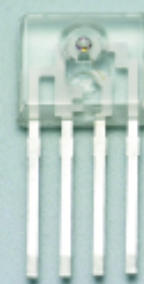


Red LED for optical link

L8045

Emitter for 50 Mbps optical link



L8045 is optical communication devices designed for POF (Plastic Optical Fiber) data links. L8045 is a highly reliable, high-power LED that emits red light with a peak at 650 nm optimized for POF. A mini-lens is molded on the package for efficient coupling to a POF. When used with our recommended driver circuit, a 50 Mbps transmitter can be configured at low cost.

Features

- Peak wavelength: 650 nm
- High reliability
- High output
- Designed to be used with S8046 or S7141-10

Applications

- High-speed data transmission even under poor environmental conditions with high noise

■ Absolute maximum ratings (Ta=25 °C)

| Parameter | Symbol | Value | Unit |
|-----------------------|--------|--|------|
| Forward current | IF | 40 | mA |
| Reverse voltage | VR | 5 | V |
| Power dissipation *1 | Pmax | 250 | mW |
| Operating temperature | Topr | -40 to +85 | °C |
| Storage temperature | Tstg | -40 to +85 | °C |
| Soldering | - | 230 °C, 5 s, at least 1.8 mm away from package surface | - |

*1: Derate power dissipation at a rate of -1.75 mW/°C above Ta=25 °C

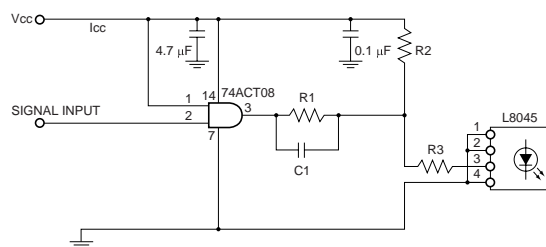
■ Electrical and optical characteristics (Ta=25 °C)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|------------------------------|--------|---------------|------|------|------|------|
| Data rate | fD | NRZ | DC | - | 50 | Mbps |
| Forward voltage | VF | IF=20 mA | - | 1.9 | 2.3 | V |
| Reverse current | IR | VR=5 V | - | - | 10 | μA |
| Peak wavelength | λp | IF=20 mA | - | 650 | - | nm |
| Spectral half width (FWHM) | Δλ | IF=20 mA | - | 20 | - | nm |
| Fiber-coupled optical output | Po | *2 | -13 | - | -8 | dBm |
| Rise time at pulse drive | tr | *2 20 to 80 % | - | - | 8 | ns |
| Fall time at pulse drive | tf | *2 80 to 20 % | - | - | 8 | ns |
| Pulse distortion | ΔT | *2 | -3 | - | +1 | ns |
| Jitter | Δtj | *2 | - | - | 3 | ns |

*2: Input is a pseudo-random bi-phase signal at 50 Mbps.

Average value (duty ratio 50 %) measured by using a plastic fiber of φ1 mm. SI-POF and NA=0.5 (GH4001 made by Mitsubishi Rayon).

Measured with the recommended driver circuit shown below. (Measurement conditions: Vcc=4.5 to 5.5 V, R1=750 Ω, R2=2.2 kΩ, R3=22 Ω, C1=35 pF)

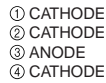


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Note:

- A bypass capacitor (0.1 μF) and another capacitor (4.7 μF) are connected between Vcc and GND at a position within 3 mm from the lead.
- The center of the optical fiber is aligned with the center of the lens on the package. The distance between the fiber end and the lens is 0.1 mm.

■ Dimensional outline (unit: mm)



Tolerance unless otherwise noted: ± 0.1 , $\pm 0.2^\circ$
Shaded area indicates burr.
Values in parentheses indicate reference value.

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