HL1326CF/CN/SN/PF

InGaAsP Laser Diodes

HITACHI

Description

The HL1326CF/CN/SN/PF are 1.3 µm InGaAsP Fabry-Perot laser diodes with a multi-quantum well (MQW) structure. They are suitable as light sources in short and medium range fiberoptic communication systems. Laser output is delivered from the coaxial package through an attached single mode fiber. A built-in photodiode provides monitor current output.

Features

- Wide operating temperature range:
  T_{opr} = –40 to +85°C
- High output power: 3 mW (Pulse)
  2 mW (CW)
- Low operating current:
  I_{op} (P_f = 2.0 mW) = 18 mA (Typ. @T_C = 25°C)
  I_{op} (P_f = 2.0 mW) = 38 mA (Typ. @T_C = 85°C)

Fiber Specifications

Mode field diameter: 9.5 ±1.0 µm

Cutoff wavelength: 1.10 to 1.27 µm

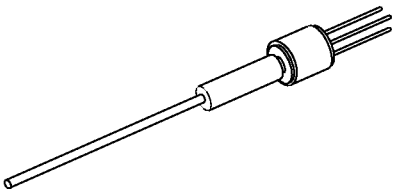
Outer diameter: 125 µm

Jacket diameter: 900 µm

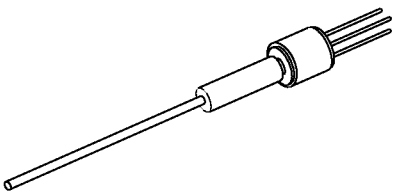
Fiber minimum Bend Radius: 25mm

Fiber length: More than 1000 mm

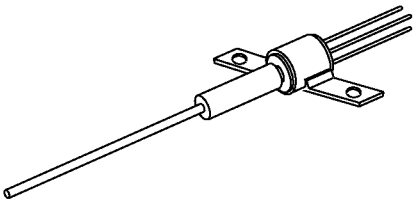
Package Type
• HL1326CF: CF1



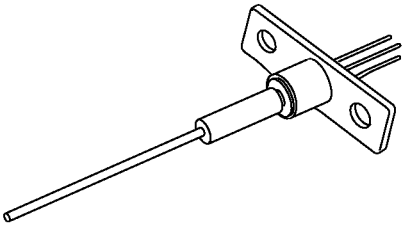
Package Type
• HL1326CN: CN1



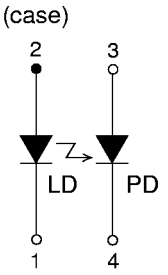
Package Type
• HL1326PF: PF1



Package Type
• HL1326SN: SN1



Internal Circuit



Absolute Maximum Ratings (TC = 25°C)

Item	Symbol	Rated Value	Unit
Fiber optical output power	$P_{f\ (Pulse)}$	3 *1	mW
	Pf (CW)	2	mW
LD reverse voltage	$V_{R\ (LD)}$	2	V
PD reverse voltage	$V_{R\ (PD)}$	15	V
PD forward current	$I_{F\ (PD)}$	1	mA
Operating temperature	T_{opr}	–40 to +85	°C
Storage temperature	T_{stg}	–40 to +85	°C

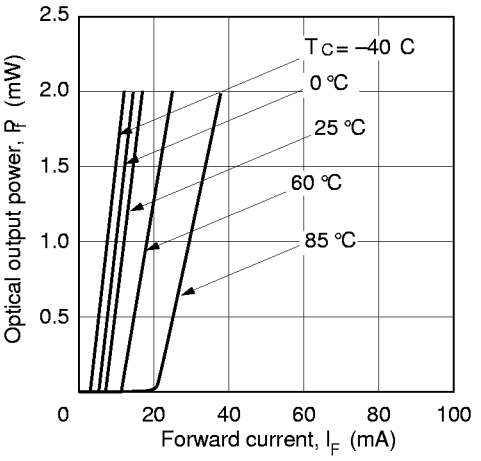
Note: 1. Maximum 50 % duty cycle, maximum 1µs pulse width.

Optical and Electrical Characteristics (TC = 25°C)

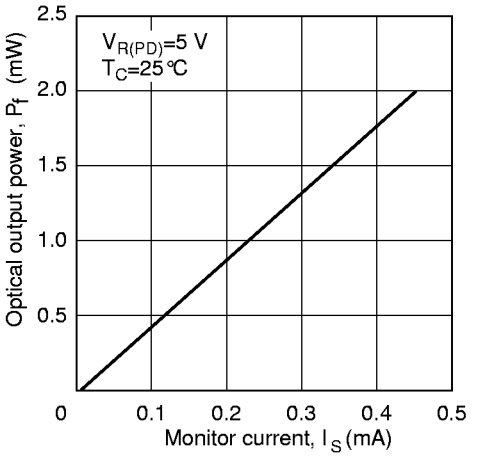
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Threshold current	I_{th}	—	8	20	mA	
Fiber optical output power	P_f	2	—	—	mW	Kink free
Slope efficiency	η_s	0.08	0.20	—	mW/mA	T_C = 25°C
		0.04	0.12	—		T_C = 85°C
Lasing wavelength	λ_c	1280	1310	1340	nm	P_f = 1.5 mW, RMS
Spectral width	σ	—	2	—	nm	P_f = 1.5 mW, RMS
Rise time	t_r	—	—	0.5	ns	10 to 90%
Fall time	t_f	—	—	0.5	ns	90 to 10%
Monitor current	I_S	100	—	—	µA	P_f = 1.5 mW, $V_{R(PD)}$ = 5 V
PD dark current	$I_{(DARK)}$	—	—	350	nA	$V_{R(PD)}$ = 5 V
PD capacitance	C_t	—	15	20	pF	$V_{R(PD)}$ = 5 V, f = 1 MHz
Photosensitivity saturation voltage	$V_{R(S)}$	—	—	2	V	

Typical Characteristic Curves

Optical Output Power vs. Forward Current

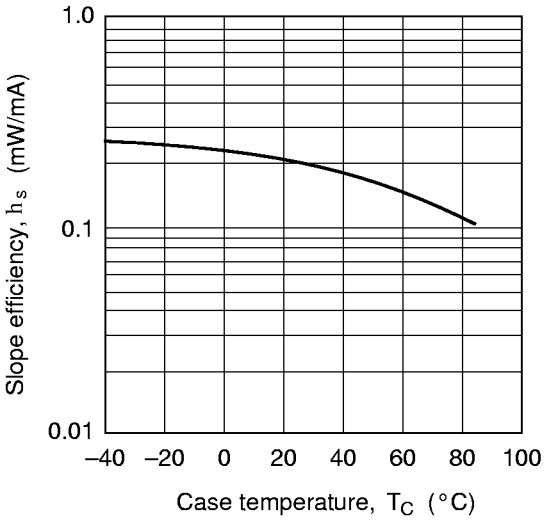


Optical Output Power vs. Monitor Current

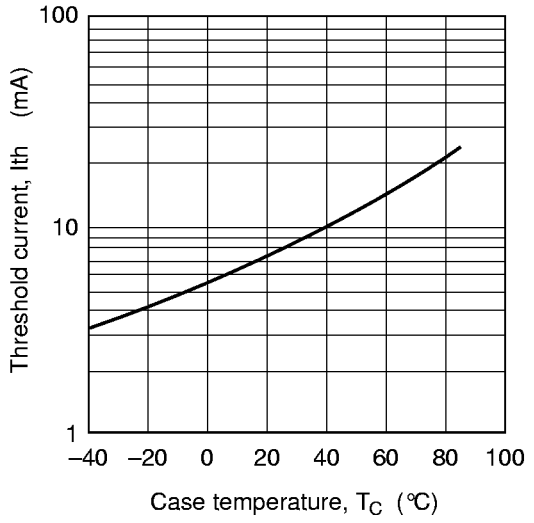


Typical Characteristic Curves (cont)

Slope efficiency vs.Case Temperature

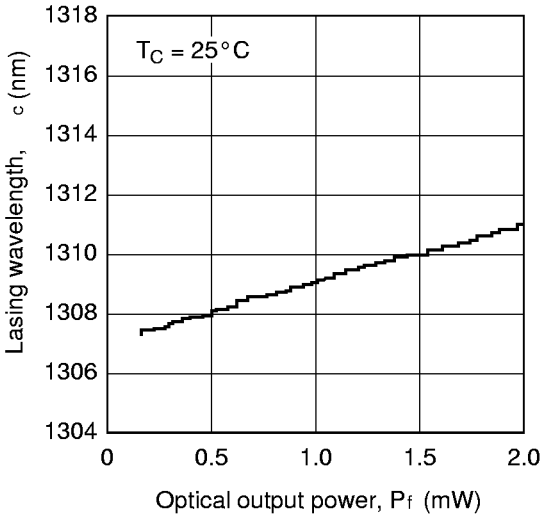


Threshold current vs. Case Temperature

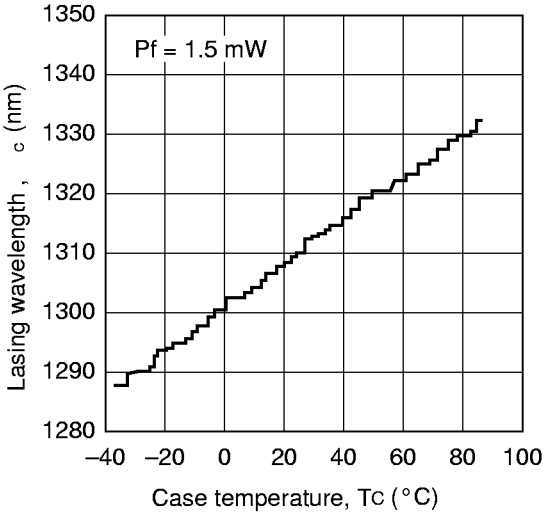


Typical Characteristic Curves (cont)

Lasing Spectrum vs. Optical Output Power

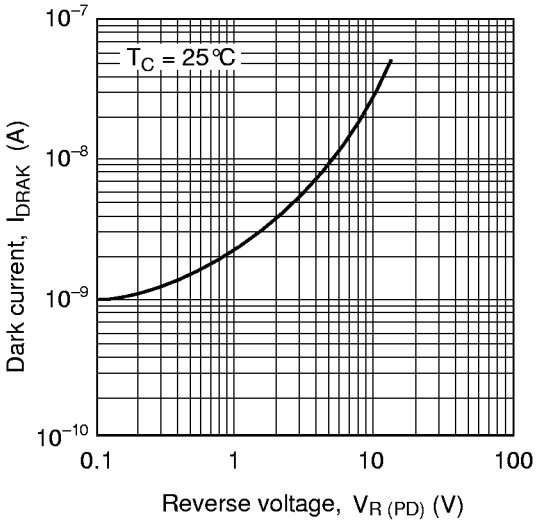


Lasing Spectrum vs.Case Temperature

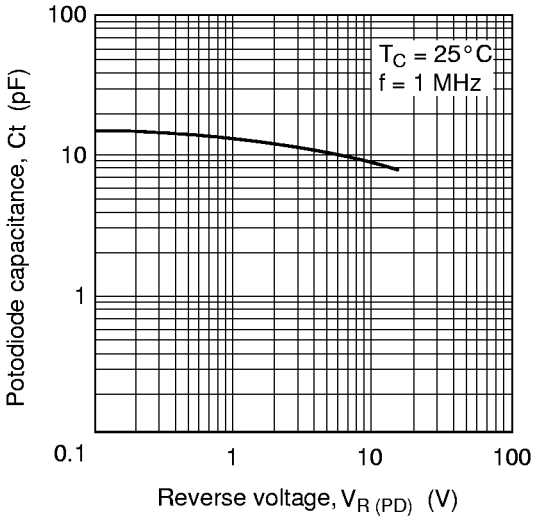


Typical Characteristic Curves (cont)

PD Dark Current vs. Reverse Voltage

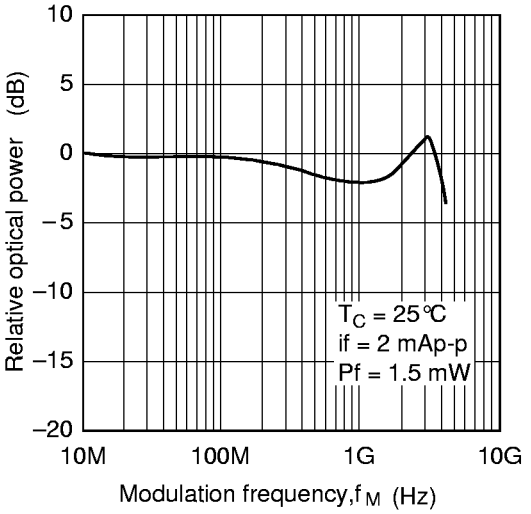


PD Capacitance vs. Reverse Voltage



Typical Characteristic Curves (cont)

Frequency Response of laser Diode



Pulsse Response of Laser Diode