

Red LED for optical link

L10881



RC-LED for 156 Mbps POF communications

The L10881 is designed for high-speed POF (plastic optical fiber) communications. The device is molded into miniature plastic package with lens, allowing easy and efficient coupling to a POF.

Features

- Red RC-LED for POF data link
- Peak emission wavelength: 650 nm (suitable for POF communications)
- High-speed response: $f_c=70$ MHz Typ.
- High output power: $P_o=-2$ dBm ($I_F=20$ mA, $\phi 1$ mm, POF)
- Designed to be used with the S7727

Applications

- Plastic optical fiber communications (FA, office machine, home automation, LAN)
- Data transmission in locations subject to high electromagnetic noise

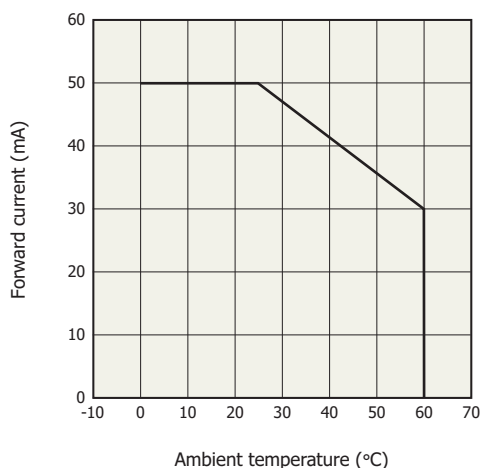
Absolute maximum ratings ($T_a=25$ °C)

Parameter	Symbol	Value	Unit
Forward current	I_F	50 *1	mA
Power dissipation	P_{max}	130 *2	mW
Operating temperature	T_{opr}	0 to 60	°C
Storage temperature	T_{stg}	-40 to +85	°C
Soldering	-	230 °C, 5 s, at least 1.5 mm away from package surface	-

*1: Decreases at a rate of 0.57 mA/°C

*2: Power dissipation decreases at a rate of 1.7 mW/°C above $T_a=25$ °C

Forward current vs. ambient temperature



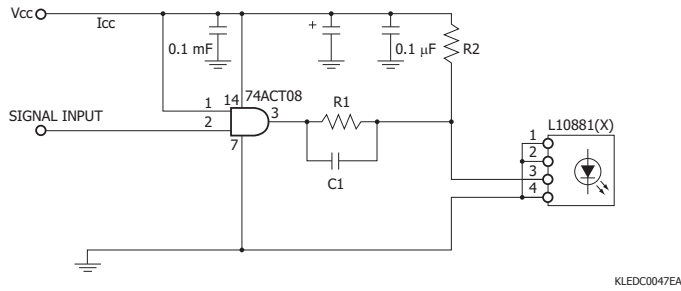
KLED80340EA

Electrical and optical characteristics (Ta=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward voltage	V _F	I _F =20 mA	-	1.9	2.4	V
Peak emission wavelength	λ _p	I _F =20 mA	640	650	665	nm
Spectral half width (FWHM)	Δλ	I _F =20 mA	-	-	25	nm
Fiber coupled optical power	P _o	*3	-4.5	-2	+0.5	dBm
Pulse distortion	ΔT	*3	-2.5	-	2.5	ns
Cut-off frequency	f _c	I _F =20 mA ±1 mAp-p	60	70	-	MHz

*3: Measured with the recommended driver circuit shown below.

Recommended driver circuit



Input is a pseudo-random bi-phase signal at 156 Mbps (NZR signal conversion).

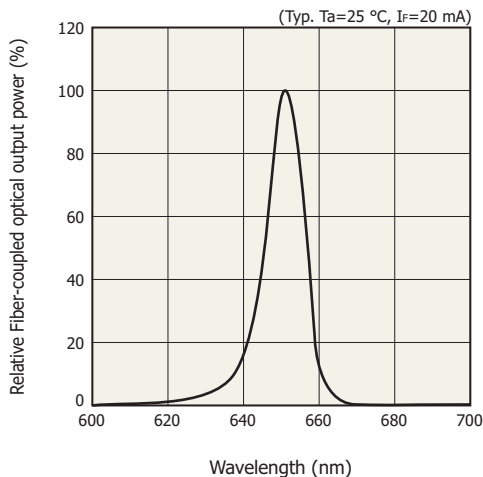
Average value (duty ratio 50 %) measured by using a plastic fiber of φ1 mm. SI-POF and NA=0.5 (GH4001 made by Mitsubishi Rayon).

V_{cc}=5.0 V, R₁=100 Ω, R₂=300 kΩ, C₁=20 pF

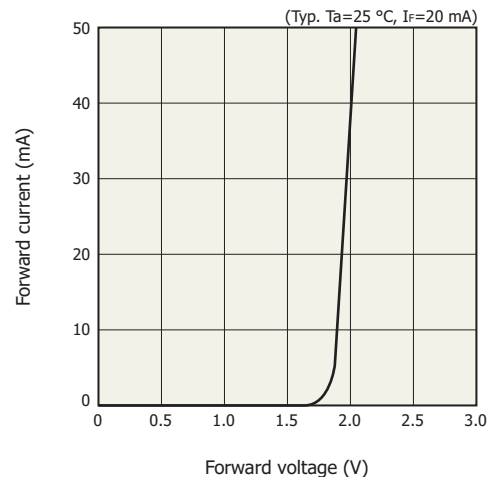
Note:

- A bypass capacitor (0.1 μF) and another capacitor (4.7 μF) are connected between V_{cc} 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.
- When using optical fibers with small core diameter, the fiber-coupled optical output power may vary.

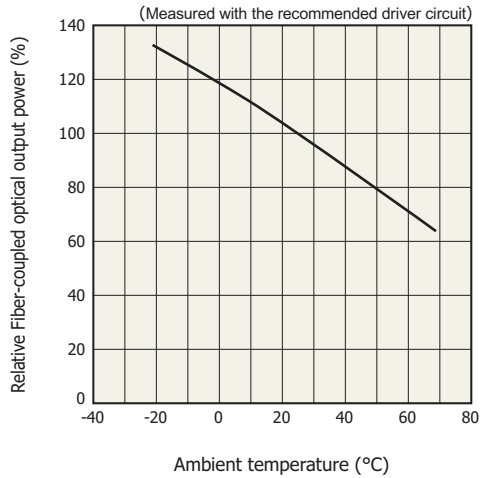
Emission spectrum



Forward current vs. forward voltage

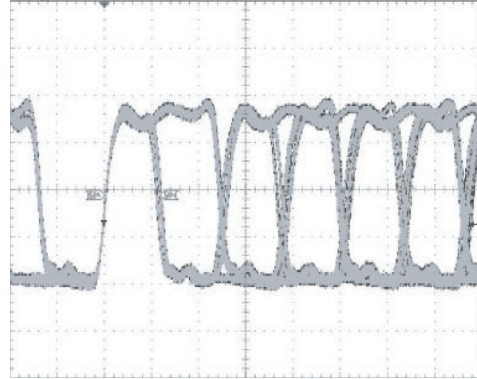


Fiber-coupled optical output power vs. ambient temperature



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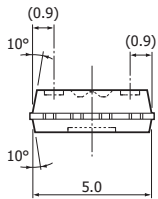
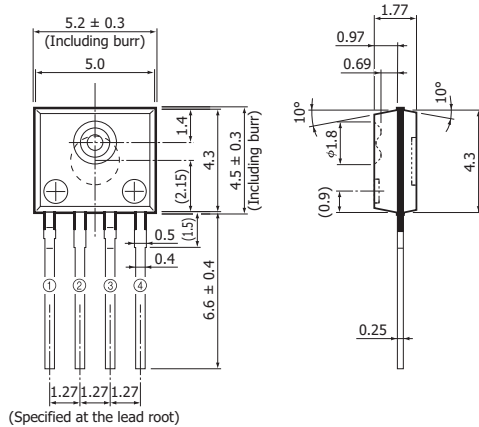
Output waveform example



Vertical axis: 30 mV/div., Horizontal axis: 5 ns/div.

(Ta=25 °C, Vcc=5.00 V, R1=100 Ω, R2=300 Ω, CL=20 pF)

Dimensional outline (unit: mm)



- ① Cathode
- ② Cathode
- ③ Anode
- ④ Cathode

Tolerance unless otherwise noted: ± 0.1 , $\pm 2^\circ$
 Shaded area indicates burr.
 Values in parentheses indicate reference value.
 Lead surface finish: Silver plating
 Packaging: tray (100 pcs/tray)
 (Please consult us for large volume orders.)

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Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications are subject to change without notice. No patent rights are granted to any of the circuits described herein.

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