

Infrared LED

L8013

Easy optical axis alignment LED for PCF200 fiber data links

L8013 is a high-speed LED developed for optical data links using PCF200 fibers. L8013 uses a non-confined structure chip that does not show the abrupt deterioration often encountered in some types of confined chips, thus providing high reliability over extended operation time. The optical output at the fiber end usually tends to vary due to non-uniform LED chip thickness. L8013 minimizes this problem by using a light condensing reflector with a slight matching offset from the chip. This widens the fiber input beam profile so fine adjustment of the optical axis is not required.

Features

- Easy optical axis alignment
- High-speed response: 50 MHz Typ.
- High optical output: 45 μ W Typ.
($I_F=30$ mA, when used with PCF200 fiber)
- High reliability

Applications

- Optical data link

■ Absolute maximum ratings ($T_a=25$ °C, unless otherwise noted)

Parameter	Symbol	Condition	Value	Unit
Reverse voltage	V_R Max.		3	V
Forward current	I_F		80	mA
Forward current decrease rate	-	$T_a > 25$ °C	1	mA/°C
Pulse forward current	I_{FP}	Pulse width=10 μ s Duty ratio=1 %	0.5	A
Pulse forward current decrease rate	-	$T_a > 25$ °C	6.5	mA/°C
Power dissipation	P		150	mW
Operating temperature	T_{opr}		-30 to +85	°C
Storage temperature	T_{stg}		-40 to +100	°C

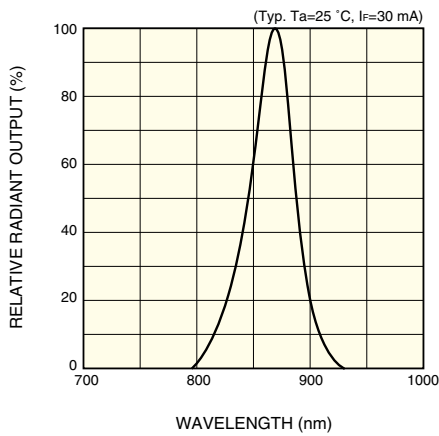
■ Electrical and optical characteristics ($T_a=25$ °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak emission wavelength	λ_p	$I_F=30$ mA	840	870	900	nm
Spectral half width	$\Delta\lambda$	$I_F=30$ mA	-	45	-	nm
Fiber end output *1	P_f	$I_F=30$ mA	30	45	-	μ W
Radiant flux	ϕ_e	$I_F=30$ mA	4.5	6.5	-	mW
Forward voltage	V_F	$I_F=30$ mA	-	1.45	1.6	V
Reverse current	I_R	$V_R=3$ V	-	-	10	μ A
Cut-off frequency *2	f_c	$I_F=30$ mA \pm 4 mA _{p-p}	30	50	-	MHz

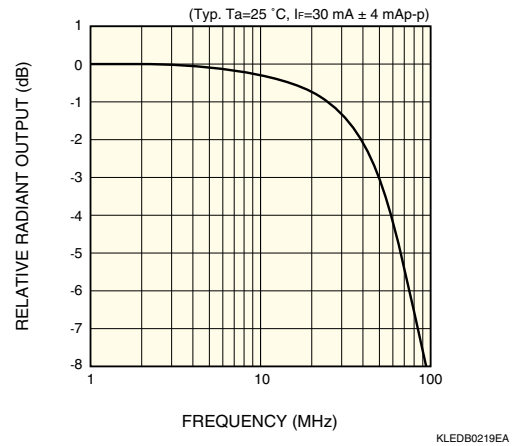
*1: PCF200 fiber; distance between fiber end and L8013 cap glass: 0.3 mm

*2: Frequency at which the optical output decreases by -3 dB versus a reference output level at 100 kHz.

Emission spectrum

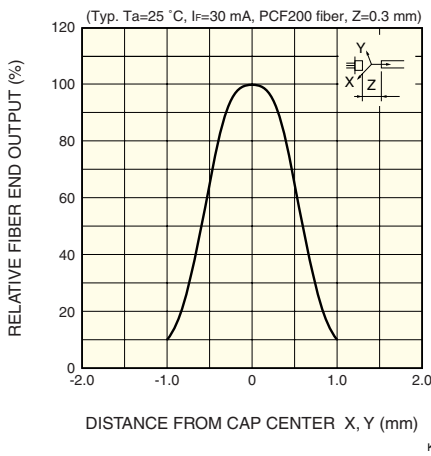


Frequency response

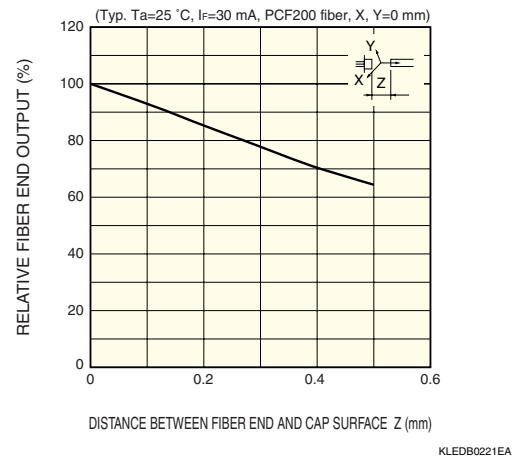


Fiber coupling characteristics

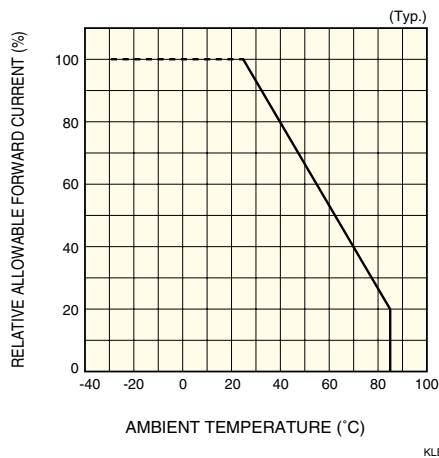
X, Y axes



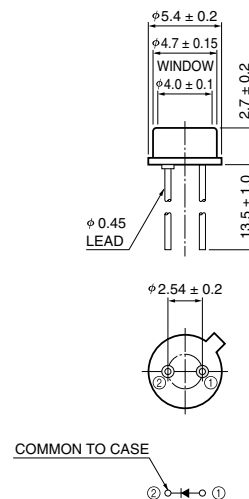
Z axis



Allowable forward current vs. ambient temperature



Dimensional outline (unit: mm)



HAMAMATSU

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. ©2002 Hamamatsu Photonics K.K.

HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Hamamatsu City, 435-8558 Japan, Telephone: (81) 053-434-3311, Fax: (81) 053-434-5184, <http://www.hamamatsu.com>

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) 08152-3750, Fax: (49) 08152-2658

France: Hamamatsu Photonics France S.A.R.L.: 8, 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: Smidsvågen 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