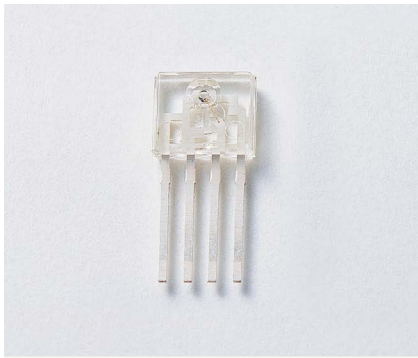


Red LED for optical link



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

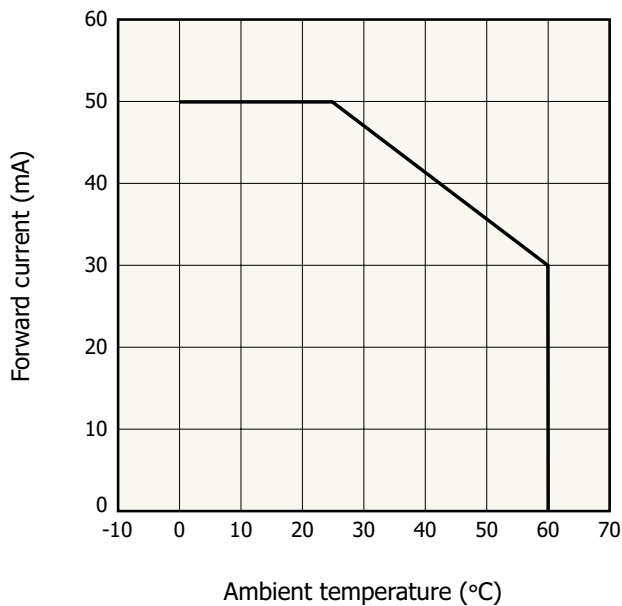
Absolute maximum ratings ($T_a=25$ °C)

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

*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



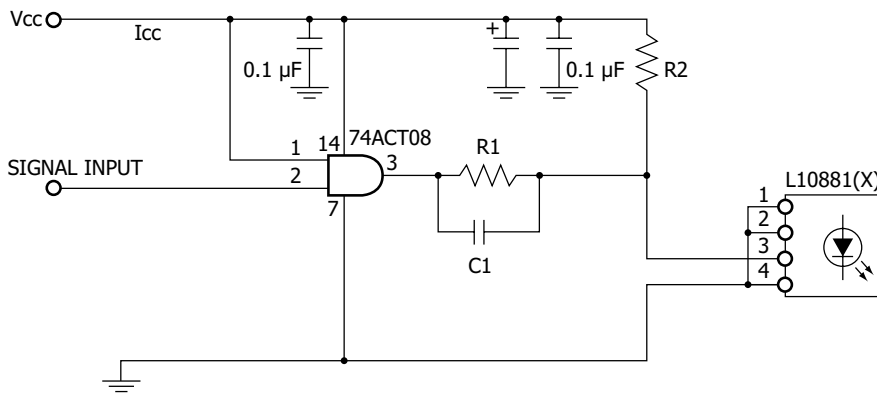
KLEDB0340EA

Electrical and optical characteristics (Ta=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward voltage	V_F	$I_F=20\text{ mA}$	-	1.9	2.4	V
Peak emission wavelength	λ_p	$I_F=20\text{ mA}$	640	650	665	nm
Spectral half width (FWHM)	$\Delta\lambda$	$I_F=20\text{ mA}$	-	-	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	$I_F=20\text{ mA} \pm 1\text{ mAp-p}$	60	70	-	MHz

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

Recommended driver circuit



KLEDC0047EA

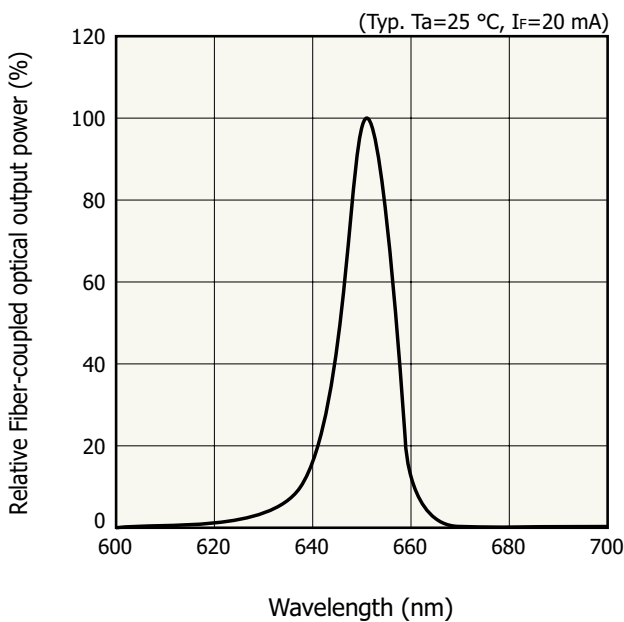
Input is a pseudo-random bi-phase signal at 156 Mbps (NZR signal conversion).

Average value (duty ratio 50 %) measured by using a plastic fiber of $\phi 1\text{ mm}$. SI-POF and NA=0.5 (GH4001 made by Mitsubishi Rayon). $V_{cc}=5.0\text{ V}$, $R_1=100\ \Omega$, $R_2=300\text{ k}\Omega$, $C_1=20\text{ pF}$

Note:

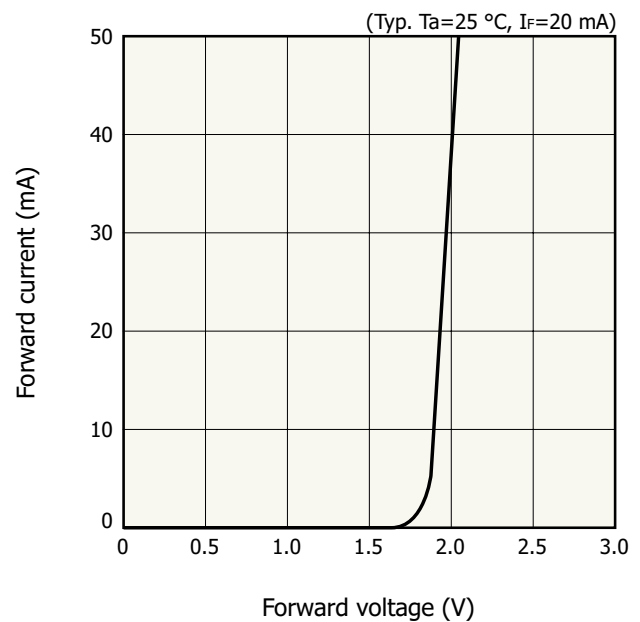
- A bypass capacitor (0.1 μF) and another capacitor (4.7 μF) are connected between Vcc and GND at a position within 3 mm from the lead.
- The center of the optical fiber is aligned with the center of the lens on the package. The distance between the fiber end and the lens is 0.1 mm.
- When using optical fibers with small core diameter, the fiber-coupled optical output power may vary.

Emission spectrum



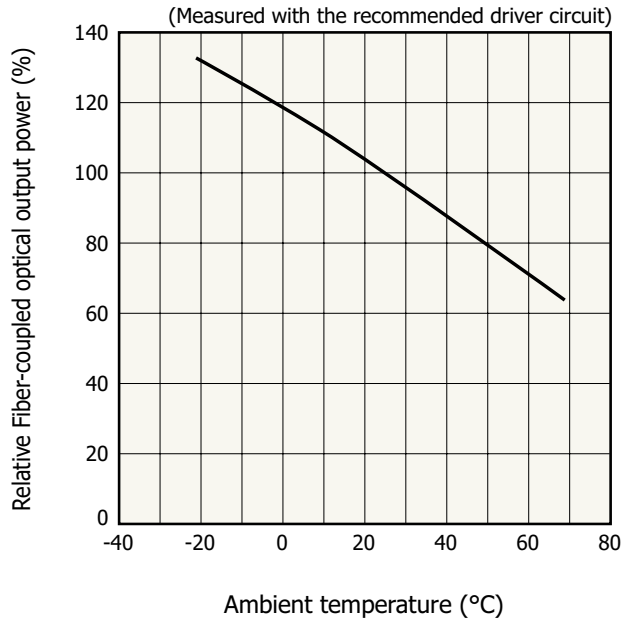
KLEDB0321EA

Forward current vs. forward voltage

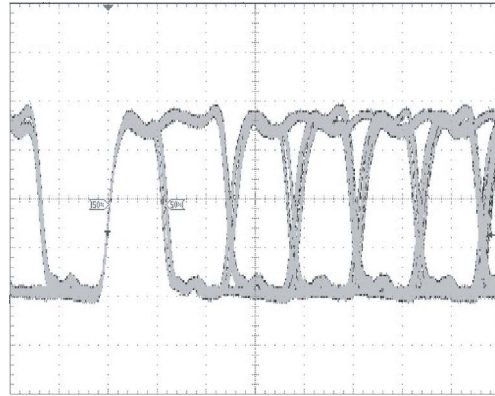


KLEDB0322EA

Fiber-coupled optical output power vs. ambient temperature

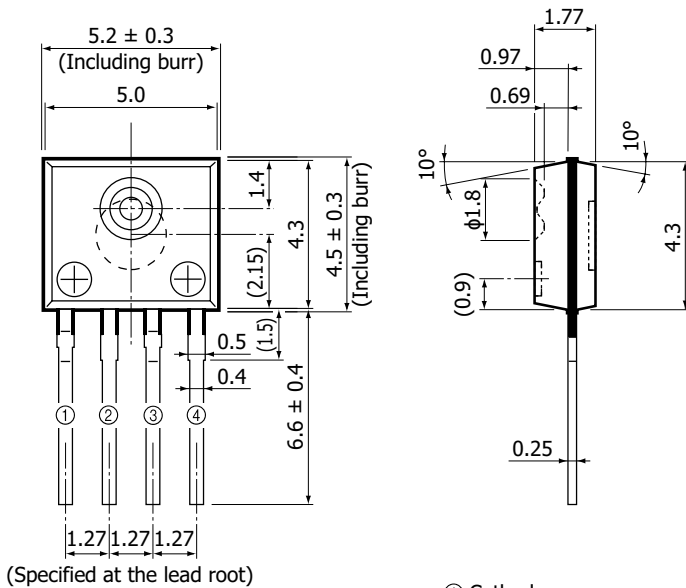


Output waveform example



Vertical axis: 30 mV/div., Horizontal axis: 5 ns/div.
($T_a=25\text{ }^\circ\text{C}$, $V_{cc}=5.00\text{ V}$, $R_1=100\text{ }\Omega$, $R_2=300\text{ }\Omega$, $C_L=20\text{ pF}$)

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.)

KLEDA0088EA

Recommended soldering conditions

Parameter	Specification	Remarks
Solder temperature	230 °C max. (less than 5 s)	at least 1.5 mm away from lead roots

Note: When setting the soldering conditions, check for any problems by testing out the soldering methods in advance.

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

- Precautions
- Disclaimer
- Precautions / Metal, ceramic, plastic package products

Information described in this material is current as of February 2025.

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