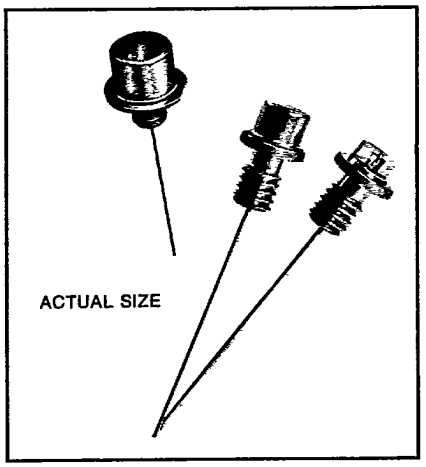
T-41-05

850nm PULSED GaAlAs LASER DIODES



FEATURES

- Wavelength Selection Available from 780 to 880 nm
- High Efficiency at Low Drive Currents
- Up to 90 Watts Peak Power Output
- Single Diodes and Stacked Arrays Available
- Hermetic Coaxial Package
- Custom Stacked Arrays Available
- Pigtailed Devices Available

DESCRIPTION

The LA Series consists of Multiheterostructure Gallium Aluminum Arsenide Injection laser diodes designed for high peak power pulsed operation at wavelengths from 780nm to 880nm. The devices consist of either single chips (LA-60 series) or in stacked diode arrays (LA-160 series). The devices offer peak output powers ranging from 1 to 90 Watts. Selected units may be operated at 75°C. The standard housing for the laser is a hermetically sealed, coaxial package. Optically centered coaxial packages (TO-18) are available upon request. The lasers may be coupled to a fiber optic pigtail. 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
Wavelength of Peak Intensity	λ	840***	850	860***	nm
Spectral Width @50% Pts.	$\Delta\lambda$		3.5	10	nm
Rise Time of Radiant Flux — 10%–90% Pts.	T_r		1		ns
Pulse Width - 50% Pts. @1_{FM}	T_p			80	ns
Storage Temperature	T_s	-196		+100	°C
Operating Temperature	T_c	-50		+60(+75**)	°C

**For selected units
***Wavelengths from 780 to 880 available on special order

TYPICAL CHARACTERISTICS

CHARACTERISTICS OF A PACKAGED DIODE @ 25°C

	SINGLE DIODES				STACKED ARRAYS			
	LA-60	LA-63	LA-65	LA-68	LA-162	LA-163	LA-167	Units
Total Peak Radiant Flux @ Max Rated I_{fm} Min.	1.0	4	6	12	12	20	60	Watts
Typ.	1.5	5	8	15	15	25	75	
Number of Diodes	1	1	1	1	3	3	5	
Emitting Area	3 x .08	6 x .08	9 x .08	16 x .08	6 x 8	9 x 8	16 x 16	Mils
Maximum Peak Forward Current (I_{fm})	8	20	30	60	20	30	60	Amps
Typical Threshold Current (I_{th})	2.5	4	7	12	4	7	12	Amps
Typical Peak Forward Voltage @I_{fm}	4.5	6.5	8.0	10	12	18.5	38	Volts
@50ma	1.4	1.4	1.4	1.4	4.2	4.2	7.0	
Duty Factor @I_{fm}	.05	.05	.05	.05	.02	.02	.02	%
Package Style	0119	0119	0119	0119	0114	0114	0114	

Fig. 1 — Typical peak output power vs. pulse repetition rate LA-60

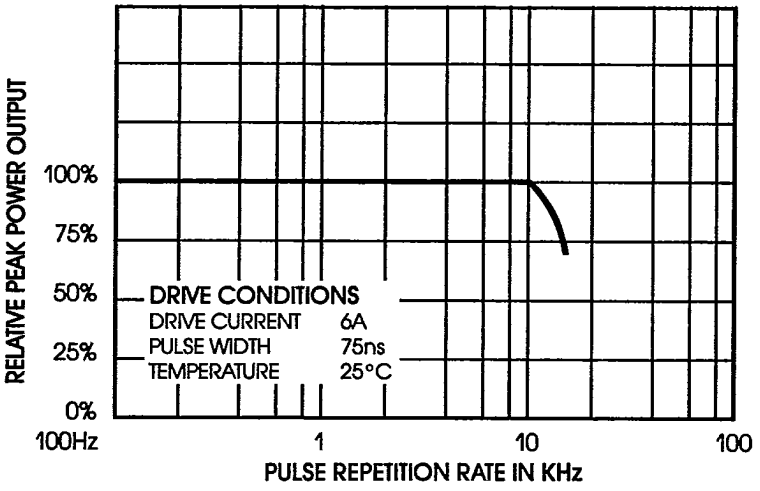


Fig. 2 — Total peak radiant flux vs. case temperature LA-60

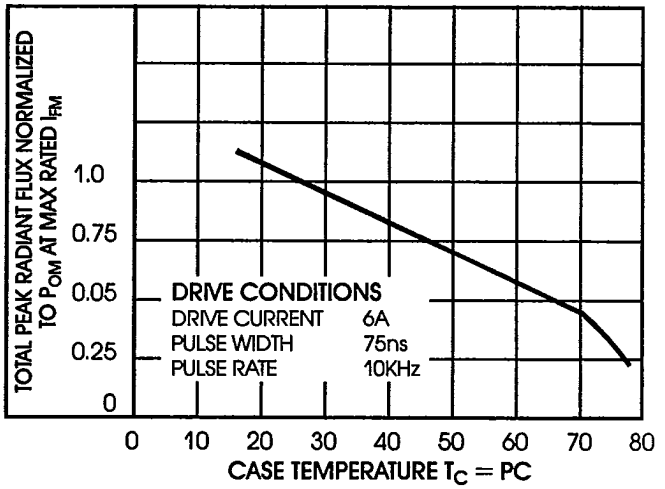


Fig. 3 — Typical peak power output and threshold current vs. case temperature

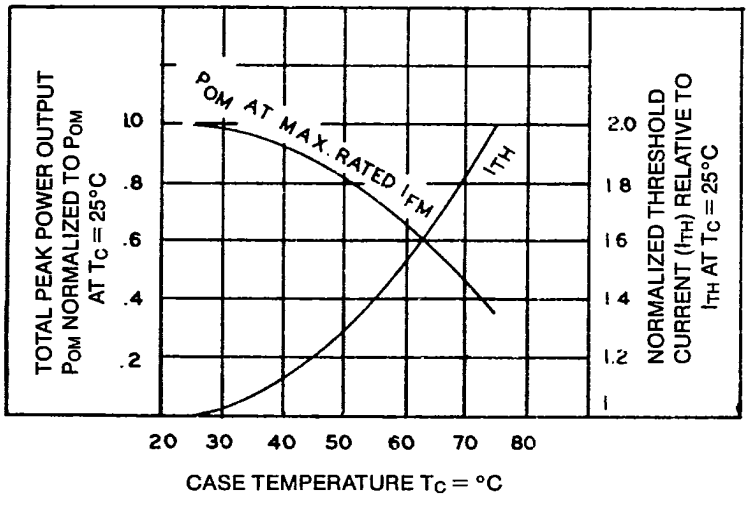


Fig. 4 — Total power collected vs. f-number

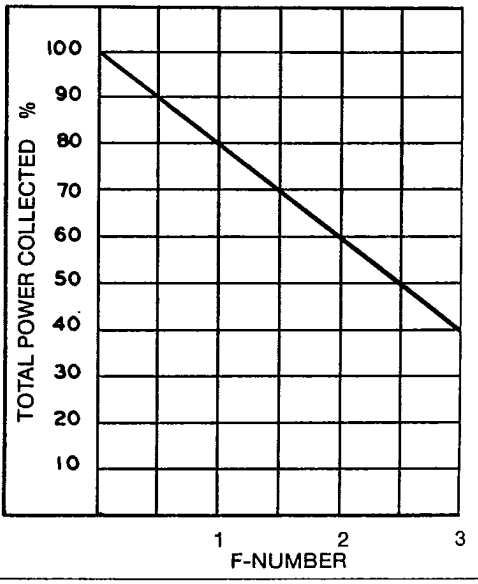


FIG. 5
FIG. 6
FIG. 7

Fig. 5 — Relative Intensity vs. Wavelength

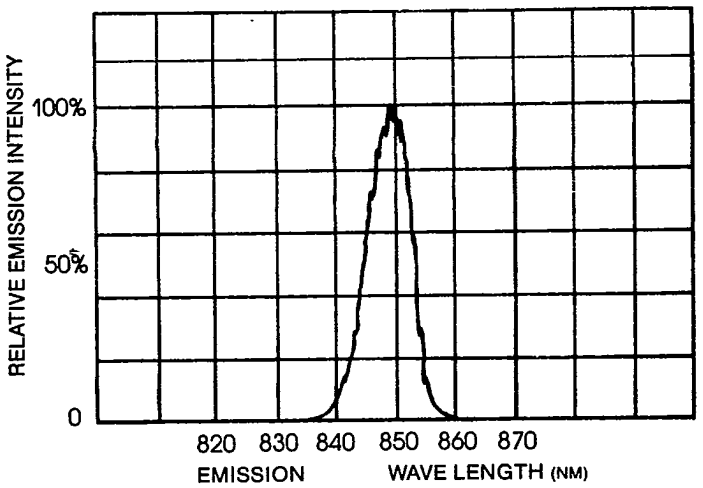


Fig. 6 — Relative Intensity vs. beam spread in plane perpendicular to LA-167 junction

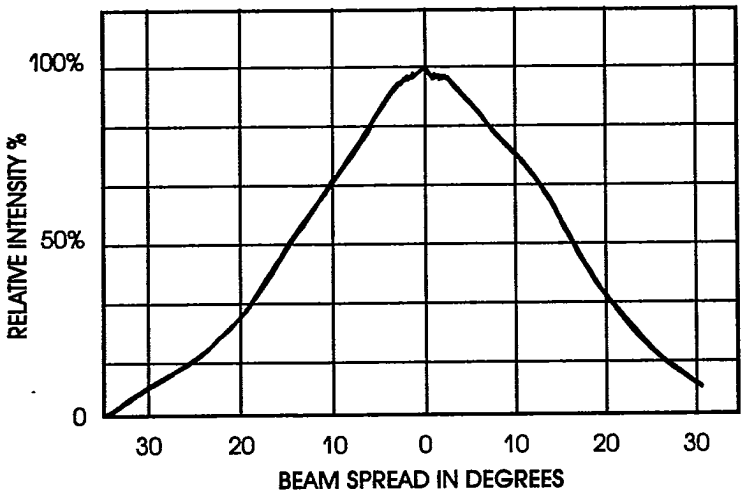
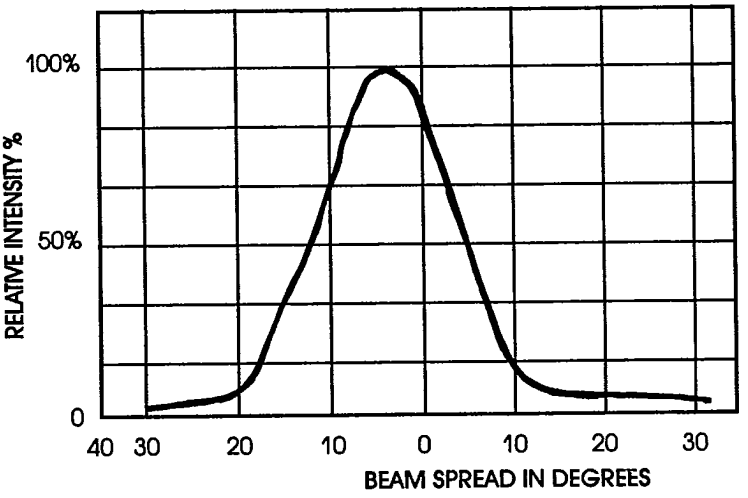
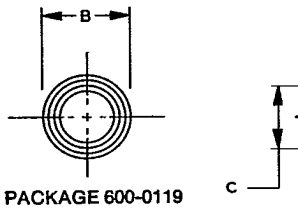
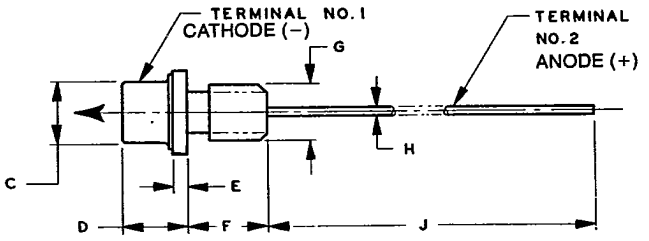


Fig. 7 — Relative Intensity vs. beam spread in plane parallel to LA167 junction



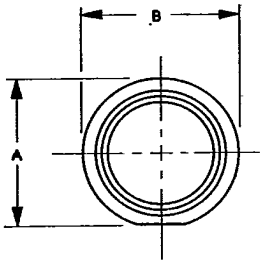
PACKAGE DRAWING

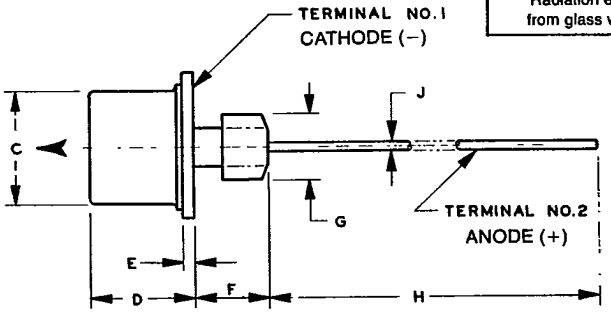




SYMBOL	INCHES TYP.	MILLIMETERS TYP.
B	.250	6.35
C	.183	4.64
D	.176	4.47
E	.040	1.01
F	.300	7.50
G	#8-32 THD.	
H	.020	0.51
J	0.750	19.05

Invisible Laser Radiation emitted from glass window





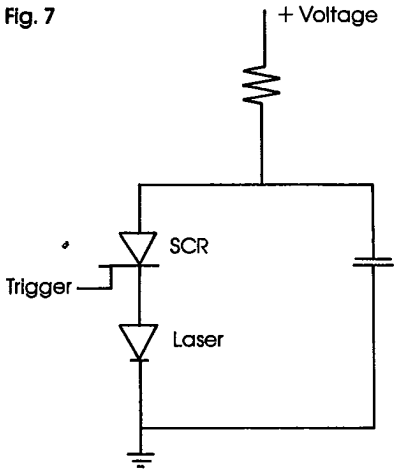
SYMBOL	INCHES TYP.	MILLIMETERS TYP.
A	.418	10.61
B	.437	11.10
C	.325	8.25
D	.285	7.23
E	.030	0.76
F	.250	6.35
G	#10-32 THD.	
H	1.100	27.94
J	.020	0.51

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 LPA-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

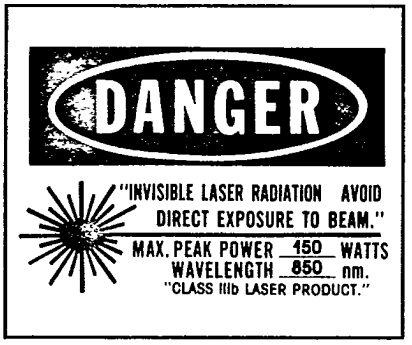
LASER DIODE, Inc. manufacturers a calibrated power meter for use with its family of laser diodes. The LPD-2 is a solid state, NBS traceable power meter capable of measuring peak powers ranging from 1 to 100 watts. The LPD-2 is configured so that it may be mounted on an optical bench or rail.

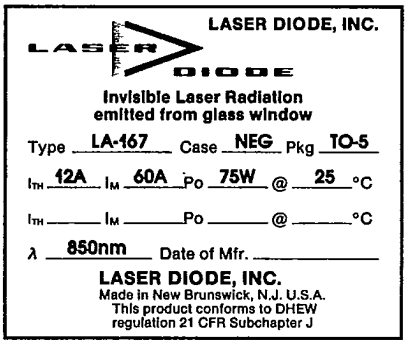
For further information on lasers, drivers, or detectors please contact the Sales Department at LASER DIODE, Inc., 1130 Somerset Street, New Brunswick, NJ 08901, (phone) 201-249-7000, (fax), 201-249-9165, (twx) 710-998-0597.

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:

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