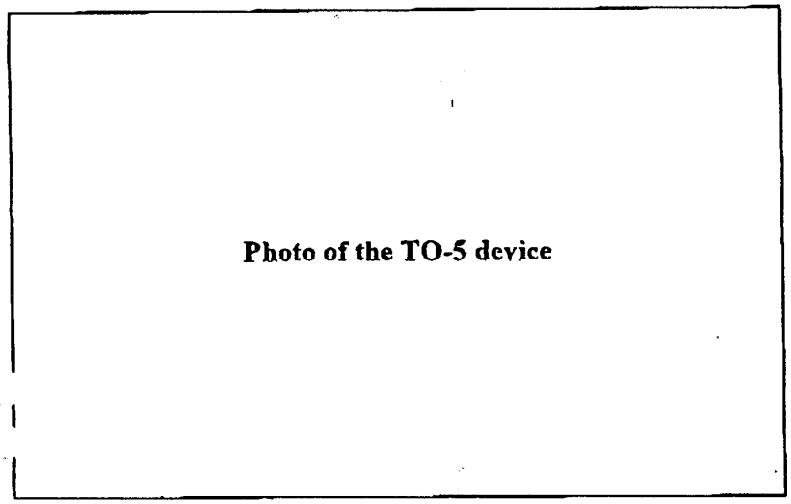
PerkinElmer™
optoelectronics.

Preliminary Data Sheet (01-26-99)

MGAD Series

Hybrid Pulsed Laser Module



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.

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

	MGAD1S0607			MGAD2S0607			MGAD3S0607		
Parameter	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 ∥ x T⊥ (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		

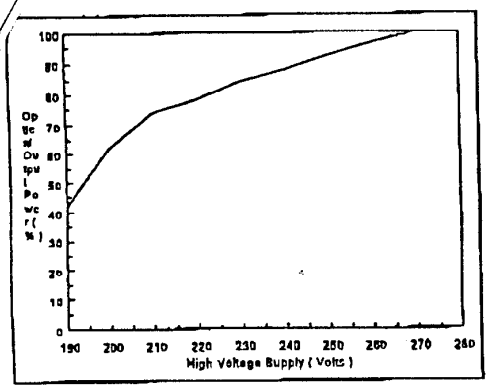


Figure 1: High Voltage Supply vs Temperature vs Relative Peak Output Power

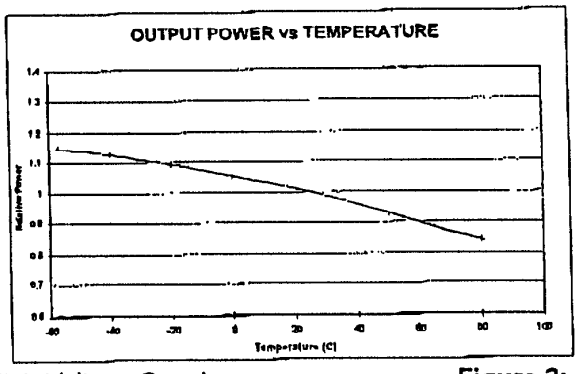
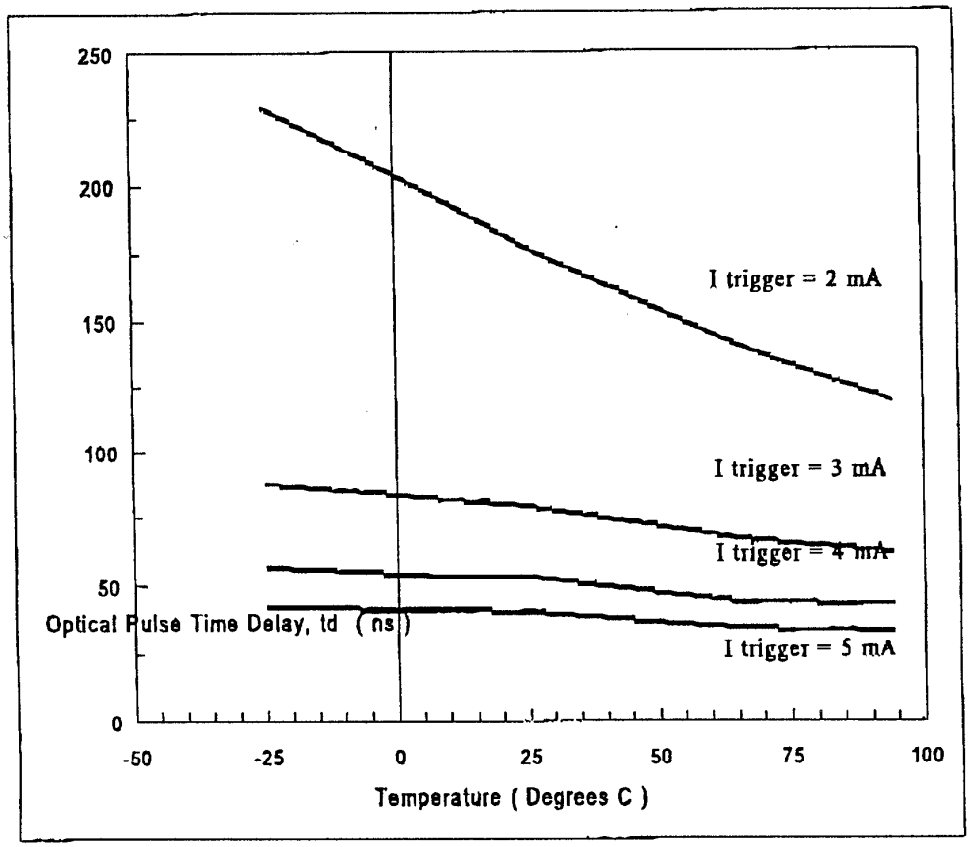


Figure 2: Peak Output Power



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

Figure 3: Turn-on Delay.

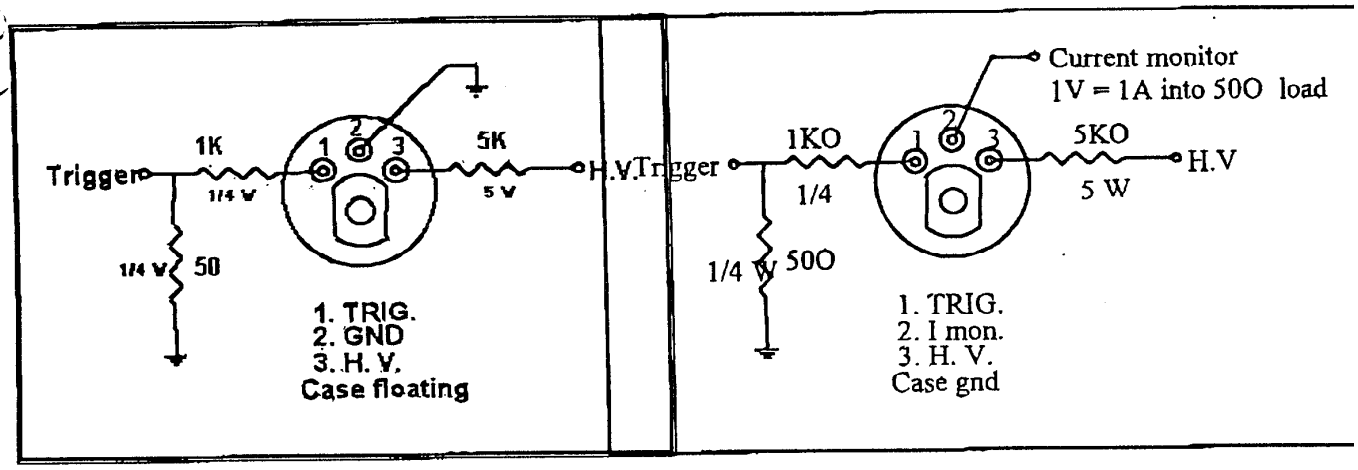


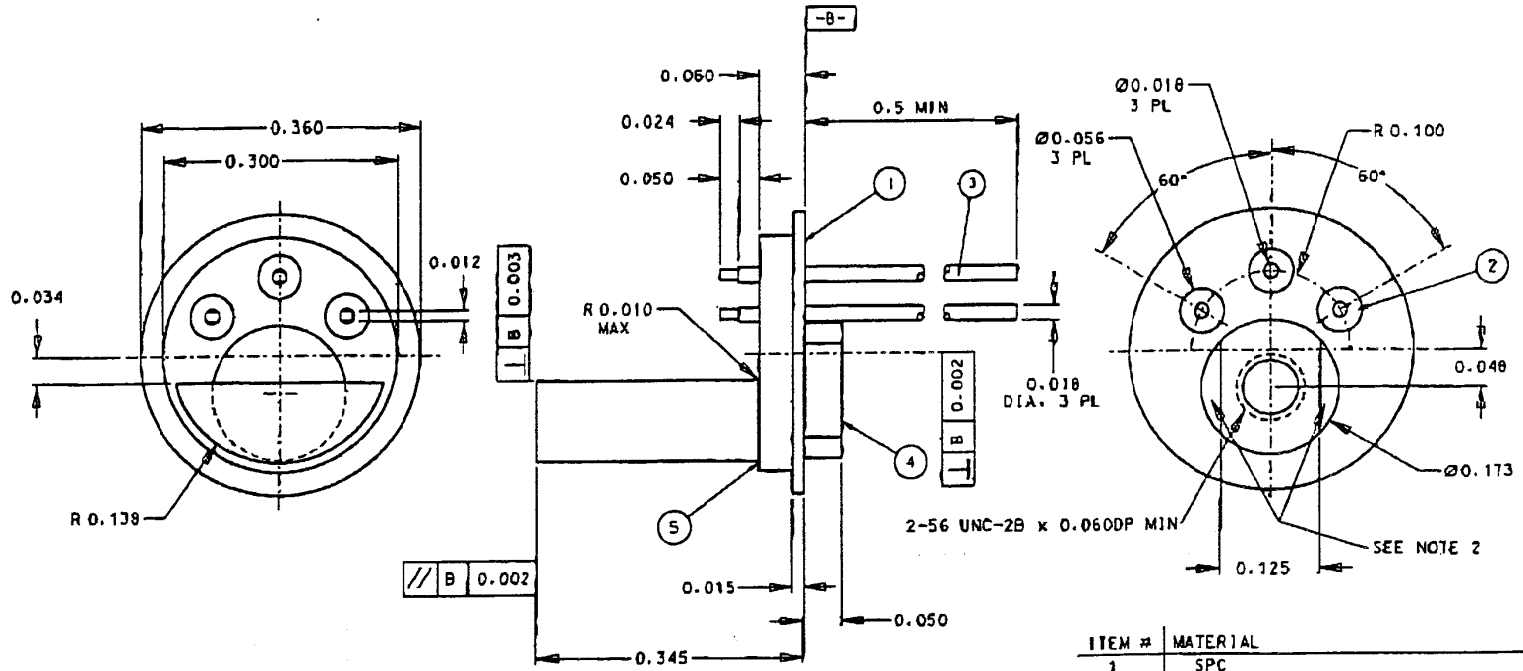
Figure 4: Recommended Interface Circuit.

ORDER PART NUMBER INFORMATION

M	X	X	D	Y	X	YY	YY	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

DIMENSIONS ARE IN INCHES AND INCLUDE THICKNESS OF PLATING. DO NOT SCALE DRAWING. ALL EXTERNAL THREADS TO BE CLASS 2A BEFORE PLATING AND CLASS 3A AFTER PLATING; ALL INTERNAL THREADS TO BE CLASS 2B, UNLESS OTHERWISE SPECIFIED.

LES DIMENSIONS SONT EN POUCES ET INCLUENT L'ÉPAISSEUR DU PLACAGE, SELON LA COTE. TOUS LES FILETS EXTERNES SERONT DE CLASSE 2A AVANT LE PLACAGE ET 3A APRÈS LE PLACAGE; TOUS LES FILETS INTERNES SERONT DE CLASSE 2B, SAUF INDICATION CONTRAIRE.



ITEM #	MATERIAL
1	SPC
2	ST-8
3	Fe-Ni-Co
4	OFCU
5	BRAZE. JIS8Ag-8 OR EQUIV.

FINISH: NI ELECTROPLATE, 50 uin -100uin
FOLLOWED BY Au PLATE 50uin - 100uin

NOTES:
1. BRAZE ITEM 3 TO ITEM 4 WITH HIGH TEMPERATURE MATERIAL.
2. SURFACES INDICATED ARE NOT TO PROTRUDE BEYOND SURFACE -B-.
3. LEAD FATIGUE TEST 4 CYCLES 0'-90'-0', 1 lb TEST. NO LEAD FAILURE PERFORM TEST ON EVERY LOT TO 1% AQL AT S 3 LEVEL.

REVISIONS/RÉVISIONS

APP. BY / APPR. PAR	B.DION	PO
DATE	28 MAY 97	
FORMAL RELEASE A.W. SEPT. 15.97		
0	R.SAUNDERS	X

NEXT ASSY / PROCHAIN MONTAGE C86157E

VARIATIONS ON FINISHED DIMENSIONS UNLESS OTHERWISE MARKED / VARIATIONS AUX DIMENSIONS FINIES SAUF INDICATION CONTRAIRE

Basic dimensions / Dimensions de base	2 places decimals / 2 chiffres décimaux	3 places decimals / 3 chiffres décimaux
UP TO & INCLUDING 8	± .0001	±.005
ABOVE 8 TO 14 & INCL.	N/A	±.010

ANGULAR DIMENSIONS / DIMENSIONS ANGULAIRES ± 1/2°

SEE PURCH. SPEC. FOR STOCK TOLERANCE / VOIR LE DEVIS D'ACHAT POUR LA TOLÉRANCE

HEADER, 3 PIN, TO-5, 0.285 POST

APPLICABLE PRODUCT / PRODUIT VISÉ C86157E

DRAWN BY / DESSINATEUR J.WILLEMS MAY 26/97

CHECKED BY / VÉRIFICATEUR 19/IX/97

DESIGNED BY / CONCEPTEUR B.DION 16 SEPT 97

Q & RA AP. / APPR. PAR CQ & AQ Sept.19/97

EG&G CANADA LTD.

SIZE / FORMAT B

114

DRAWING NO. / CODE DESSIN 69276

SHEET / FEUILLE 1 OF / DE 1

7

114

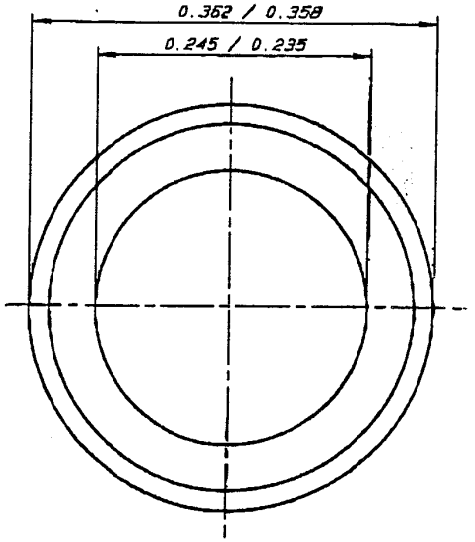
EG-0068/91

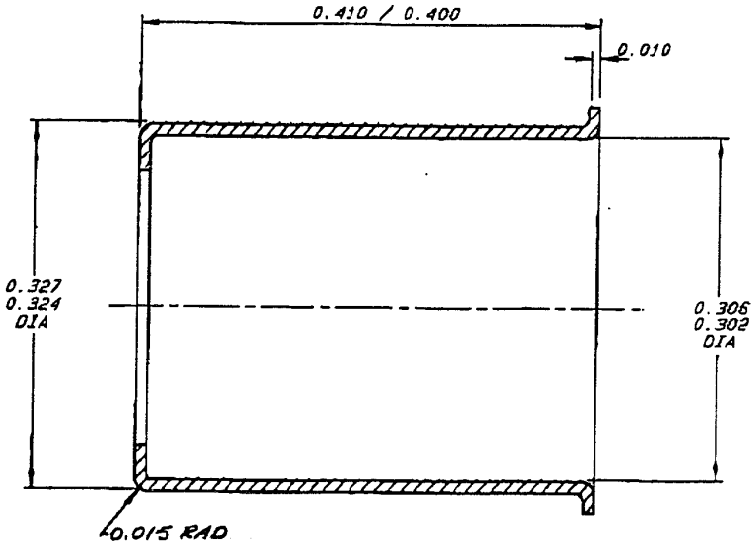
)IMENSIONS ARE IN INCHES AND INCLUDE THICKNESS OF PLATING. DO NOT SCALE DRAWING. ALL EXTERNAL THREADS TO BE CLASS 2A BEFORE PLATING AND CLASS 3A AFTER PLATING. ALL INTERNAL THREADS TO BE CLASS 2B, UNLESS)THERWISE SPECIFIED.

LES DIMENSIONS SONT EN POUCES ET INCLUENT L'ÉPAISSEUR DU PLAQAGE, SELON LA COTE. TOUS LES FILETS EXTERNES SERONT DE CLASSE 2A AVANT LE PLAQAGE ET 3A APRES LE PLAQAGE; TOUS LES FILETS INTERNES SERONT DE CLASSE 2B, SAUF INDICATION CONTRAIRE.

REVISIONS / RÉVISIONS

APP. BY / APPR. PAR	H. Tabb
DATE	92/01/17
REVD PER ECN 5633 J. WILLEMS JUN 16/92	
	1





NOTES:

1. REMOVE ALL BURRS
2. PLATING MUST BE NON-POROUS, UNIFORM, ADHERENT AND FREE OF PEELING AND BLISTERING
3. CORROSION RESISTANCE - PARTS MUST NOT EXHIBIT ANY RUST, CORROSION OR DISCOLORATION AFTER BEING SUBJECTED TO 5 MINUTES IN BOILING DE-IONIZED WATER
4. HEAT TEST - PLATING MUST NOT DISCOLOR, FLAKE, PEEL, BLISTER OR BUBBLE AFTER BEING SUBJECT TO 20 MINUTES MIN AT 200 DEG C +/-10 DEG C (THIS WILL BE VERIFIED BY VISUAL INSPECTION AND TAPE TESTS)
5. VENDOR TO SUPPLY CERTIFICATE OF COMPLIANCE FOR EACH BATCH SHIPPED. EACH C OF C SHALL INCLUDE AS A MINIMUM:
   a) THE NUMBER(S) OF THE MANUFACTURING LOT(S) OR SUBLOT(S) SHIPPED
   b) THE INGOT NUMBER, HEAT NUMBER, ETC OF THE MATERIAL AS APPLICABLE
   c) THE PLATING BATCH (ES)
   d) THE DATE OF MANUFACTURE

   EG&G RESERVES THE RIGHT TO PERFORM SOME INSPECTION ON FINISHED PRODUCT AT ITS DISCRETION. NEVERTHELESS, FINAL LOT APPROVAL IS PERFORMED AT EG&G INCOMING INSPECTION

(1) MAT'L: KOVAR OR EQUIV
FINISH: 100 uin LOW STRESS NICKEL PER QQ-N-290, CLASS 1

THIS DWG IS SUBJECT TO REVISION CONTROL
NEXT ASSY / PROCHAIN MONTAGE

UNLESS OTHERWISE SPECIFIED / SAUF INDICATION CONTRAIRE		
Basic dimensions / Dimensions de base	2 place decimals / 2 chiffres décimaux	3 place decimals / 3 chiffres décimaux
UP TO 4 INCHES / JUSQU'A 4	±.0001	±.005
ABOVE 4 TO 14 INCHES / DE 4 A 14	N/A	±.010
ANGULAR DIMENSIONS / DIMENSIONS ANGULAIRES	± 1/2°	

CAP, PLATED

120

APPLICABLE PRODUCT / PRODUIT VISÉ: SALEM

DRAWN BY / DESSINATEUR: J. WILLEMS 20/12/91
CHECKED BY / VÉRIFICATEUR: 22/I/92
DESIGNED BY / CONCEPTEUR: P. ALFONSO 22/1/91
Q & RA AP. / APPR. AQ & F: 16-JAN-92

EG&G CANADA LTD.

B — SIZE / FORMAT

DI-0394

69276

SHEET / FEUILLE 1 OF / DE 1

10

DI-0394