



Preliminary Data Sheet (01-26-99)

MGAD Series

Hybrid Pulsed Laser Module

Photo of the TO-5 device

Features:

- Integral Hybrid Driver Design
- Narrow Pulse Widths: 3ns, 7ns
- Output Power Options
- QW Laser Source: 850, 905, 1550 nm

Applications:

- Range Finding
- Obstacle Avoidance
- LIDAR
- Optical Proximity Fusing
- High Speed Switching

Product Information

EG&G Canada MGAD series of hybrid pulsed laser modules incorporate the laser diode, and hybrid pulsing circuit in a compact convenient package. The series utilizes selected chip variations from our popular MOCVD grown multiple quantum well laser diode line providing narrow beam divergence and high efficiency.

The hybrid circuit includes a high speed semiconductor switching element, storage capacitor and laser diode mounted on a planar ceramic substrate. Options include single, double and triple stacked 150 μm sources producing output peak power of 24 W,

48 W and 72 W respectively.

The advantages of such a design include ease of use (the circuit requires only a single power supply and a TTL compatible trigger signal), compact size and light weight.

Operating Considerations

These modules are operated by charging the integral storage capacitor to a high voltage and discharging this stored energy through the laser diode via a high speed avalanche transistor. The transistor is triggered by a user-supplied TTL base signal.

The pulse length is predetermined at the time of manufacture and is thus not adjustable. It is recommended to use the MGAD with an external 5 KO current limiting resistor be connected between the high voltage supply and the (+HV) circuit connection. This will limit the pulse repetition rate to ~ 25 KHz. Please see Figure 3 for additional operating circuit information.

The current device design is a TO-5 sealed hybrid to protect the electronics from field environmental conditions.



MGAD Series



Maximum Ratings

Maximum ratings of voltage, current, frequency and temperature must never be exceeded. Exceeding these values can cause permanent damage to the laser diode or circuitry.

Limiting Values

High Voltage (+HV) 300V max.
 Trigger Current (I_{TRIG}) 5V max.
 Repetition Frequency (P_{rr}) 25 KHz max.

Operating Temp. Range
 -50°C* to +85°C Storage
 Temp. Range
 -55°C* to +100°C
 Soldering (Leads Only)
 5 seconds at 200°C max.

Characteristics at 25°C

Parameter	MGAD1S0607			MGAD2S0607			MGAD3S0607		
	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Peak Output Power, W	20	24		40	48		60	72	
High Voltage (+HV), V		280	300		280	300		280	300
Trigger Voltage, V	3.5		5.0	3.5		5.0	3.5		5.0
Trigger Pulse Width, ns	100	250	500	100	250	500	100	250	500
Optical Pulse Width, ns		7	10		7	10		7	10
Pulse Repetition Rate, kHz			25			25			25
Beam Divergence, $T \times T_{\perp}$ (deg.)	10 x 25			10 x 25			10 x 25		
Number of diode Elements	1			2			3		
Source Size, μm	1 x 150			110 x 150			220 x 150		

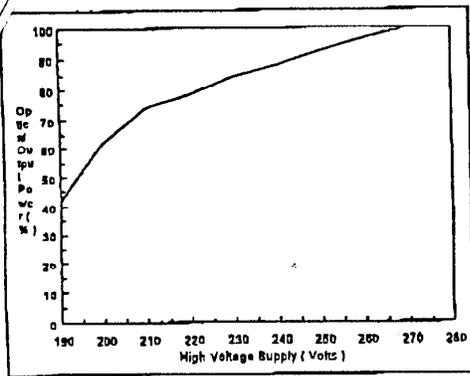


Figure 1: High Voltage Supply vs Temperature vs Relative Peak Output Power

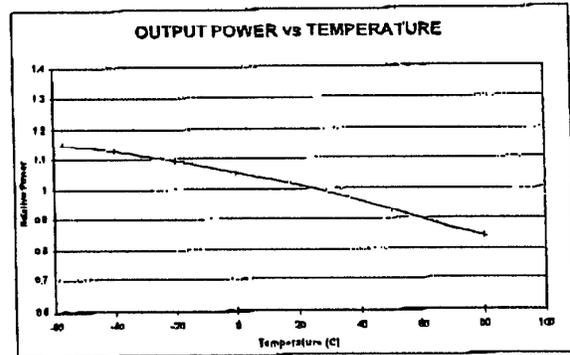
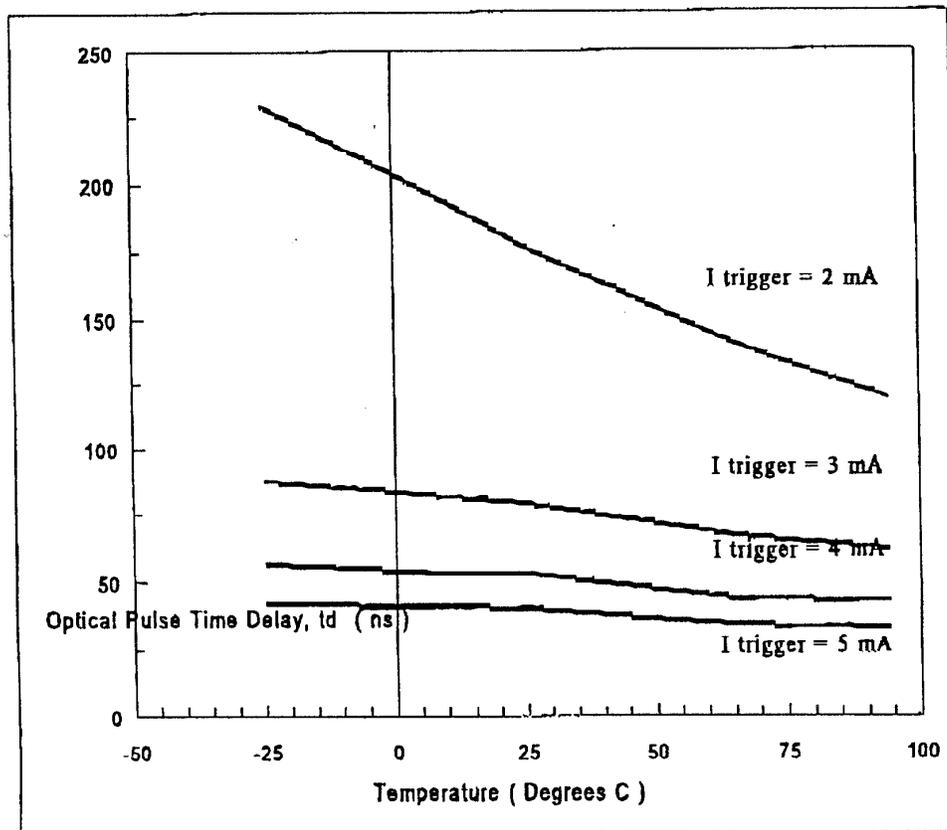


Figure 2: OUTPUT POWER vs TEMPERATURE



Note: $I_{TRIGGER} = (V_{TRIGGER} - 0.7V) / R_S$
 R_S IS THE 1kΩ resistor in Figure-4

Figure 3: Turn-on Delay.

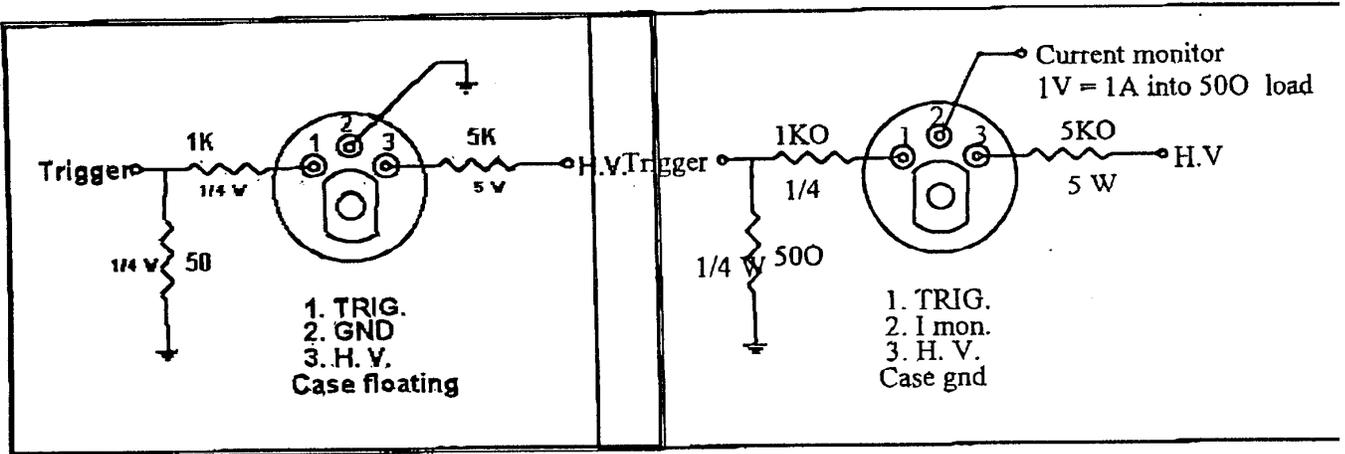


Figure 4: Recommended Interface Circuit.

ORDER PART NUMBER INFORMATION

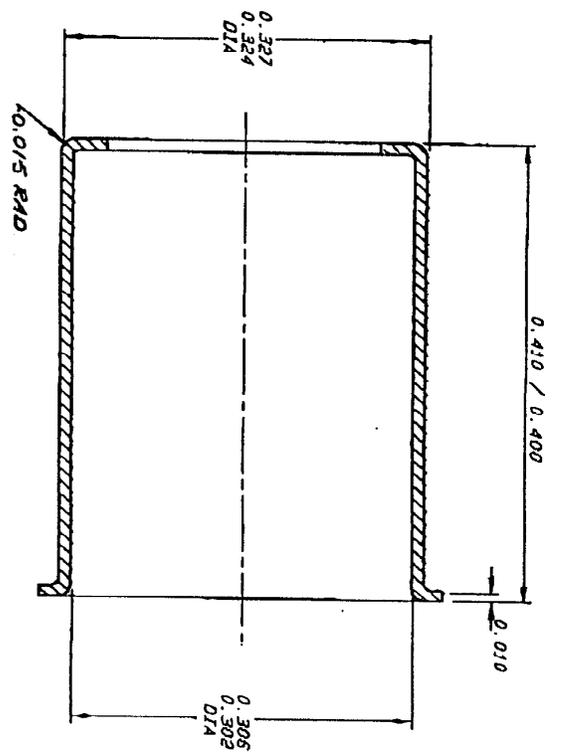
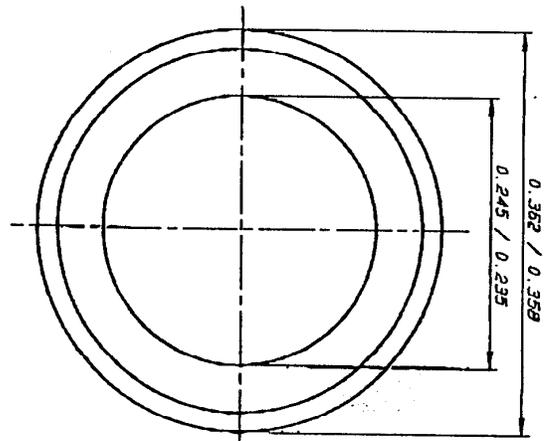
M X X D Y X Y Y Y X

M									PGAZ Series
									WAVELENGTH
	F								850nm
	G								905nm
	V								1550nm
		A							+/- 10% OF LAMBDA
		B							+/- 20%
			D						TO-5 CAN
									# OF LASERS
				1					1
				2					2
				3					3
				4					4
				5					5
									ARRAY TYPE
			L						Linear
			S						Stack (S for 1 laser)
									SOURCE WIDTH
					03				3mils/75µm
					06				6mils/150µm
					09				9mils/225µm
					12				12mils/300µm
									PULSE WIDTH
						03			3ns typical
						07			7ns typical
									CURRENT MONITOR
								-	None
								M	Monitor

MEASUREMENTS MUST INCLUDE THICKNESS OF PLATING. DO NOT SCALE DRAWING. ALL EXTERNAL THREADS TO BE CLASS 2A UNLESS OTHERWISE SPECIFIED. ALL INTERNAL THREADS TO BE CLASS 2B UNLESS OTHERWISE SPECIFIED.

LES DIMENSIONS SONT EN NOUVEAU ET INCLUENT L'ÉPAISSEUR DU PLACAGE, SAUF LA COÛTE. TOUS LES FILETS EXTÉRIEURS SONT DE CLASSE 2A SAUF AUTREMENT PRÉCISÉ. TOUS LES FILETS INTÉRIEURS SONT DE CLASSE 2B SAUF AUTREMENT PRÉCISÉ.

REVISIONS / RÉVISIONS	
NO. BY	H. L. M.
DATE	4/21/17
BY	J. WILKINS
DATE	7/20/17



- NOTES:
- REMOVE ALL BURRS
 - PLATING MUST BE NON-POROUS, UNIFORM ADHERENT AND FREE OF PEELING AND BLISTERING
 - CORROSION RESISTANCE - PARTS MUST NOT EXHIBIT ANY RUST, CORROSION OR DISCOLORATION AFTER BEING SUBJECTED TO 5 MINUTES IN BOILING DE-IONIZED WATER
 - HEAT TEST - PLATING MUST NOT DISCOLOR FLAKE, PEEL, BLISTER OR BUBBLE AFTER BEING SUBJECT TO 20 MINUTES MIN AT 300 DEG C +/- 10 DEG C (THIS WILL BE VERIFIED BY VISUAL INSPECTION AND TAPE TESTS)
 - VENDOR TO SUPPLY CERTIFICATE OF COMPLIANCE FOR EACH BATCH SHIPPED. EACH C OR C SMALL INCLUDE AS A MINIMUM:
 - THE NUMBER(S) OF THE MANUFACTURING LOT(S) OR SUBLOT(S) SHIPPED
 - THE INSOT NUMBER HEAT NUMBER ETC OF THE MATERIAL AS APPLICABLE
 - THE PLATING BATCH (ES)
 - THE DATE OF MANUFACTURE
 EGGS RESERVES THE RIGHT TO PERFORM SOME INSPECTION ON FINISHED PRODUCT AT ITS DISCRETION. NEVERTHELESS, FINAL LOT APPROVAL IS PERFORMED AT EGGS INCOMING INSPECTION

1 MAT'L: KOWAR OR EQUIV
FINISH: 100 UIN LOW STRESS NICKEL PER QQ-N-290, CLASS 1

THIS DRG IS SUBJECT TO REGULATION CONTROL PROGRAMS AND/OR

THESE DIMENSIONS AND SPECIFICATIONS ARE THE PROPERTY OF EGGS CANADA LTD. AND SHALL NOT BE REPRODUCED OR COPIED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF ANY PART OR PARTS OF ANY MACHINE OR EQUIPMENT WITHOUT THE WRITTEN PERMISSION OF EGGS CANADA LTD. ANY VIOLATION OF THIS NOTICE WILL BE PROSECUTED TO THE FULL EXTENT OF THE LAW.

DI-0394

UNFINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED UNLESS OTHERWISE SPECIFIED		FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED	
UP TO 4 JANUARY	± .0001	± .005	± .010
4095 TO 11 JANUARY	N/A	± .010	± .010
UNLESS OTHERWISE SPECIFIED ± .12"			
MANUFACTURER'S PART NUMBER 69276		PART NUMBER IN THIS DRAWING 69276	
MANUFACTURER'S PRODUCT SALEM		MANUFACTURER'S NAME EGGS CANADA LTD.	
DRAWING NO. 2012/201		DATE 2/1/17	
DESIGNED BY P. ALFONSO		CHECKED BY J. WILKINS	
DATE 2/1/17		DATE 2/1/17	
DRAWING NO. DI-0394		DATE 1/17	
PART NUMBER 69276		PART NUMBER 69276	
MANUFACTURER'S NAME EGGS CANADA LTD.		MANUFACTURER'S NAME EGGS CANADA LTD.	
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