

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	0.8	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	5	mA/°C
Power dissipation	P		150	mW
Operating temperature	T_{opr}		-30 to +85	°C
Storage temperature	T_{stg}		-40 to +100	°C

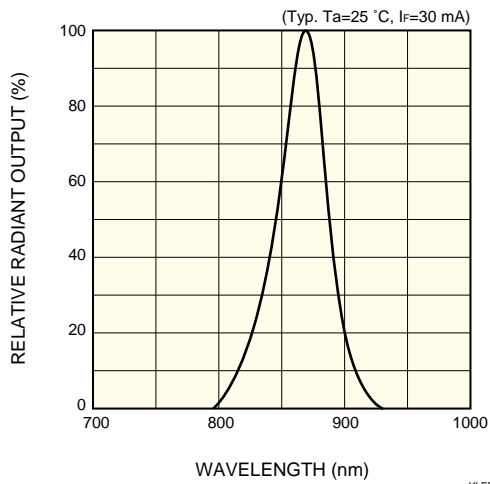
■ Electrical and optical characteristics ($T_a=25$ °C)

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

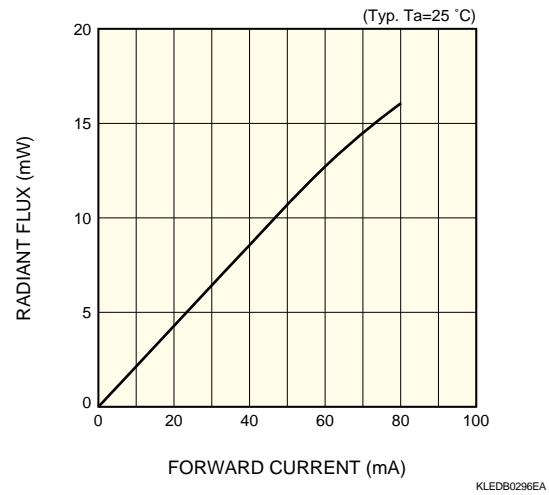
*1: PCF200 fiber; distance between fiber end and L8013 cap glass: 0.3 mm

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

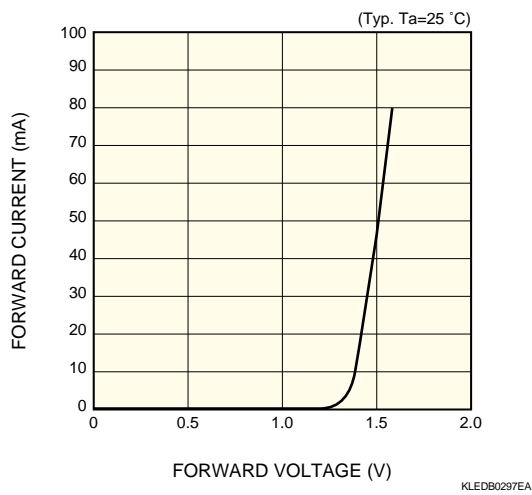
Emission spectrum



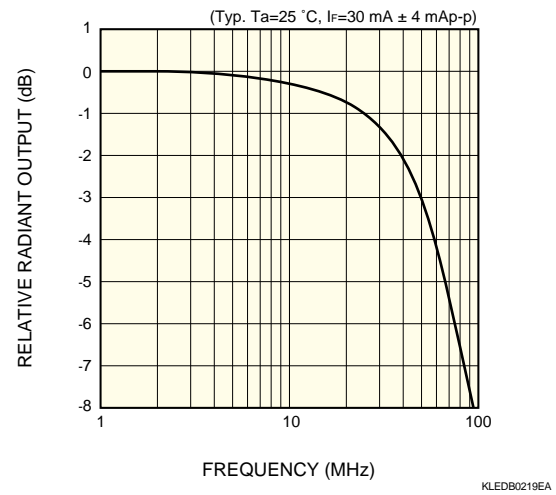
Radiant flux vs. forward current



Forward current vs. forward voltage

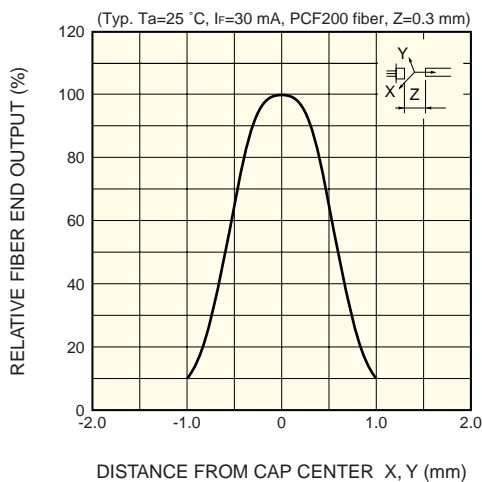


Frequency response

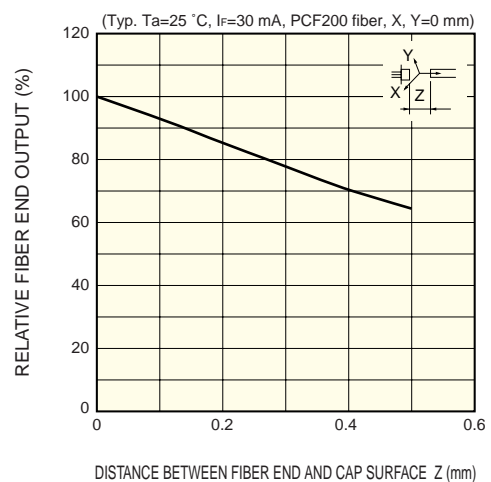


Fiber coupling characteristics

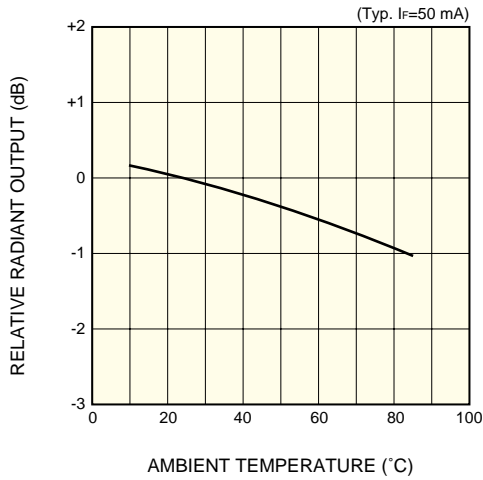
X, Y axes



Z axis

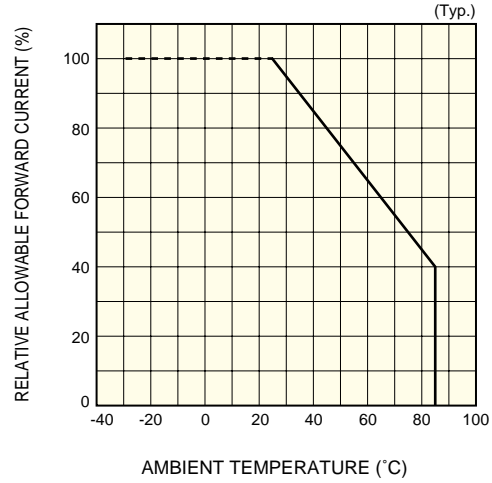


■ Radiant output vs. ambient temperature



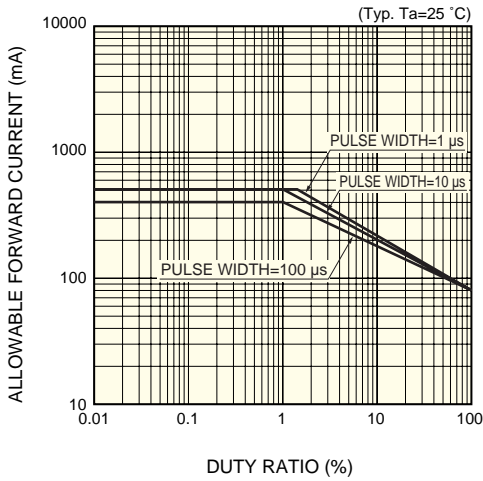
KLEDB0228EA

■ Allowable forward current vs. ambient temperature



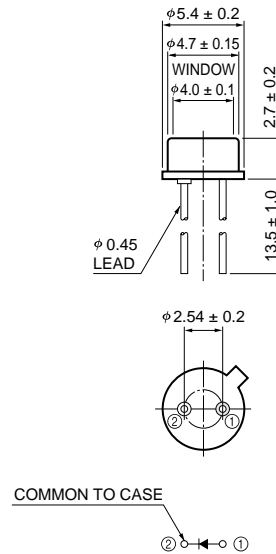
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■ Allowable forward current vs. duty ratio



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■ Dimensional outline (unit: mm)



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