HAMAMATSU

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: fc=70 MHz Typ.**
- **High output power: Po=-2 dBm (I_F=20 mA, ϕ1 mm, POF)**
- **Designed to be used with the S7727**

Applications

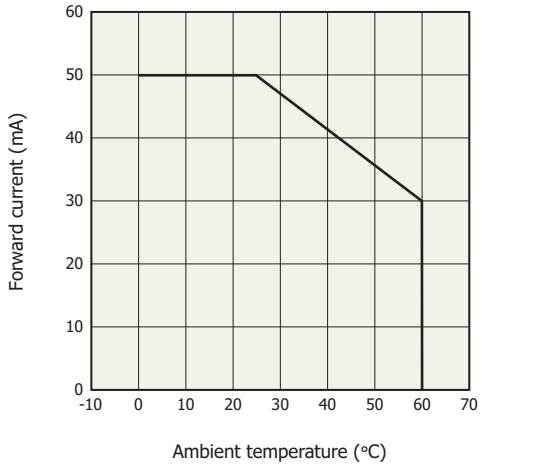
- **Plastic optical fiber communications (FA, office machine, home automation, LAN)**
- **Data transmission in locations subject to high electromagnetic noise**

Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Forward current	I_F	50 *1	mA
Power dissipation	Pmax	130 *2	mW
Operating temperature	Topr	0 to 60	°C
Storage temperature	Tstg	-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 Ta=25 °C

Forward current vs. ambient temperature



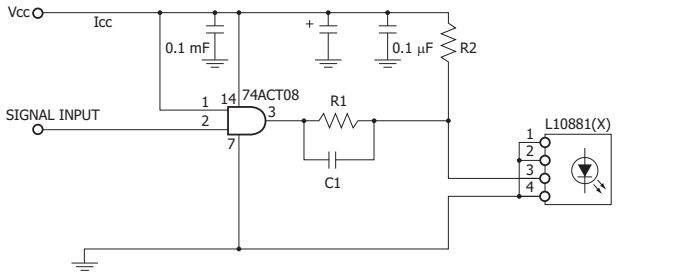
KLEDB0340EA

Electrical and optical characteristics (Ta=25 °C)

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

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

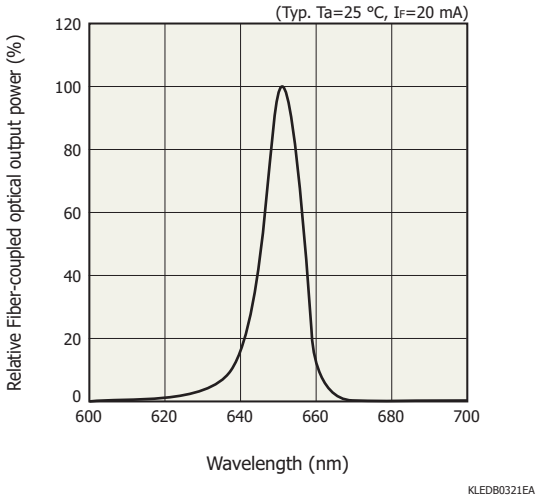
Recommended driver circuit



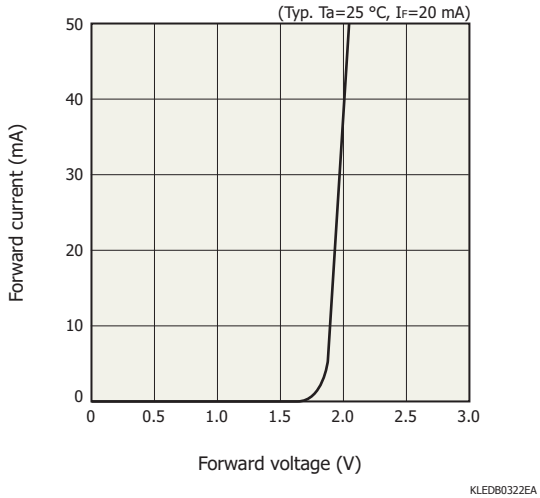
Input is a pseudo-random bi-phase signal at 156 Mbps (NZR signal conversion).
Average value (duty ratio 50 %) measured by using a plastic fiber of ϕ1 mm. SI-POF and NA=0.5 (GH4001 made by Mitsubishi Rayon).
Vcc=5.0 V, R1=100 Ω, R2=300 kΩ, C1=20 pF

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

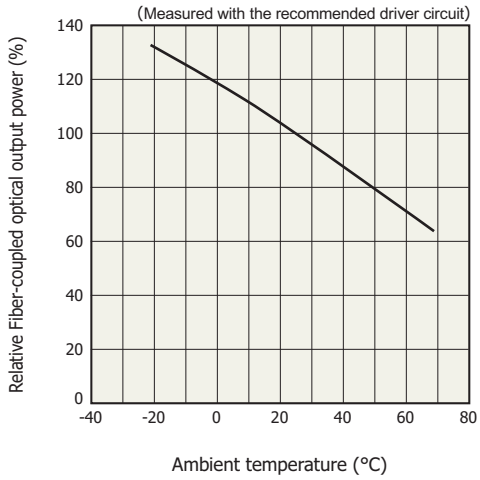
Emission spectrum



Forward current vs. forward voltage

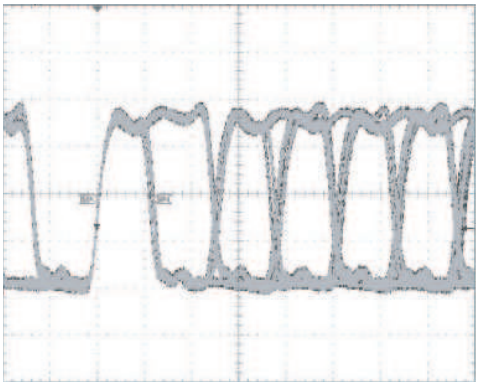


Fiber-coupled optical output power vs. ambient temperature



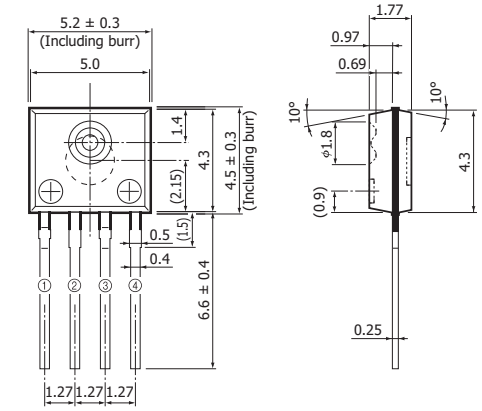
KLEDB0323EA

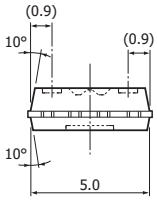
Output waveform example



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)





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.)

KLEDA0088EA

HAMAMATSU
www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Solid State Division
1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184
U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P.O.Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218
Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 8152-375-0, Fax: (49) 8152-265-8
France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10
United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777
North Europe: Hamamatsu Photonics Norden AB: Smidesvägen 12, SE-171 41 Solna, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01
Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741