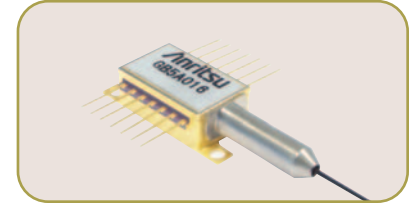
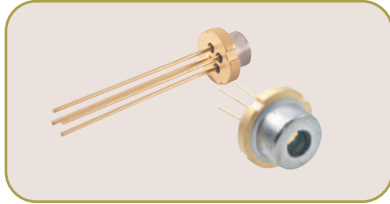


LASER DIODE OVERVIEW

- 5.6mm, 9mm, and VCSEL Laser Diodes
- DFB C and L-Band Butterfly Laser Pigtailed
- Fiber Bragg Stabilized Pump Laser Diodes
- Fiber Pigtailed Laser Diodes



5.6mm, 9mm and VCSEL Laser Diodes

Thorlabs offers an extensive selection of discreet laser diodes in 5.6mm, 9mm and VCSEL packages. Ranging in wavelengths from 405nm to 1550nm, we have a diode to work in nearly any application. Our selection of 5.6mm and 9mm diodes includes both Fabry-Perot and DFB lasers in a variety of standard pin configurations. Most of our lasers are fully compatible with our entire line of laser diode and TEC controllers as well as our selection of Laser Diode Mounts (See Pages 459).

- Output Powers Up to 1W
- Standard Pin Configurations
- Fabry-Perot and DFB
- VCSEL Diodes
- 405nm to 1550nm
- Compatible with Thorlabs' Laser Diode and TEC Controllers

Fiber Pigtailed 5.6 & 9mm Laser Diodes

Thorlabs' full line of fiber pigtailed laser diodes (manufactured by either Thorlabs or our customers) are assembled at our extensive pigtailling facilities in the United States.

A high-quality alignment process ensures maximum efficiency at an affordable price.

Our selection includes both single mode and multimode pigtailed, whose typical high-coupling efficiency delivers more power from the diode.

- 8° Angled-Cleaved Fiber at Laser Diode
- Visible to Near IR Models
- Single Mode and Multimode Fibers
- Angle-Cleaved Fiber to Minimize Intensity Noise (Single Mode Only)
- Pigtailling of Customer-Supplied Diodes Available
- DFB Pigtailed Include In-Line Isolator

DFB Laser C-and L-Band Butterfly Laser Pigtailed

Thorlabs offers a full range of pigtailed lasers with wavelengths centered on the ITU grid (100GHz spacing). These lasers include polarization maintaining (PM) fiber, with an extinction ratio of better than 20dB and a side mode suppression ratio of 40dB (typ.). These DFB lasers meet the stringent reliability standards for the telecom industry. With their built-in 30dB optical isolation, thermoelectric cooler (TEC) and thermistor, these 20mW lasers will provide many hours of reliable operation when operated with our laser diode current controllers/TEC controllers.

- Wavelength: ITU Grid, 100GHz Steps
- Single Longitudinal Mode
- Accurate Peak Wavelength (± 0.5 nm)
- Built-In Optical Isolator (30dB)
- Built-In Cooler and Thermistor

All laser diodes are extremely electrostatic sensitive; see page 496 for our selection of antistatic products.

Laser Diode Selection Guide

ITEM#	WAVELENGTH (nm)	P (mW)	PACKAGE (mm)	PIN CODE	PAGE
DL3146-151	405	7	5.60	5B	466
DL5146-152	405	35	5.60	5B	466
LPS-635-FC	635	2.5	Pigtailed	9A	492
HL6314MG ^{1,2}	635	3	5.60	5A	466
HL6312G ^{1,2}	635	5	9.00	9A	467
HL6335G	635	5	9.00	9A	467
DL3148-025	635	6	5.60	5A	467
HL6320G ^{1,2}	635	10	9.00	9A	468
HL6344G	635	10	9.00	9A	468
HL6322G	635	15	9.00	9A	468
DL4038-026	635	20	9.00	9A	469
DL5038-021	635	35	9.00	9A	469
LPM-635-SMA	635	7.5	Pigtailed	9A	492
DL3147-060	650	7	5.60	5A	469
GH06510B2A	654	10	5.60	5B	470
RLD65MZT2	655	10	5.6	5B	470
HL6501MG ¹	658	35	5.60	5C	470
DL6147-040	658	40	5.60	5A	471
HL6512MG	658	50	5.60	OPEN	471
DL7147-201	658	60	5.60	OPEN	471
ML120G21	658	80	5.60	OPEN	472

¹ Single Mode - Longitudinal

² Single Mode - Transverse

Laser Diode Selection Guide

ITEM#	WAVELENGTH (nm)	P (mW)	PACKAGE (mm)	PIN CODE	PAGE
HL6535MG ¹	658	90	5.60	OPEN	472
LPS-660-FC	660	7.5	Pigtailed	5C	492
LPM-660-SMA	660	22.5	Pigtailed	5C	492
ML101J8	660	45	5.60	OPEN	472
HL6548FG	660	90	9.00	9D	473
ML101J27	660	130	5.60	OPEN	473
HL6722G ^{1,2}	670	5	9.00	9A	473
HL6724MG ^{1,2}	670	5	5.60	5A	474
DL3149-057	670	7	5.60	5A	474
HL6714G ^{1,2}	670	10	9.00	9A	474
LPS-675-FC	675	2.5	Pigtailed	9A	492
FLD6A2TK	685	35	5.60	OPEN	475
HL6738MG ^{1,2}	690	35	5.60	5C	475
VCSEL-780	780	1.65	—	—	475
L780P010	780	10	5.60	5A	476
GH0781JA2C	784	120	5.60	OPEN	476
RLD78MA-E	785	5	5.6	5B	476
LPS-785-FC	785	6.25	Pigtailed	5A	492
DL4140-001S	785	25	5.60	5A	477
HL7851G ^{1,2}	785	50	9.00	9A	477
DL7140-201S	785	80	5.60	5C	477
L785P100	785	100	5.60	5A	478
L808P010	808	10	5.60	5A	478
L808P030	808	30	5.60	5A	478
L808P200	808	200	5.60	5A	479
L808P1WJ	808	1WATT	9	9A	479
LPS-830-FC	830	10.0	Pigtailed	9C	492
DL5032-001	830	30	9.00	9A	479
HL8325G ^{1,2}	830	40	9.00	9C	480
DL7032-001 ^{1,2}	830	100	9.00	9A	480
DL8142-201	830	180	5.60	5C	481
VCSEL-850	850	1.85	—	—	481
L850P010	850	10	5.60	5A	481
L850P030	850	30	5.60	5A	482
L850P100	850	100	5.60	5A	482
L904P010	904	10	5.60	5A	482
L904P030	904	30	5.60	5A	483
L915P1WJ	915	1WATT	9.00	9A	483
L975P1WJ	975	1 WATT	9.00	9A	483
VCSEL-980	980	1.85	—	—	484
L980P010	980	10	5.60	5A	484
L980P030	980	30	5.60	5A	484
L9805E2P5 ²	980	50	5.60	5A	485
L980P100	980	100	5.60	5A	485
PL980P200	980	200	Pigtailed	BFY-14Pin	485
L980P200J	980	200	9	9A	491
L980P300J	980	300	9	9A	486
L1060P100J	1060	100	9	9A	486
LPS-1310-FC	1310	2.5	Pigtailed	5D	492
ML725B11F	1310 DFB	6	5.60	5D	486
ML725B8F ²	1310	10	5.60	5D	487
ML925B45F	1550	6	5.60	5D	487
ML925B11F	1550 DFB	6	5.60	5D	492
LPS-1550-FC	1550	1.5	Pigtailed	5D	492
LPS-1550DFB-FC	1550DFB	1.5	Pigtailed	5D	492

1 Single Mode - Longitudinal 2 Single Mode - Transverse

- Benchtop Drivers
- Platform Drivers
- OEM Drivers
- Laser Diode Mounts
- Laser Diodes**
- Pigtailed Lasers
- Laser Modules
- Accessories

All laser diodes are extremely electrostatic sensitive; see page 496 for our selection of antistatic products.

DFB
DFB
DFB

PIN CODES

Style A

Style B

Style C

Style D

1. All specifications are typical; see individual items for complete details.
2. Pin code is based on laser pin configuration and is used to help select socket cable assemblies.

Note: The 5 and 9 of the pin code designate 5.6mm or 9mm packages, respectively.

$\lambda = 685\text{nm}$ P = 35mW, Single Mode Eudyna FLD6A2TK

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

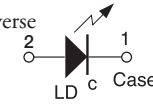
CHARACTERISTIC	SYMBOL	RATING
Optical Output Power	P_o	35mW
Reverse Voltage	$V_{R(LD)}$	2V
Operating Temperature	T_{op}	0 to 70°C
Storage Temperature	T_{stg}	-40 to 80°C

Optical-Electrical Characteristics ($T_c=25^\circ\text{C}$, P=35mW)

CHARACTERISTIC	SYMBOL	MIN	TYP.	MAX
Threshold Current	I_{th}	15mA	25mA	35mA
Operation Current	I_{op}	35mA	50mA	60mA
Operation Voltage	V_{op}	2.0V	2.5V	2.8V
Slope Efficiency	η_s	0.9mW/mA	1.2mW/mA	1.6mW/mA
Lasing Wavelength	λ_p	675nm	685nm	695nm
Beam Divergence (//)	$\theta_{//}$	11°	13°	16°
Beam Divergence (\perp)	θ_{\perp}	14°	17°	20°

- Modulation Up to 300MHz
- Low Aspect Ratio (1.31)
- Longitudinal and Transverse Single Mode

Pin Description
 1 LD cathode/case
 2 LD anode



OPEN PIN CODE COMPATIBLE WITH PIN STYLE A, B, & C



ITEM #	£*	€*	RMB*
FLD6A2TK	£ 30.90	€ 45,60	¥ 468.00

*For quantities over 5 pieces, please call our local office for pricing.

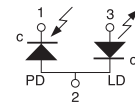
ITEM #	PRICE 1-5 PCS	PRICE 6-10 PCS	PRICE 11-20 PCS	DESCRIPTION
FLD6A2TK	\$ 49.00	\$ 42.90	\$ 34.60	Eudyna 685nm, 35mW

$\lambda = 690\text{nm}$ P = 35mW, Single Mode Hitachi HL6738MG

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

CHARACTERISTIC	SYMBOL	RATING
Optical Output Power (CW)	P_o	35mW
LD Reverse Voltage	$V_{R(LD)}$	2V
PD Reverse Voltage	$V_{R(PD)}$	30V
Operation Case Temperature	T_c	-10 to 70°C
Storage Temperature	T_{stg}	-40 to 85°C

Pin Description
 1 monitor diode cathode
 2 common case
 3 laser anode



PIN CODE 5C



- 5.6mm Package
- AlGaInP Structure
- $6\mu\text{m}$ Astigmatism @ 5mW
- Very High Operating Temperature (70°C)

ITEM #	£*	€*	RMB*
HL6738MG	£ 34.70	€ 51,20	¥ 526.20

*For quantities over 5 pieces, please call our local office for pricing.

ITEM #	PRICE 1-5 PCS	PRICE 6-10 PCS	PRICE 11-20 PCS	DESCRIPTION
HL6738MG	\$ 55.10	\$ 48.20	\$ 36.67	Hitachi 690nm, 35mW

$\lambda = 780\text{nm}$ P = 1.65mW, Multimode VCSEL-780

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

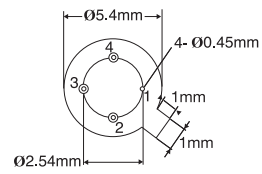
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITION
Dark Current	I_{dr}	-	0.2	1	nA	$V_r = 10\text{V}$
Shunt Resistance	R_p	100	200	-	$\text{G}\Omega$	-
Breakdown Voltage	V_{br}	-	50	-	V	-
Junction Capacitance	C_p	-	40	-	pF	@ $V_r = 10\text{V}$, 10kHz

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

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITION
Peak Wavelength	λ_p	770	780	795	nm	$I_f = 8\text{mA}@RT$
Spectral Width (FWHM)	$\Delta\lambda$	-	0.5	1	nm	$I_f = 8\text{mA}@RT$
Beam Divergence	θ	10	16	30	Deg	Full width at $1/e^2$; $I_f = 8\text{mA}@RT$
Forward Voltage	V_f	1.7	2.1	2.5	V	$I_f = 8\text{mA}@RT$
Threshold Current	I_{th}	0.5	1.5	3	mA	-
Slope Efficiency	$\Delta P/\Delta I$	0.12	0.24	0.4	W/A	$I_f = 8\text{mA}@RT$
Optical Output Power	P_{out}	-	1.65	-	mW	$I_f = 8\text{mA}@RT$
Dynamic Resistance	$\Delta V/\Delta I$	40	55	65	Ω	$I_f = 8\text{mA}@RT$
Reverse Breakdown Voltage	V_{br}	-	10	-	V	-
Monitor Current	I_m	100	-	-	μA	$I_f = 8\text{mA}@RT$

- Flat Window
- Monitor Photodiode
- High Speed 2.5Gbps
- High-Speed Data Communications and Telecommunications Applications
- Multimode

Pin Description
 1 Case
 2 LD anode
 3 LD cathode/PD anode
 4 PD Cathode



CHARACTERISTIC	MIN	MAX	UNIT	CONDITION
Storage Temperature	-40	100	$^\circ\text{C}$	-
Operating Temperature	0	70	$^\circ\text{C}$	-
Continuous Forward Current	-	8	mA	-
Continuous Reverse Voltage	-	5	V	@10 μA

ITEM #	£*	€*	RMB*
VCSEL-780	£ 15.00	€ 22,10	¥ 227.30

ITEM #	PRICE 1-5 PCS	PRICE 6-10 PCS	PRICE 11-20 PCS	DESCRIPTION
VCSEL-780	\$ 23.80	\$ 20.80	\$ 16.05	780nm VCSEL Laser Diode

*For quantities over 5 pieces, please call our local office for pricing.

Benchtop Drivers

Platform Drivers

OEM Drivers

Laser Diode Mounts

Laser Diodes

Pigttailed Lasers

Laser Modules

Accessories

Optical Power Meters

See Page 946