T-41-05

THERMALLY STABLE MOCVD GaAlAs MULTIHETEROSTRUCTURE LASER DIODES

FEATURES:

- High Efficiency at Low Drive Currents
- Up to 100 Watts Peak Power Output
- Stable Output Power from -50 to +100°C
- Wavelength Selection Available from 820 to 870nm
- Single Diodes and Stacked Arrays Available
- Hermetic Package
- Custom Stacked Arrays Available
- Pigtailed Devices Available
- Hybrid Laser Driver Modules Available

DESCRIPTION:

Laser Diodes, Inc.'s (LDI) CVD Series devices are multi-heterostructure Gallium Aluminum Arsenide injection laser diodes fabricated by the advanced MOCVD epitaxial growth technology. These devices, either single chip (CVD-90 series) or stacked arrays (CVD-190 series), are designed for high peak power pulsed operation at wavelengths from 820 to 870nm. These devices, available with peak output power from 5 to 100 watts, offer stable output power between -50°C and 100°C without the need for current compensation. The standard housing for the laser is a hermetically sealed twin lead TO-5 (LDL-10) package. Low inductance TO-18, (LDL-13) and coaxial TO-18 (LDL-7) packages are available on request. The lasers may also be coupled to a fiber optic pigtail or optical integrator. Hybrids lasers with integral drivers are also available. Other packages such as 14 pin dual in lines with peltier coolers and reverse polarity coaxial headers are also available.

ELECTRO-OPTICAL CHARACTERISTICS OF THE DIODE AT 25°C

Parameters	Symbol	Min.	Typ.	Max.	Units
Peak Wavelength Range Available ± 10nm*	λ	820	850	870	nm
Spectral Width	$\Delta\lambda$		3.5		nm
Rise Time of Radiant Flux	T_r		<1		ns
Max. Pulse Width -50% Pts.	T_{pm}		50**		ns
Typ. Beam Spread-Full Angle to 50% Pts.	$\theta_{\parallel} X \theta_{\perp}$		10X33		Degrees
Storage Temperature	T_S	-196		+100	Degrees C
Operating Temperature	T_O	- 50		+100	Degrees C

* Other wavelengths available on special order
** Wider pulse width operation at reduced drive current

TYPICAL CHARACTERISTICS

CHARACTERISTICS OF A PACKAGED DIODE AT @ 25°C

	SINGLE DIODES				STACKED ARRAYS				
Parameters	**CVD-90**	**CVD-93**	**CVD-95**	**CVD-97**	**CVD-192**	**CVD-193**	**CVD-195**	**CVD-197**	**Units**
Min. Peak Radiant Flux@ Max. Rated I_{fm}	5	10	15	25	25	40	60	100	Watts
Number of Diodes	1	1	1	1	3	3	3	5	
Typ. Emitting Area	3X.08	6X.08	10X.08	15X.08	6X8	10X8	15X8	15X16	Mils
Max. Peak Forward Current (I_{fm})	7	14	20	30	14	20	30	30	Amps
Typical Threshold Current (I_{th})	0.5	0.8	1.3	2.0	0.8	1.3	2.0	2.0	Amps
Typical Peak Forward Voltage @ I_{fm}	8	8	10	12	24	30	35	60	Volts
Duty Factor @ I_{fm}	0.1	0.1	0.1	0.1	0.08	0.08	0.04	0.04	%

FIG 1
Relative Peak Output Power vs Peak Forward Current (10KHz, 50ns)

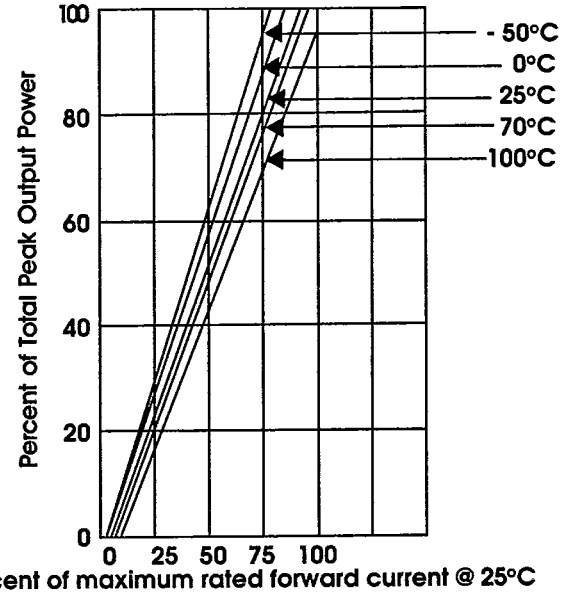


FIG 2
Relative Peak Output Power vs Pulse Repetition Rate (50ns)

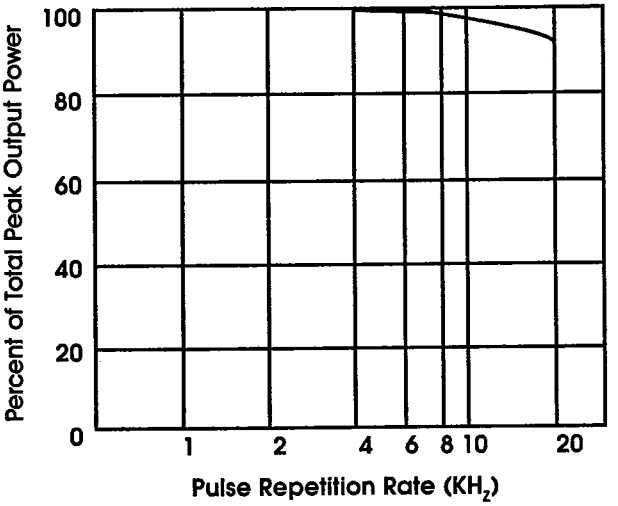


FIG 3
Relative Peak Output Power vs Pulse Width (5KH$_z$)

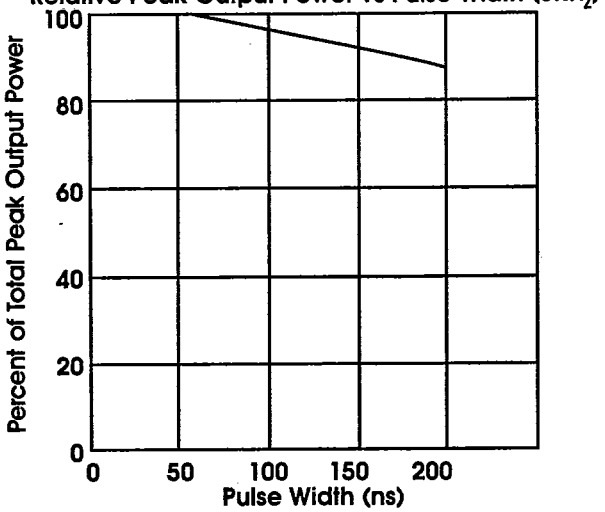


FIG 4
Relative Intensity vs Wavelength (25°C)

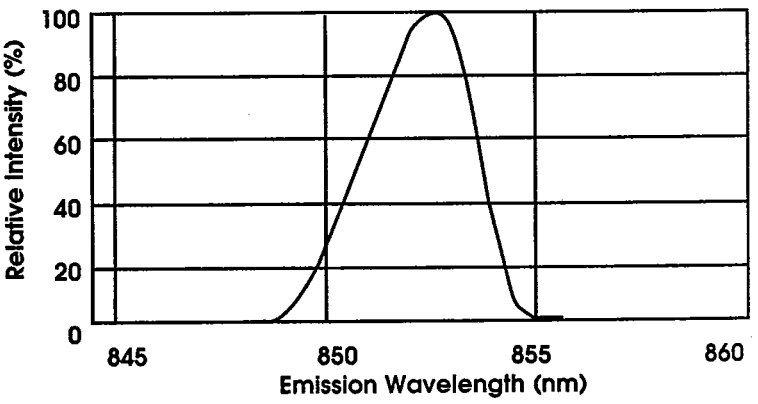


FIG 5
Relative Intensity vs Beam Spread - Plane Parallel to Junction

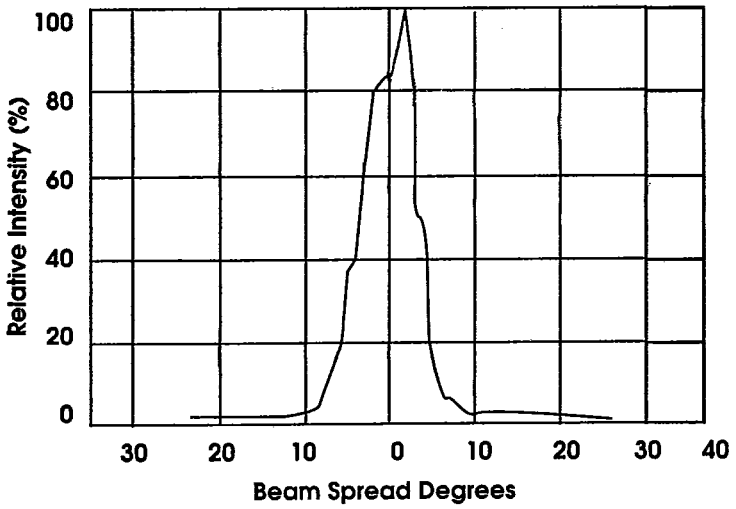


FIG 6
Relative Intensity vs Beam Spread - Plane Normal to Junction

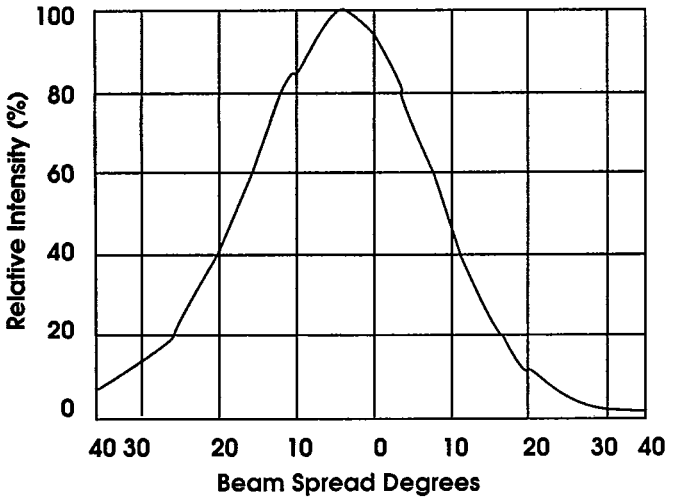
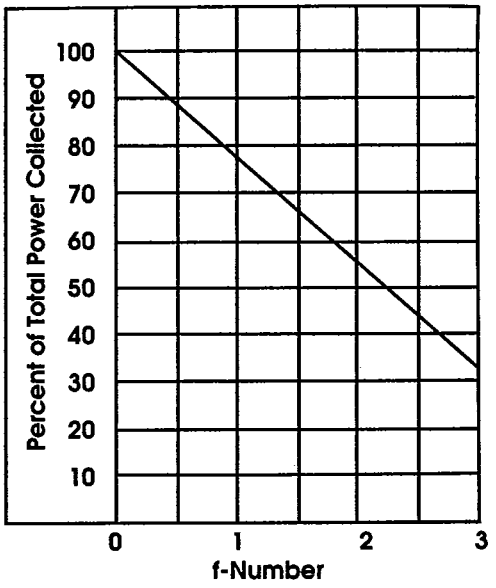
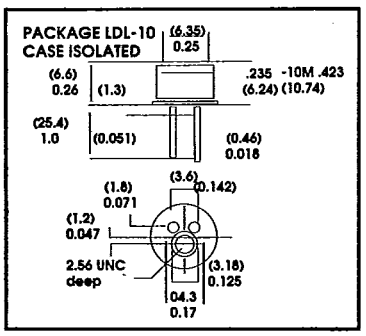


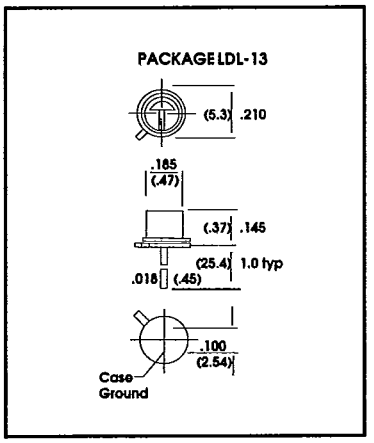
FIG 7 Total Power Collected vs f-number

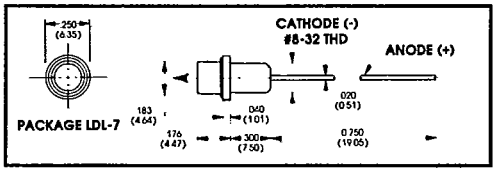


PACKAGE DRAWINGS

PACKAGE OPTIONS





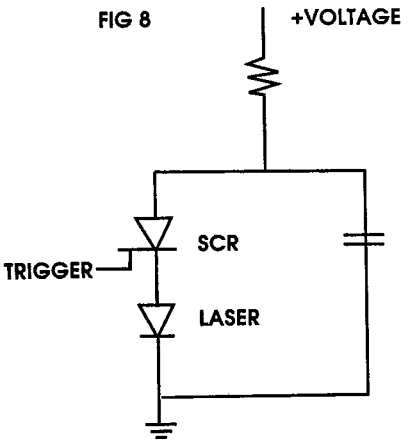


DRIVING THE LASER

High power, pulsed laser diodes are typically driven by a silicon controlled rectifier (SCR) capacitor discharge circuit. A typical circuit is shown in Figure 8.

Laser Diode, Inc. manufacturers custom drivers and power supplies for this family of lasers. Please consult the factory in regard to specific applications.

FIG 8



DETECTING THE LASER

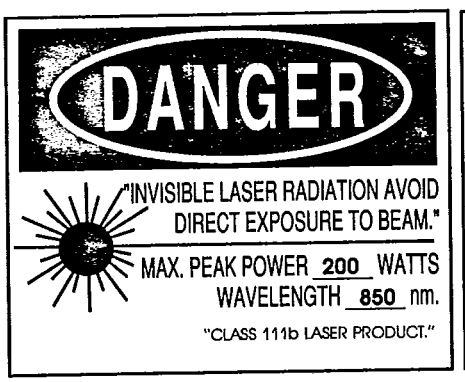
Laser Diode, Inc. manufactures a calibrated power meter for use with its family of laser diodes. The LPD-3 is a solid state, NBS traceable power meter capable of measuring peak powers ranging from 1 to 100 watts. The LPD-3 is configured so that it may be mounted on an optical bench or rail.

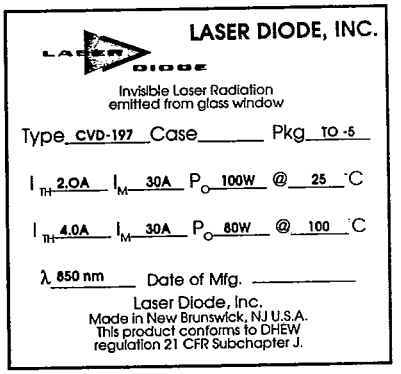
For further information on lasers, drivers, or detectors please contact the Sales Department at LASER DIODE, INC. 1130 Somerset Street, New Brunswick, NJ 08901, (phone) 201-249-7000, (fax) 201-249-9165, (twx) 710-998-0597.

LASER SAFETY

Gallium arsenide lasers emit infrared radiation which is invisible to the human eye. When in use, safety precautions should be taken to avoid the possibility of eye damage.

Do not stare directly at the device or view an operating laser at close range. If viewing is required, the beam should only be observed by reflection from a matte surface utilizing an image convertor or by use of a suitable fluorescent screen.





CAUTION: **Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.**

LASER DIODE, Inc., reserves the right to make changes at any time as deemed practical and/or necessary to improve the design and to supply the best possible product.

Information provided is believed at this time to be accurate and reliable. No responsibility is assumed for its use, nor for any infringements on the rights of others.

* For further information on this product or other LASER DIODE, Inc., please call:

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