



## High-speed, high-power infrared LED for free space optics

The L7558 series LEDs were developed for free space optical communications such as image data signal transmission, and operate at high speeds of 50 MHz.

The L7558 delivers a high output of 14 mW and is used in combination with a light projection lens. The L7558-01 is sealed in a metal package capped with a glass lens that produces an angle of view of  $\pm 7^\circ$  (full angle at half maximum).

Both types employ a metal stem package that gives higher reliability than plastic package devices.

### Features

- High-speed response: 50 MHz Typ. ( $I_F=50$  mA)
- High radiant output power  
L7558 : 14 mW Typ. ( $I_F=50$  mA)  
L7558-01: 7 mW Typ. ( $I_F=50$  mA)
- High reliability

### Applications

- FSO (free space optics)

### Absolute maximum ratings ( $T_a=25^\circ\text{C}$ )

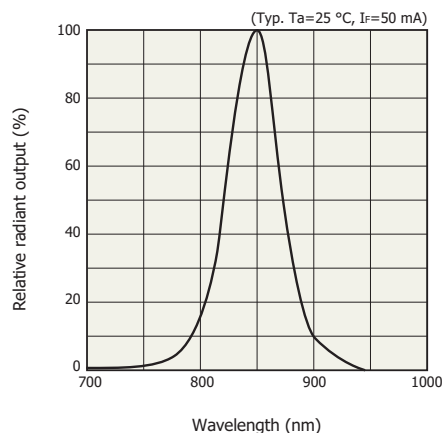
| Parameter             | Symbol    | Condition                                      | Value         | Unit             |
|-----------------------|-----------|------------------------------------------------|---------------|------------------|
| Forward current       | $I_F$     |                                                | 100           | mA               |
| Reverse voltage       | $V_R$     |                                                | 5             | V                |
| Pulse forward current | $I_{FP}$  | Pulse width=10 $\mu\text{s}$<br>Duty ratio=1 % | 1.0           | A                |
| Operating temperature | $T_{opr}$ |                                                | -30 to +85    | $^\circ\text{C}$ |
| Storage temperature   | $T_{stg}$ |                                                | -40 to +100 * | $^\circ\text{C}$ |

\* Guaranteed to resist temperature cycle test of up to 5 cycles.

### Electrical and optical characteristics ( $T_a=25^\circ\text{C}$ )

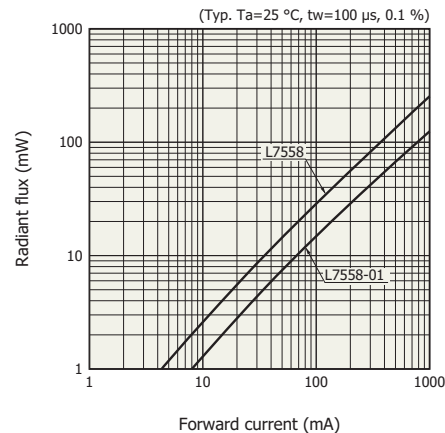
| Parameter                | Symbol          | Condition                       | L7558 |      |      | L7558-01 |      |      | Unit                    |
|--------------------------|-----------------|---------------------------------|-------|------|------|----------|------|------|-------------------------|
|                          |                 |                                 | Min.  | Typ. | Max. | Min.     | Typ. | Max. |                         |
| Peak emission wavelength | $\lambda_p$     | $I_F=50$ mA                     | 820   | 850  | 880  | 820      | 850  | 880  | nm                      |
| Spectral half width      | $\Delta\lambda$ | $I_F=50$ mA                     | -     | 50   | -    | -        | 50   | -    | nm                      |
| Forward voltage          | $V_F$           | $I_F=50$ mA                     | -     | 1.45 | 1.60 | -        | 1.45 | 1.60 | V                       |
| Pulse forward voltage    | $V_{FP}$        | $I_F=1$ A                       | -     | 3.4  | 4.3  | -        | 3.4  | 4.3  | V                       |
| Reverse current          | $I_R$           | $V_R=5$ V                       | -     | -    | 10   | -        | -    | 10   | $\mu\text{A}$           |
| Radiant flux             | $\phi_e$        | $I_F=50$ mA                     | 11    | 14   | -    | 5.5      | 7.0  | -    | mW                      |
| Radiant illuminance      | $P_E$           | $I_F=50$ mA                     | -     | 1.5  | -    | -        | 4.0  | -    | $\text{mW}/\text{cm}^2$ |
| Cut-off frequency        | $f_c$           | $I_F=50$ mA $\pm 1\text{mAp-p}$ | 35    | 50   | -    | 35       | 50   | -    | MHz                     |

### Emission spectrum



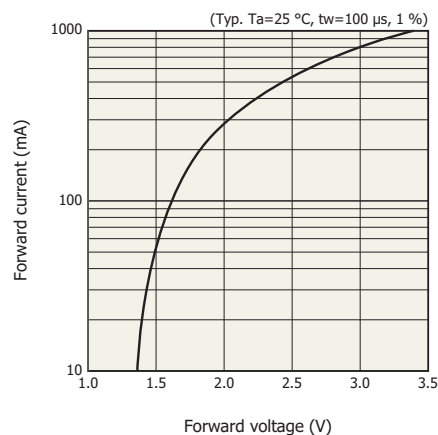
KLED80153EA

### Radiant flux vs. forward current



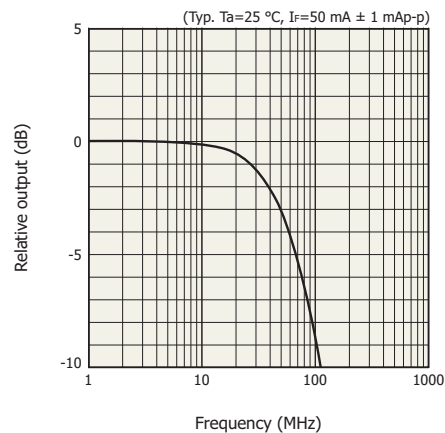
KLED80154EA

### Forward current vs. forward voltage



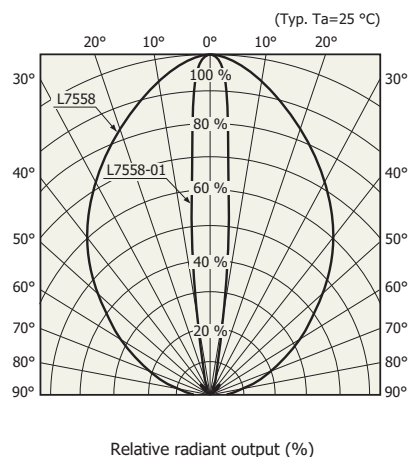
KLED80155EA

### Frequency characteristic



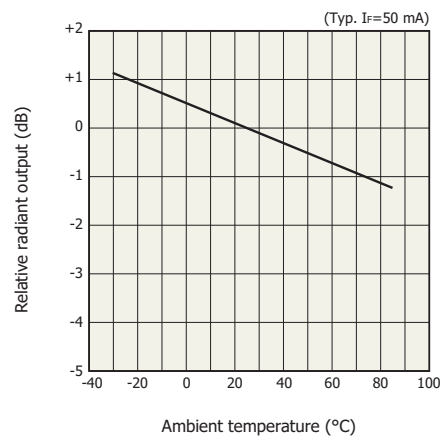
KLED80319EA

### Directivity



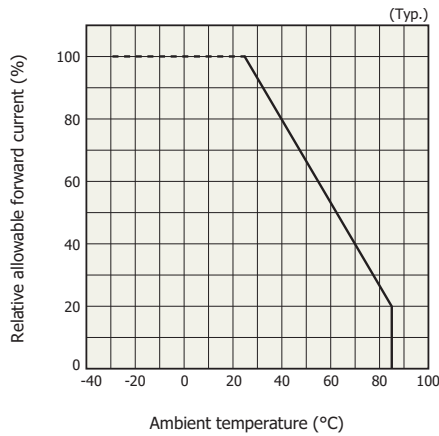
KLED80066EA

### Radiant output vs. ambient temperature

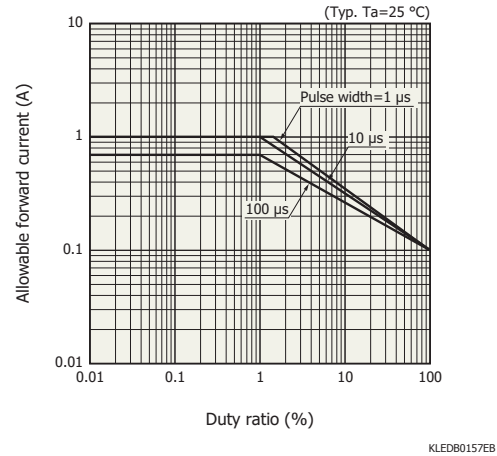


KLED80156EA

### Allowable forward current vs. ambient temperature

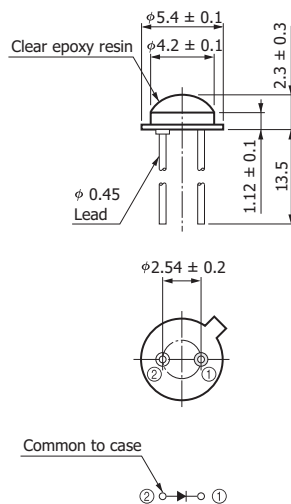


### Allowable forward current vs. duty ratio



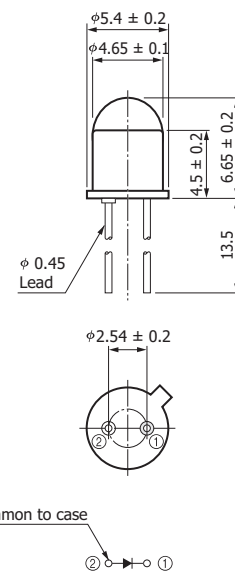
### Dimensional outlines (unit: mm)

L7558



KLEDA0009ED

L7558-01



KLEDA0052EB

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