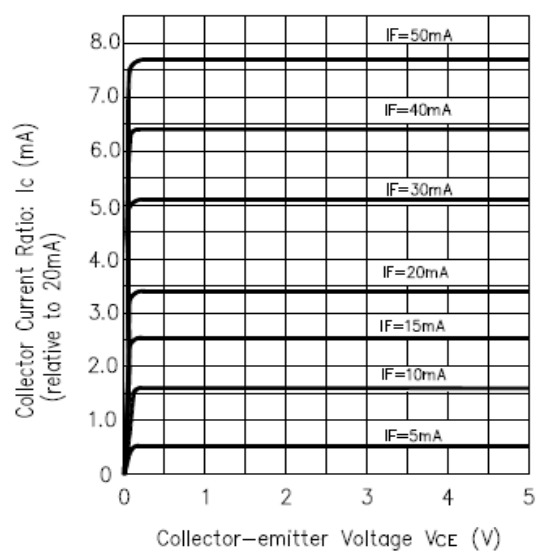


Fig.4 Collector Current Ratio vs. Collector-emitter Voltage





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Fig.5 Relative output vs. Ambient Temperature

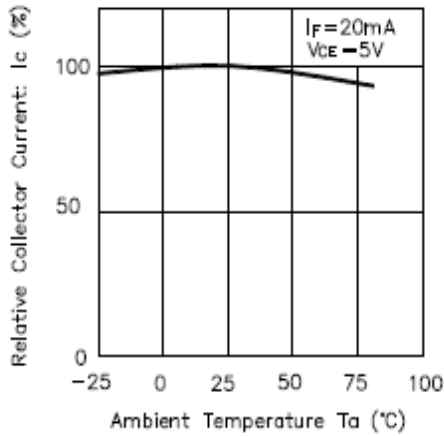


Fig.6 Collector-emitter Saturation Voltage vs. Ambient Temperature

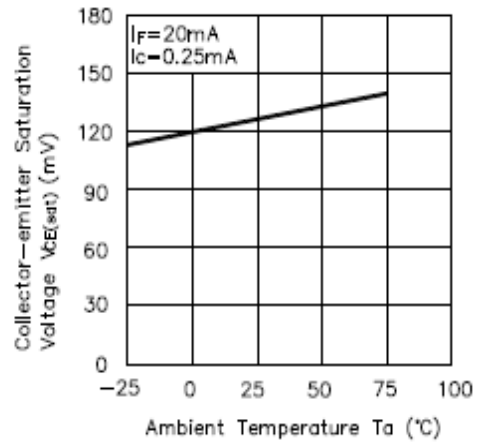
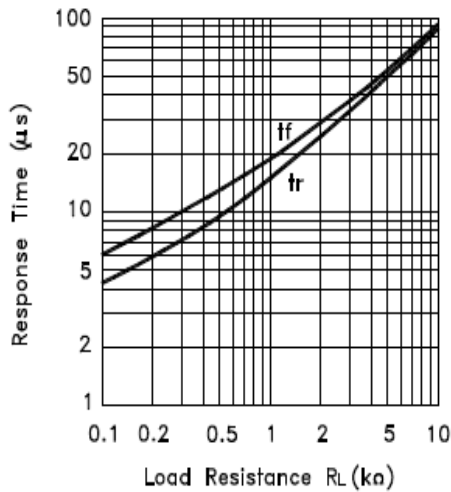
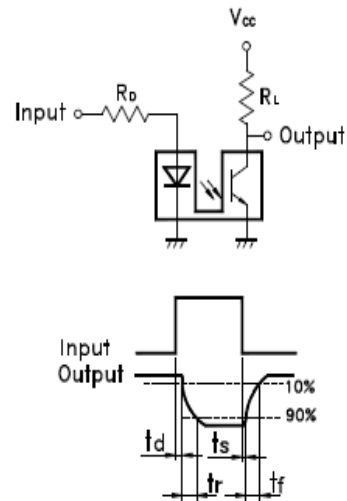


Fig.7 Response Time vs. Load Resistance



Test Circuit for Response Time



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**6. Soldering information**

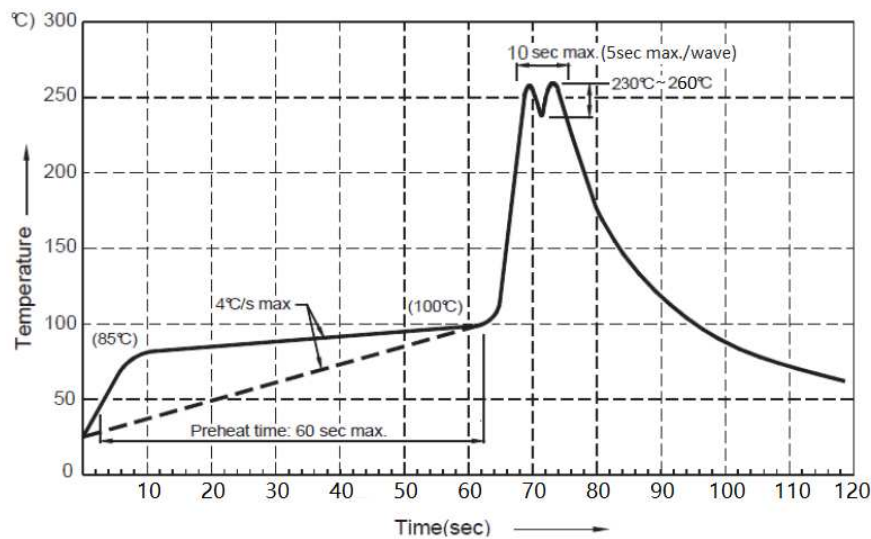
Dipping the housing into the solder must be avoided.

Do not apply any external stress to the lead frame during soldering while the product is at high temperature.

**Recommended soldering conditions:**

| Lead Soldering |  | Wave soldering   |   |
|----------------|--|------------------|---|
| Temperature    | 350°C Max.   | Pre-heat         | 100°C Max.  |
| Soldering time | 3 seconds Max.<br>(one time only)                  | Pre-heat time    | 60 seconds Max.                                   |
| Position       | No closer than 2mm<br>from the base of the housing | Solder wave      | 260°C Max.  |
|                |  | Soldering time   | 5 seconds Max.                                    |
|                |  | Dipping Position | No lower than 2mm from the<br>base of the housing |

**Recommended Wave soldering Profile:**



**7. Cautions for Storage**

The storage ambient for this component should be <30°C temperature and < 70 % relative humidity, also the component should be assembled within 3 months upon the delivery date. To extend the storage life when the part still in original packing, the component should be stored in a sealed container with appropriate desiccant or in desiccators with nitrogen ambient but not over a year; after opening the package, the component must be consumed within 3months under controlled environment of <25°C and <60%RH. Please avoid rapid transitions in ambient temperature, especially in high humidity environment where condensation can occur. If storage conditions do not meet above criteria, the component’s pin may become oxidized then solderability assessment and re-sorting must be performed before use.