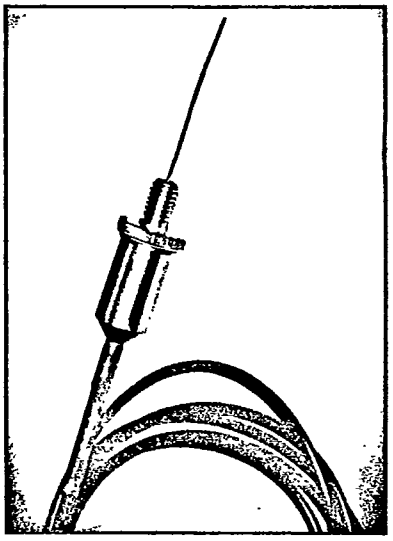
T-41-07

SINGLE HETEROJUNCTION LASER DIODES WITH FIBER PIGTAILS



FEATURES

- Uniform Intensity Source
- Up to 75 Watts of Peak Optical Power Output
- 904nm Peak Wavelength at 25 degrees C
- Coaxial 10-32 Screw Stud LDL-9F Package, Case Negative. Reverse Polarity Available.
- Operation to 60 degrees C
- Custom Devices and Packages Available
- 850nm Devices also Available

DESCRIPTION

LASER DIODE, Inc.'s (LDI) GaAs single heterostructure laser diodes emitting at 904nm are designed for high power, pulsed operation. The devices when coupled to a fiber pigtail provide a uniform source (emission source spot).

The LD-60F series consists of pigtailed single diode lasers that have a peak output power of up to 12 watts through the fiber. The LD-160F devices are stacked laser diode arrays coupled to a single fiber pigtail. These units couple up to 75W out of the fiber.

Both styles of devices are mounted in a coaxial, 10-32 screw stud, case negative, LDL-9F package. Other packages such as reverse polarity LDL-9F or 14 pin dual in lines are also available.

ELECTRO-OPTICAL CHARACTERISTICS OF THE DIODE AT 25°C

Parameters	Symbol	Min.	Typ.	Max.	Units
Peak Wavelength of Emission	λ		904		nm
Spectral Width	$\Delta\lambda$		3.5	7	nm
Rise Time of Radiant Flux	T_r		<1		ns
Max. Pulse Width - 50% Pts.	T_{pm}			200	ns
Typ. Beam Spread-Full Angle to 50% Pts.			25		Degrees
Storage Temperature	T_s	-20		+60	Degrees C
Operating Temperature	T_o	-20		+60	Degrees C

TYPICAL CHARACTERISTICS

T-41-07

CHARACTERISTICS OF A PACKAGED DIODE @ 25°C

	LD-60F	LD-62F	LD-65F	LD-67F	LD-160F	LD-162F	LD-163F	LD-166F	LD-167F	LD-168F	Units
Total Peak Radiant -Min.	0.30	3	6	9	2	10	15	30	45	60	Watts
Flux at Max. Rated I_{fm} -Typ.	0.45	4	7	12	3	12	20	40	55	75	
Core Diameter	100	200	400	400	100	200	400	400	400	600	microns
Maximum Peak Forward Current -I_{fm}	10	20	40	60	15	25	40	60	75	100	Amps
Typical Threshold Current @ -I_{th}	3	6	10	16	4	7	10	14	18	25	Amps
Typical Peak Forward Voltage @ -I_{fm}	5	6	7	8	7	12	15	22	27	37	Volts
Maximum Pulse Width -50% Pts.	200	200	200	200	200	200	200	200	200	200	ns
Duty Factor @-I_{fm}	0.1	0.1	0.1	0.1	.08	0.04	0.04	0.02	0.02	0.01	%
Fiber Type*	AS	PCS	PCS	PCS	AS	PCS	PCS	PCS	PCS	PCS	

*AS — All Silica: NA ~ 0.2
*PCS — Plastic Clad Silica: NA ~ 0.4

Fig. 1 — Typical peak power output vs. pulse repetition rate

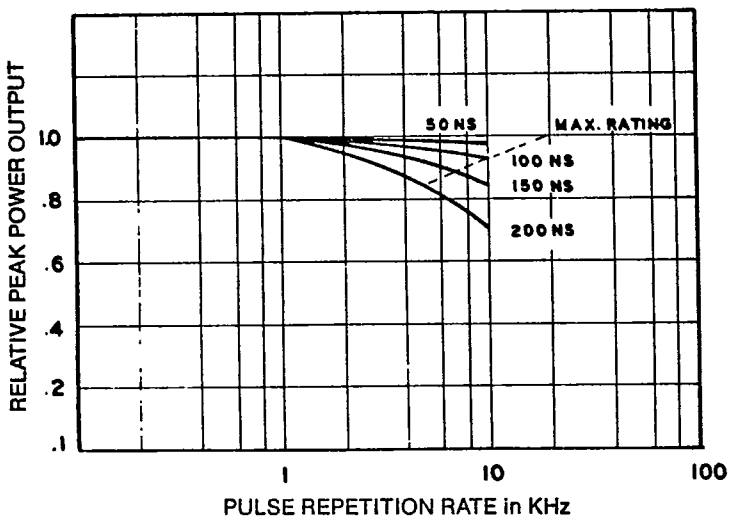


Fig. 2 — Total peak radiant flux vs. peak forward current for selected units

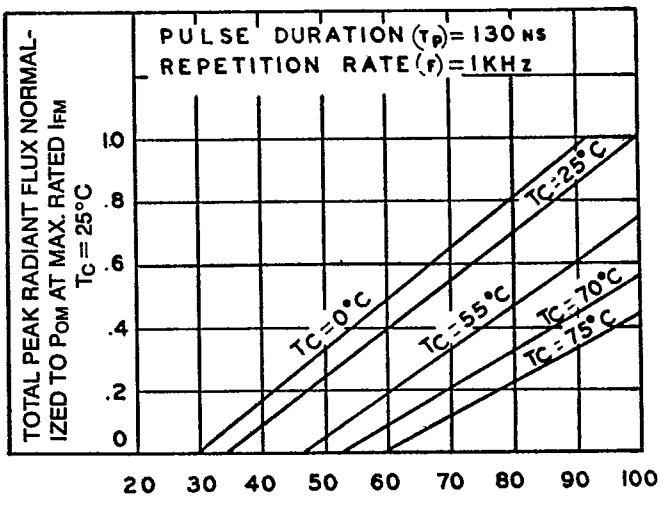


FIG. 3
FIG. 4
FIG. 5
FIG. 6

T-41-07

Fig. 3 — Typical peak power output and threshold current vs. case temperature

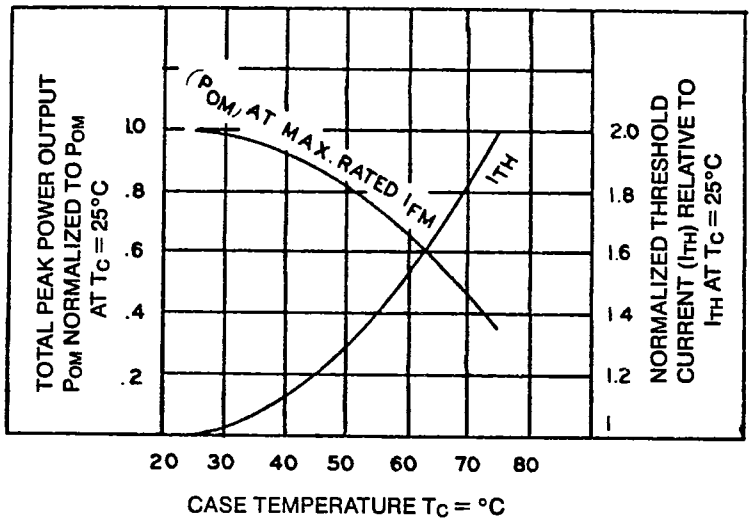


Fig. 4 — Total power collected vs. f-number

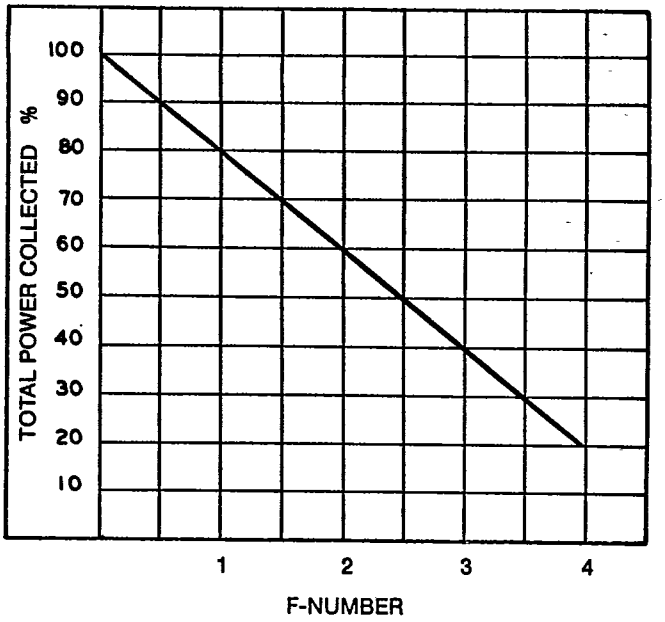


Fig. 5 — Relative Intensity vs. Wavelength

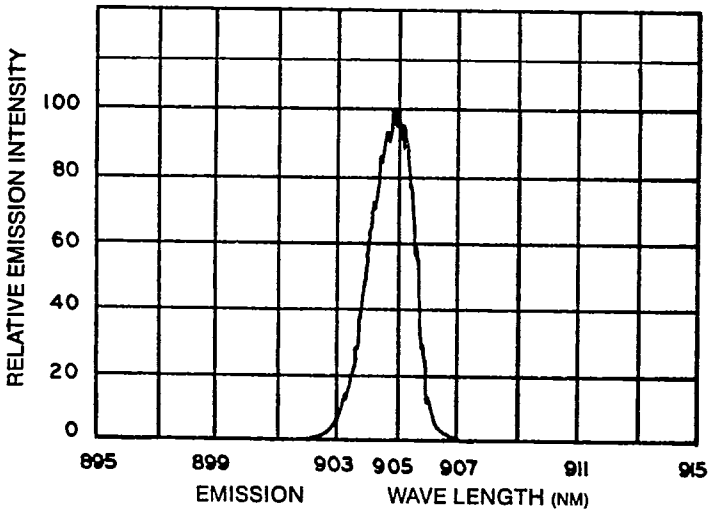
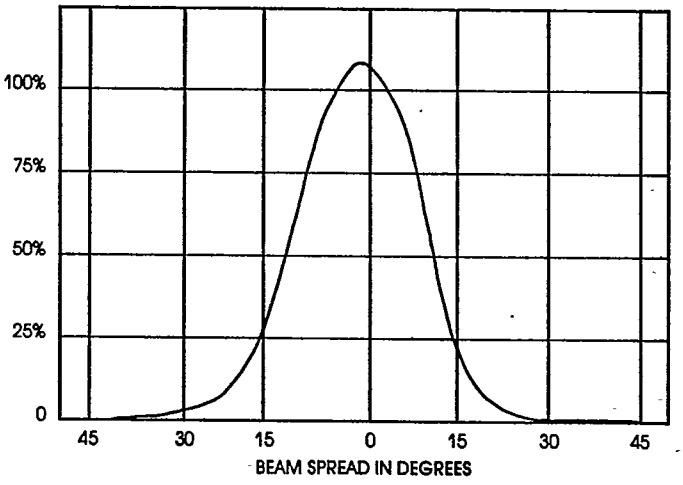
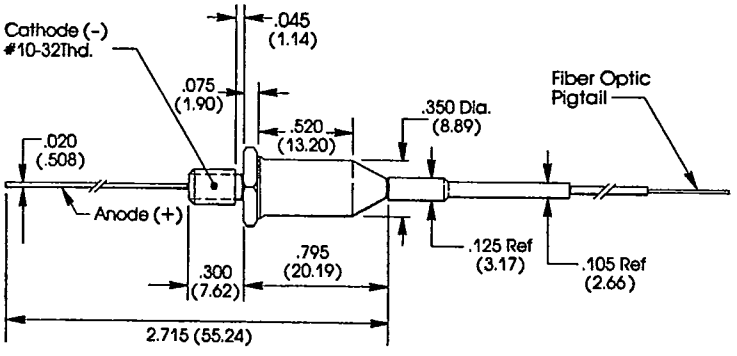


Fig. 6 — Relative Intensity vs. beam spread



PACKAGE SPECIFICATIONS



NOTE
1. Dimensions in inches. mm in parenthesis.

— CAUTION —
INVISIBLE LASER
RADIATION EMITTED
FROM GLASS FIBER

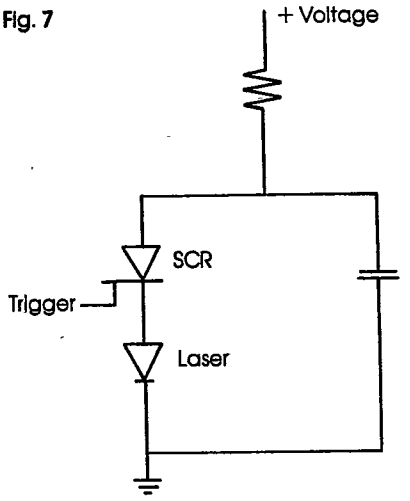
T-41-07

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 7.

LASER DIODE, Inc. manufactures pulsers and power supplies for this family of lasers. For laboratory experimentation the LP-210C, pulse generator, and the LC-200 (for 115V operation) or the LC-210 (for 28V operation) power supply may be used. Custom drivers are available for specific applications.

Fig. 7



DETECTING THE LASER

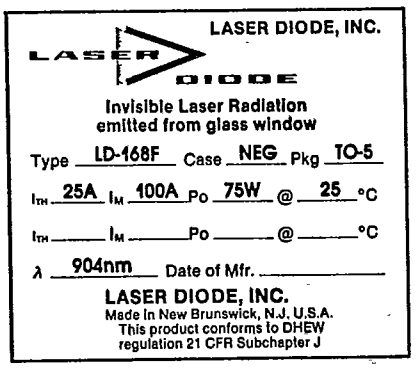
LASER DIODE, Inc. manufacturers a calibrated power meter for use with its family of laser diodes. The LPD-2 is a solid state, NBS traceable power meter capable of measuring peak powers ranging from 1 to 100 watts. The LPD-2 is configured so that it may be mounted on an optical bench or rail.

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 others of LASER DIODE, Inc., please call:

LASER DIODE

LASER DIODE, INC.
MORGAN ELECTRONICS DIVISION
1130 SOMERSET ST., NEW BRUNSWICK, NJ 08901
(201) 249-7000 (FAX) 201-249-9165 (TWX) 710-998-0597