

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

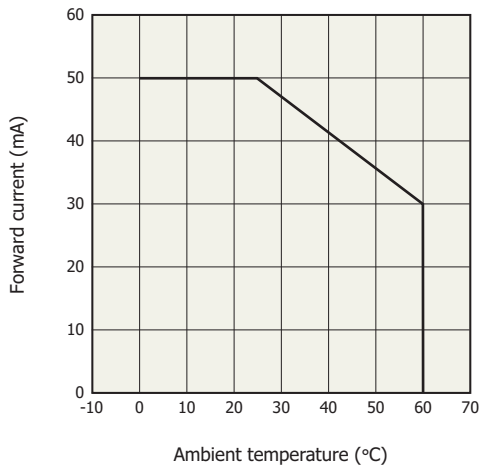
Absolute maximum ratings ($T_a=25$ °C)

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



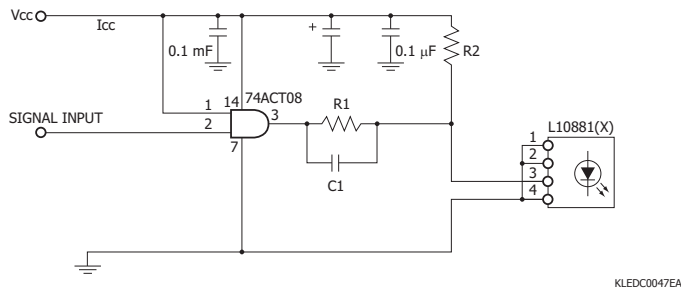
KLED80340EA

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

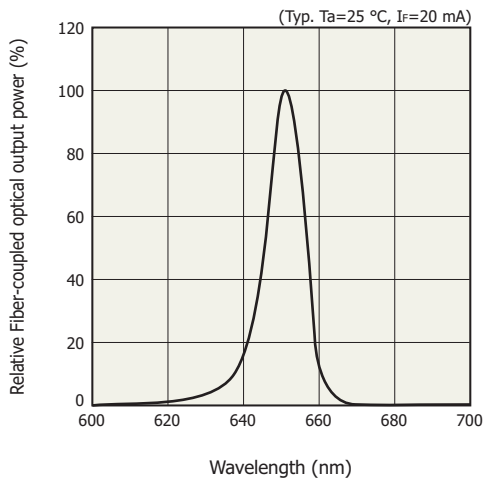


Input is a pseudo-random bi-phase signal at 156 Mbps (NZR signal conversion).
 Average value (duty ratio 50 %) measured by using a plastic fiber of φ1 mm. SI-POF and NA=0.5 (GH4001 made by Mitsubishi Rayon).
 V_{cc}=5.0 V, R₁=100 Ω, R₂=300 kΩ, C₁=20 pF

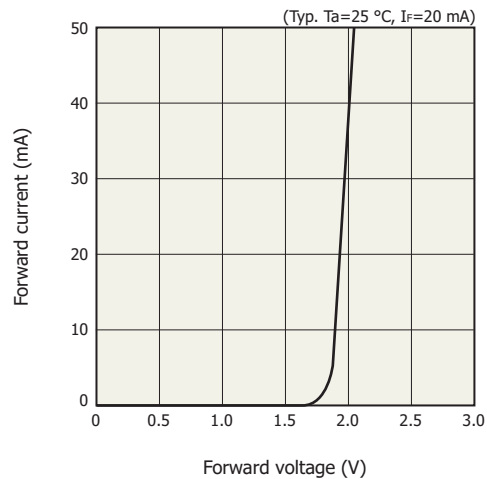
Note:

- 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.

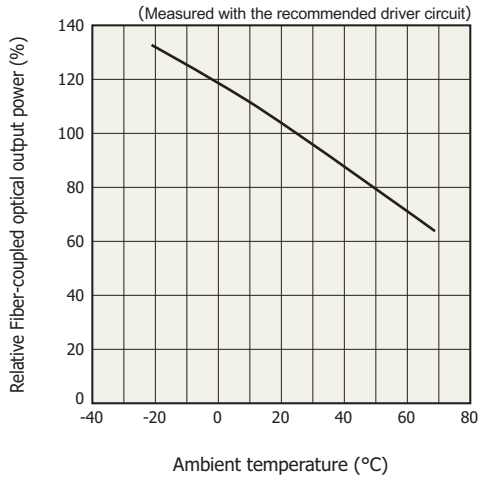
Emission spectrum



Forward current vs. forward voltage

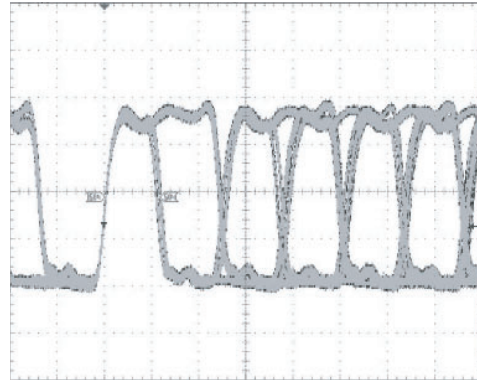


Fiber-coupled optical output power vs. ambient temperature



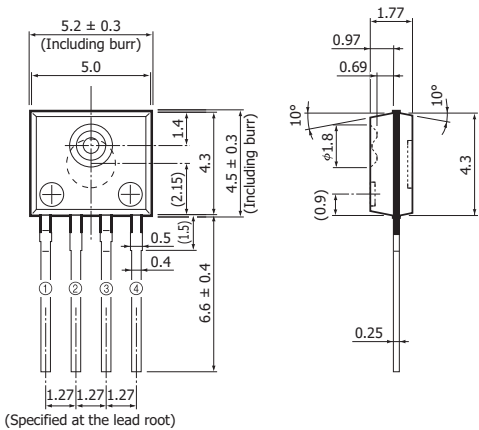
KLEDB0323EA

Output waveform example

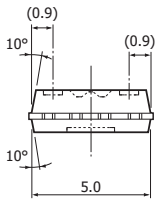


Vertical axis: 30 mV/div., Horizontal axis: 5 ns/div.
(Ta=25 °C, Vcc=5.00 V, R1=100 Ω, R2=300 Ω, CL=20 pF)

Dimensional outline (unit: mm)



(Specified at the lead root)



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

Tolerance unless otherwise noted: ±0.1, ±2°
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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