
HL1362A/AC

InGaAsP Laser Diodes

HITACHI

Description

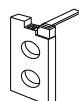
The HL1362A/AC are 1.3 μm InGaAsP $\lambda/4$ phase-shifted distributed-feedback laser diodes (DFB-LDs). They are suitable as light sources for high-bit-rate, long-haul fiberoptic communication systems and other applied optical equipment. The compact packages are suitable for module assembly.

Features

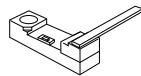
- Long wavelength output: 1290 to 1330 nm
- High-power output: 12 mW
- High quantum efficiency: $\eta_s \geq 0.2 \text{ mW/mA}$
- Fast pulse response: t_r and $t_f \leq 0.2 \text{ ns}$
- Dynamic single longitudinal mode: $S_r = 40 \text{ dB}$ Typ.
- High frequency response: $f_r = 10 \text{ GHz}$ Typ.

Package Type

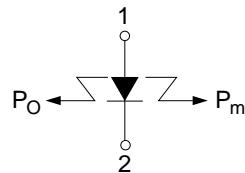
- HL1362A: A1



- HL1362AC: AC



Internal Circuit



HL1362A/AC

Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$)

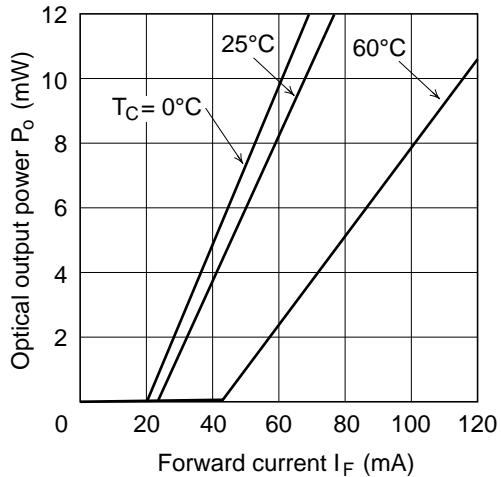
Item	Symbol	Value	Unit
Optical output power	P_o	12	mW
Reverse voltage	V_R	2	V
Operating temperature	T_{opr}	0 to +60	°C
Storage temperature	T_{stg}	0 to +80	°C

Optical and Electrical Characteristics ($T_c = 25^\circ\text{C}$)

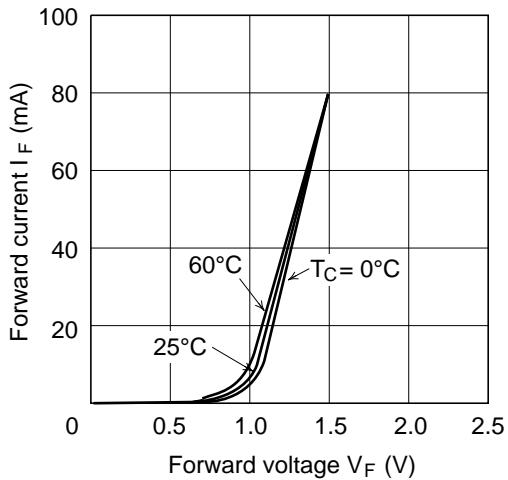
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Threshold current	I_{th}	—	25	50	mA	
Optical output power	P_o	12	—	—	mW	Kink free
Monitor optical output power	P_m	2	—	—	mW	$P_o = 8 \text{ mW}$
Slope efficiency	η_s	0.2	—	—	mW/ mA	
Lasing wavelength	λ_p	1290	1310	1330	nm	$P_o = 8 \text{ mW}$
Side-mode suppression ratio	S_r	30	40	—	dB	2.5 Gbps (NRZ)
Beam divergence (parallel)	$\theta_{//}$	—	30	—	deg.	$P_o = 8 \text{ mW}$, FWHM
Beam divergence (perpendicular)	θ_{\perp}	—	40	—	deg.	$P_o = 8 \text{ mW}$, FWHM
Rise time	t_r	—	0.1	—	ns	$P_o = 3 \text{ mW}$, $I_b = I_{th}$, 10 to 90%
Fall time	t_f	—	0.15	—	ns	$P_o = 3 \text{ mW}$, $I_b = I_{th}$, 90 to 10%

Typical Characteristic Curves

Optical Output Power vs. Forward Current

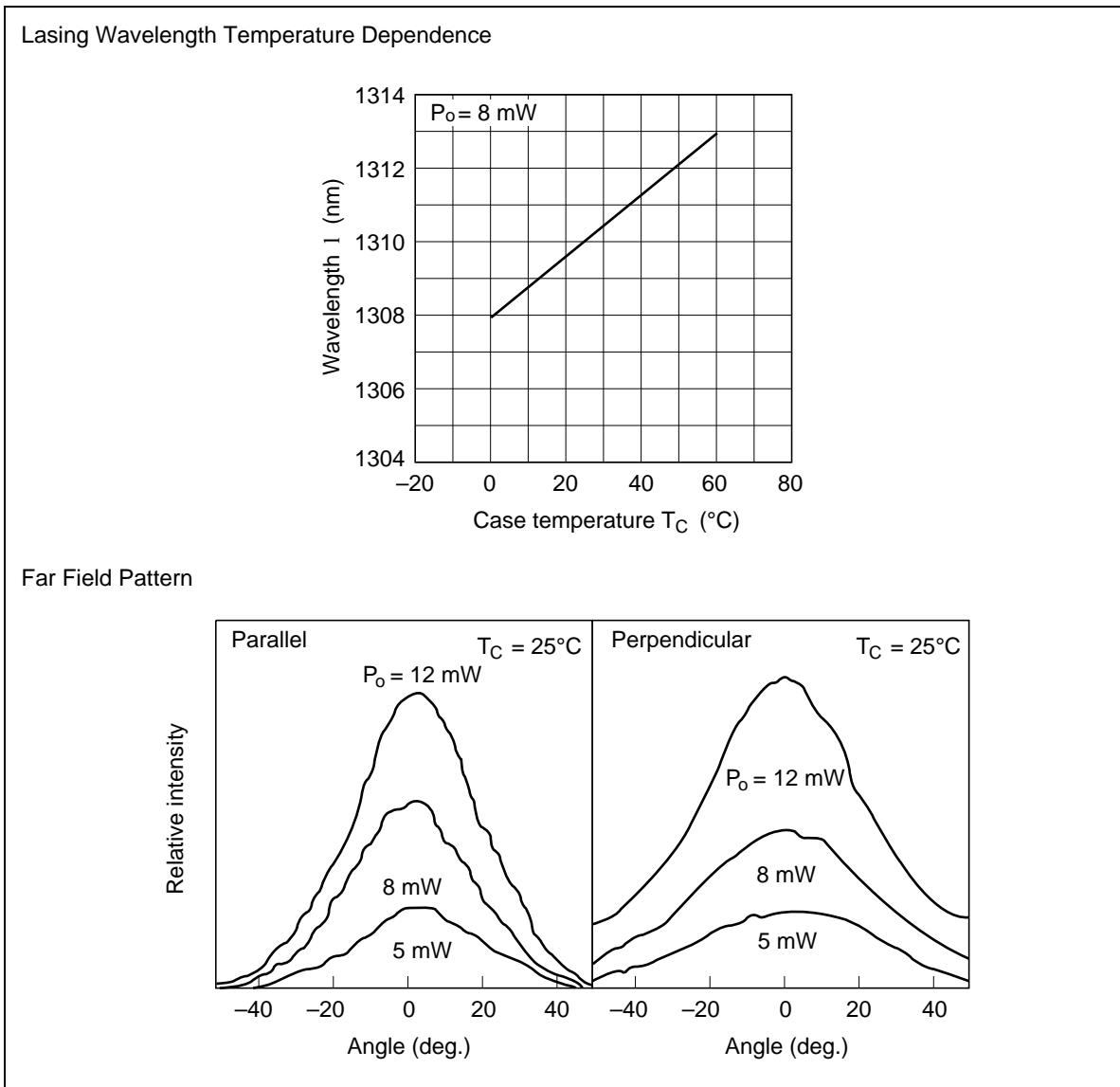


Forward Current vs. Forward Voltage



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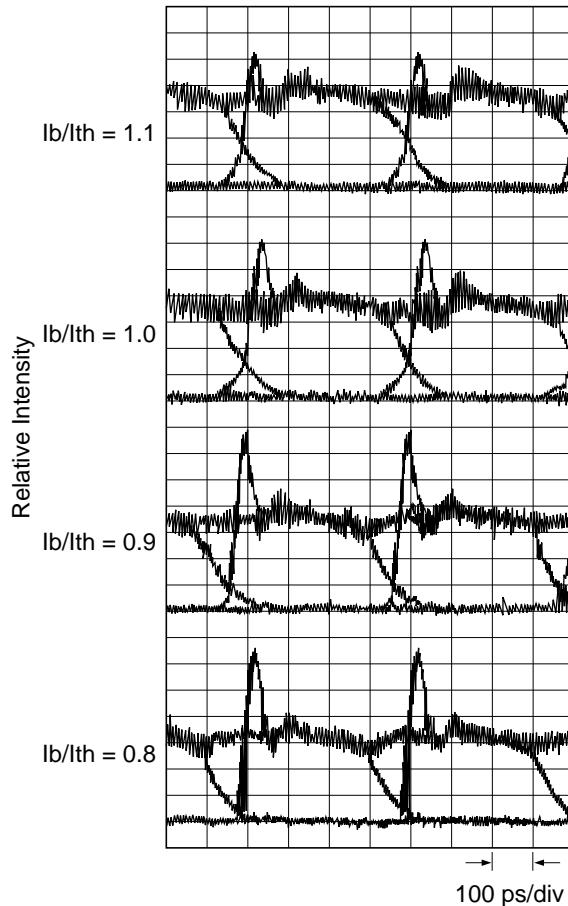
Typical Characteristic Curves (cont)



Typical Characteristic Curves (cont)**Bias Dependence of Optical Pulse Response**

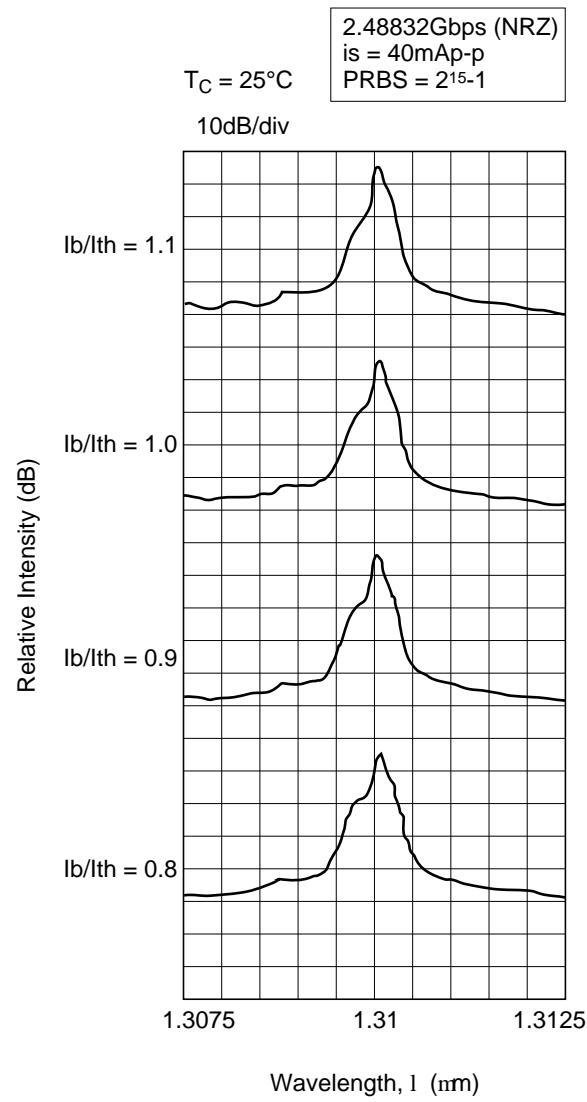
$T_C = 25^\circ\text{C}$

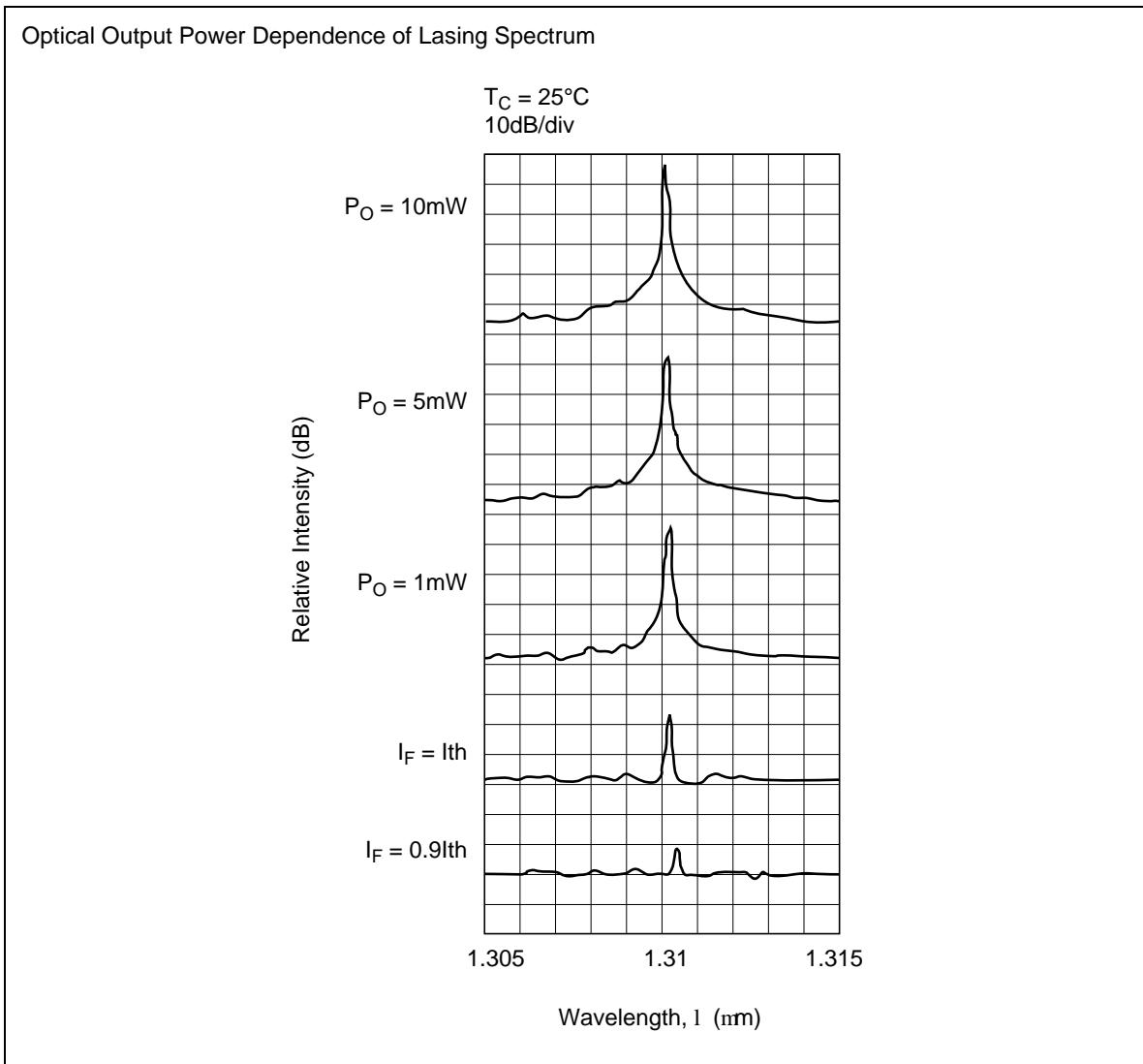
2.48832Gbps (NRZ)
 $i_s = 40\text{mA}\text{p-p}$
PRBS = $2^{15}-1$



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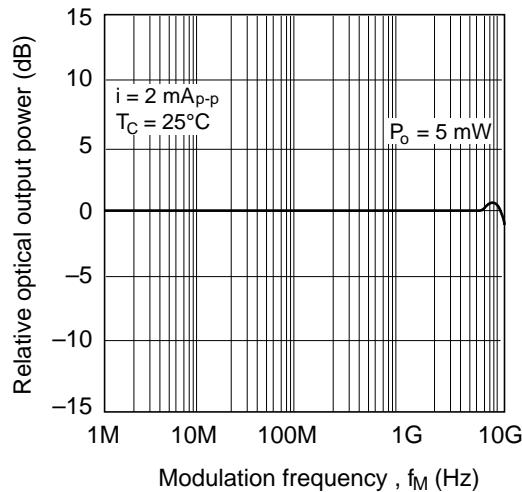
Bias Dependence of Lasing Spectrum



Typical Characteristic Curves (cont)

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Frequency Response of Laser Diode



Threshold Current vs. Case Temperature

