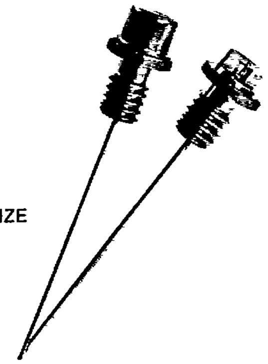
SINGLE HETEROJUNCTION GaAs LASER DIODES



FEATURES

- High Efficiency at Low Drive Currents
- Up to 20 Watts Peak Power Output
- Operation to 75° C for Selected Devices
- Optically Centered Hermetic Coaxial Package
- Reverse Polarity Devices Available
- Pigtailed Devices Available

DESCRIPTION

The LD-60 Series devices are single heterostructure Gallium Arsenide injection laser diodes designed for high peak power pulsed operation at a wavelength of 904nm. These single chip devices offer peak output powers of between 1 and 20 Watts. Selected units may be operated up to 75° C. The standard housing for the laser is a hermetically sealed optically centered TO-18 coaxial package. Other packages such as TO-5 coaxial header or 14 pin dual in lines with peltier cooler with fiber pigtails are also available. On request devices may be supplied in coaxial styles with reverse polarity.

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 — 10%-90% Pts.	T_r		<0.5		ns
Max. Pulse Width — 50% Pts.	Tpm			200	ns
Duty Factor @Ifm				0.1	%
Storage Temperature	T_S	-196		+100	°C
Operating Temperature	T_O	-50		+60(+75*)	°C

*For Selected Units

TYPICAL CHARACTERISTICS

CHARACTERISTICS OF A PACKAGED DIODE @ 25°C

		LD-60	LD-61	LD-62	LD-63	LD-65	LD-66	LD-67	LD-68	Units
Total Peak Radiant Flux at max. rated I_{fm}	Min. Typ.	2 2.3	1 1.5	5 6	5 6	10 12	8 9.5	16 20	16 20	Watts Watts
Maximum Peak Forward Current	I_{fm}	10	10	20	25	40	40	60	75	Amps.
Typical Threshold Current	I_{th}	3	3.5	6	7	10	12	16	18	Amps
Typical Peak Forward Voltage	@I_{fm} @50ma	5.0 1.2	5.0 1.2	5.8 1.2	6.5 1.2	6.7 1.2	6.7 1.2	7.0 1.2	8.0 1.2	Volts
Emitting Area		3x.08	3x.08	6x.08	6x.08	9x.08	9x.08	16x.08	16x.08	Mils

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

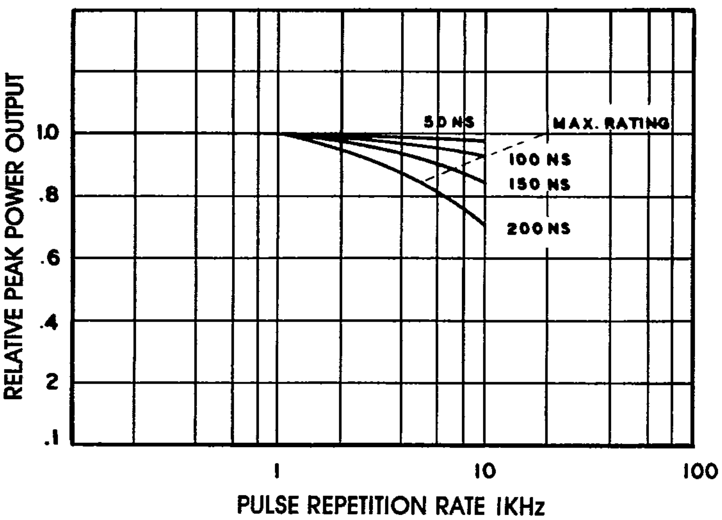


Fig. 2 — Total peak radiant flux vs. peak forward current for selected units

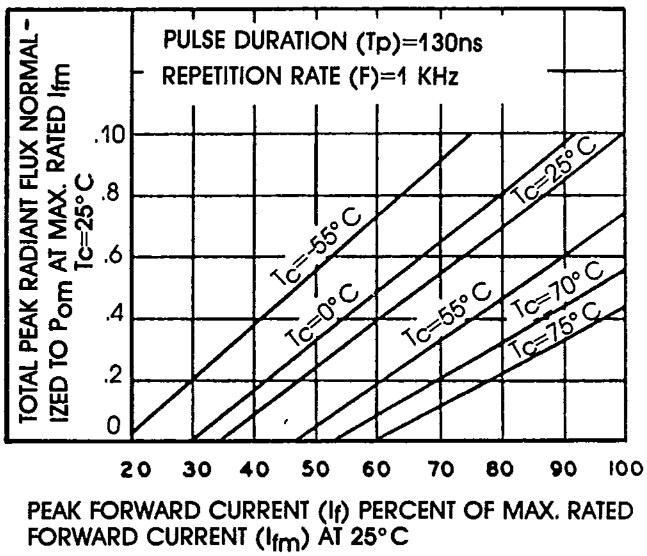


Fig. 3 — Typical peak power output and threshold current vs. case temperature

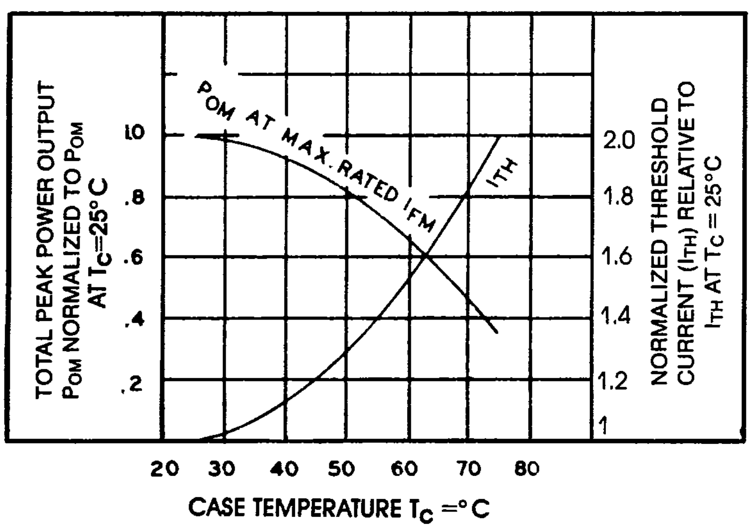


Fig. 4 — Relative Intensity vs. Wavelength

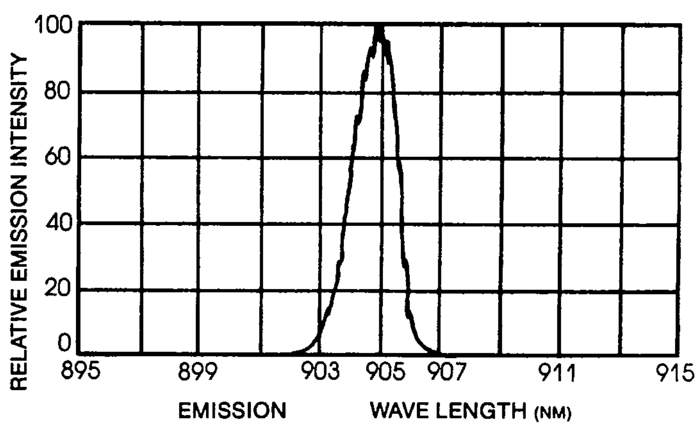


Fig. 5 — Relative Intensity vs. beam spread in plane normal to junction

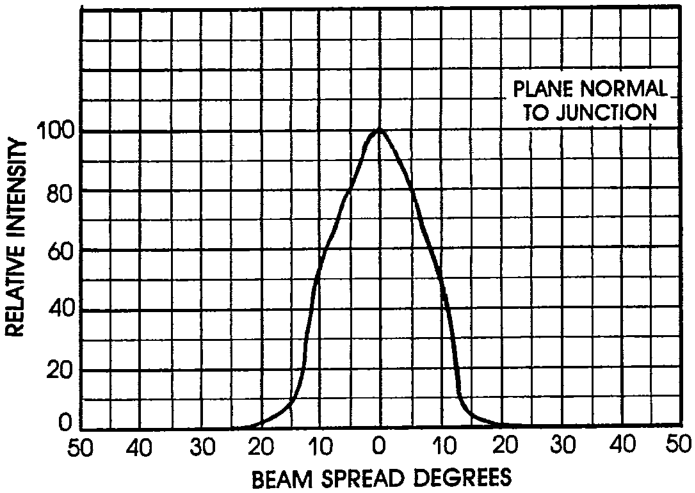


Fig. 6 — Relative Intensity vs. Beam spread in plane parallel to junction

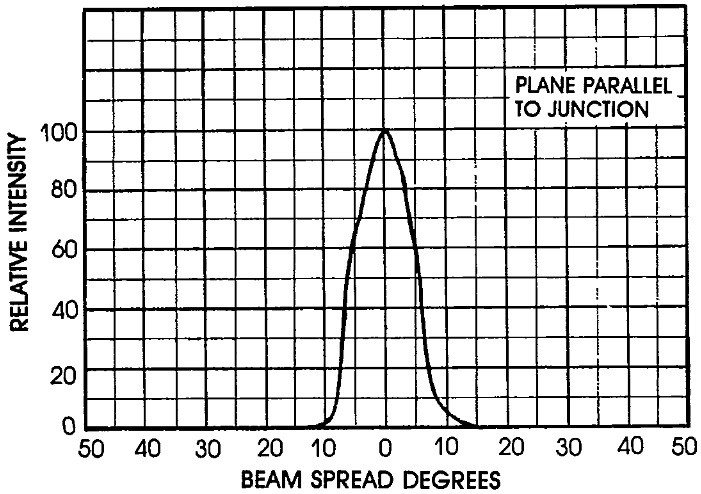
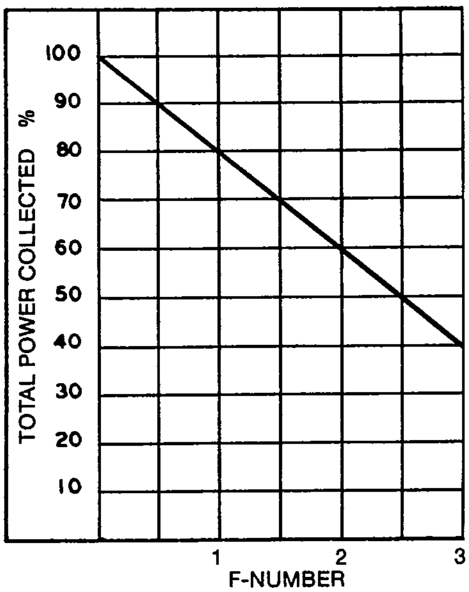
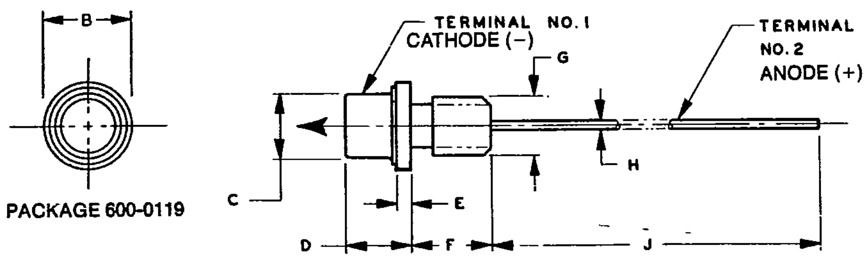


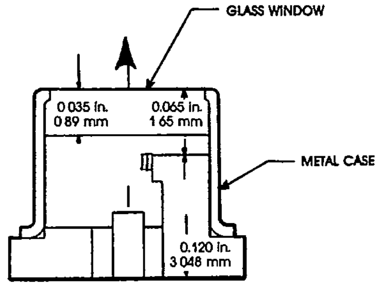
Fig. 7 — Total power collected vs. f-number



PACKAGE DRAWING



SYMBOL	INCHES	MILLIMETERS
	TYP.	TYP.
B	.250	6.35
C	.183	4.64
D	.176	4.47
E	.040	1.01
F	.300	7.50
G	#8-32 THD.	
H	.020	0.51
J	0.750	19.05



NOTE: PELLET MOUNTED ON OPTICAL CENTER OF PACKAGE
TO-18

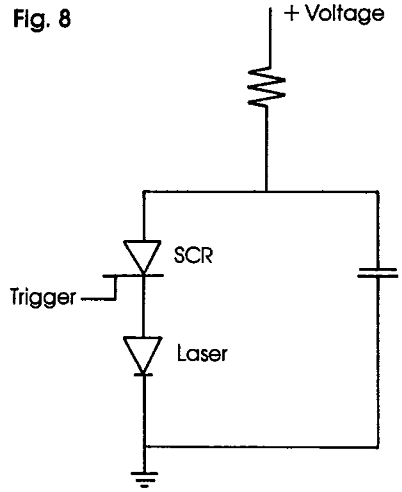
Invisible Laser Radiation emitted from glass window

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 pulsers and power supplies for this family of lasers. For laboratory experimentation the LP-23C pulse generator, and the LC-200 (for 115V operation) or the LC-23 (for 28V operation) power supply may be used. Custom drivers are available for specific applications.

Fig. 8



DETECTING THE LASER

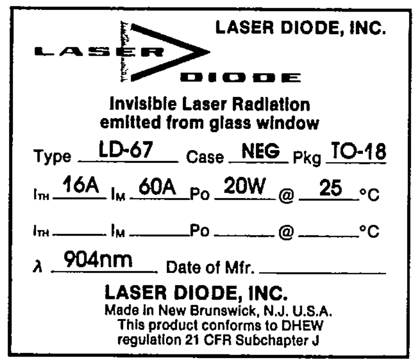
LASER DIODE, Inc. manufacturers a calibrated power meter for use with its family of laser diodes. The LPD-2 is a solid state, NBS traceable power meter capable of measuring peak powers ranging from 1 to 100 watts. The LPD-2 is configured so that it may be mounted on an optical bench or rail.

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:

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