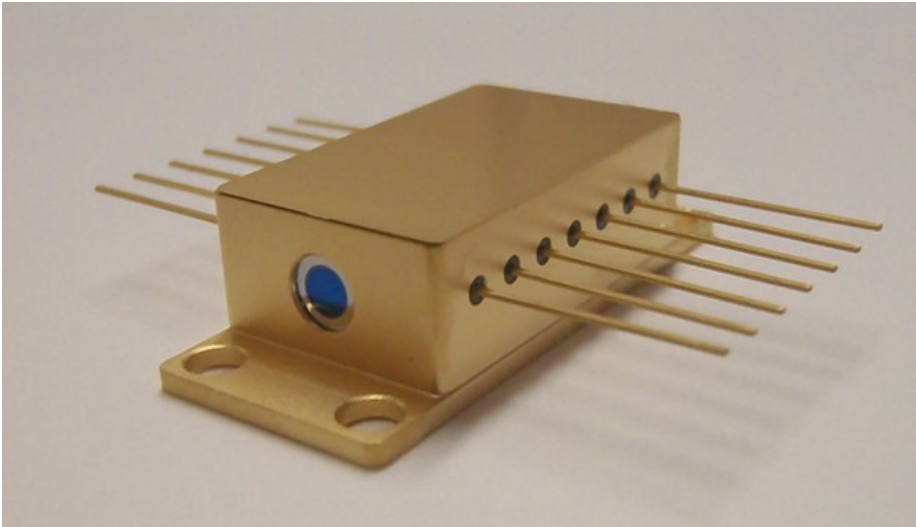


DIODE LASER MODULES FOR ALL APPLICATIONS



## DRUMMOND

Single Mode Collimated Diode Lasers in Butterfly package

**HERMETICALLY SEALED AND THERMALLY CONTROLLED**

**30 X 12.7 X 8.9 mm<sup>3</sup>**

Free-space collimated diode lasers for OEM's and system integrators who require specifications and performance not available from off-the-shelf devices.

The Drummond can accommodate various single mode chips from numerous manufacturers over multiple wavelengths with modules on prompt lead times. With this approach we can offer defined, optical, electrical, thermal and mechanical performance specs in a range of industry standard packages in both prototype and volume quantities.

### Key Features

- Wide range of wavelengths 700 to 2500 nm. Use of laser chips from multiple manufacturers
- CW operation - pulsed operation, optional
- Symmetrical beam and high output powers
- Hermetically sealed housing
- Thermally optimised with high performance (12W) TECs to achieve stable module optical performance over wide temperature range (100 K) with integrated temperature sensor for precision control.
- Manufactured using qualified processes
- Coefficient of Thermal Expansion (CTE) matched materials
- Serialisation and laser marking
- Fibre coupled – see AUERBACH for options
- Available for volume manufacture

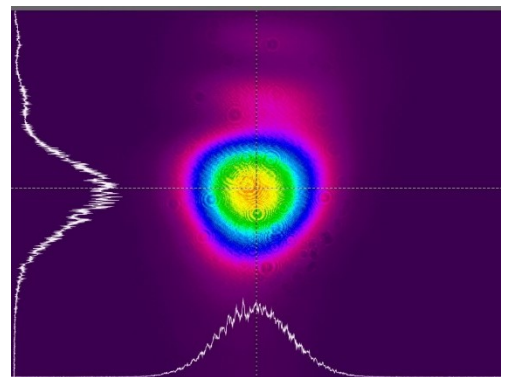
### Applications

Machine vision, targeting, quantum technology, metrology and spectroscopy

## Typical Module Output Specifications

Laser Type	DBR	DBR	FP	FP	FP	FP	DFB
Wavelength (nm)	780	795	808	915	975	1064	2330
Output Power (mW)	>150	>90	>100	>200	>350	>200	>5
Operating Current (mA)	250	165	185	370	680	440	100
Operating Voltage (V)	1.68	1.65	1.9	1.7	1.9	1.7	2.3
Threshold Current (mA)	58	47	38	38	60	38	10
Beam Characteristics	Approx. 1 mm FWHM @ 0.5m, TEM <sub>00</sub>						
Beam Divergence X (mRads FWHM)	2.2	1.9	<2.5	<2.5	<2.5	<2.5	<2.5
Beam Divergence Y (mRads FWHM)	1.5	1.6	<2.5	<2.5	<2.5	<2.5	<2.5
Polarization	Linear, 100:1 (Dependent on diode)						

Actual beam profile from a 795DBR at <0.5m from package window



## Drummond Chip Design Boundaries

DRUMMOND		14-PIN BUTTERFLY WINDOW PACKAGE - Characteristics/ Specification*				
Description		Symbol	Min	Typical	Max	Comment
<b>Chip Parameters</b>						
Wavelength (nm)		$\lambda$	750		2500	NIR
Optical Output Power (mW)		P <sub>o</sub>	5		500	Dependent upon laser diode efficiency
Chip Beam Divergence (deg)	Parallel (Y)	$\Theta_h$			11.5**	FWHM
	Perpendicular (X)	$\Theta_v$			30.0**	
Chip on Submount thickness( $\mu$ m)			600	900		
Submount Footprint (mm x mm)					4.2 x 3.2	
<b>Generic Package Parameters</b>						
Optical Transmission (Total)				>70%		2 lenses + window (High performance AR coating available on request, >90%)
TEC Performance		$\Delta T$ (Typ)		60 K		Max heat load (I <sub>max</sub> 3 Amp)
Operating Temperature (°C)		T <sub>op</sub>	-20	25	85	
Diode Operating Temperature (°C)		T	10	25	35	
Storage Temperature (°C)		T <sub>st</sub>	-40	25	85	

\* All values are subject to Laser Diode availability.

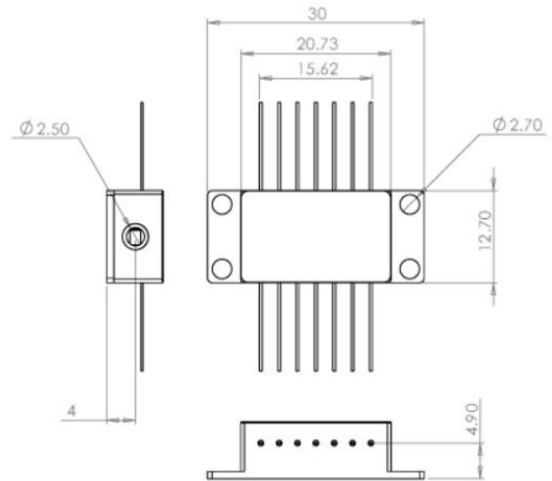
## TEC Performance

$\Delta T_{max}$ (K)	Q <sub>max</sub> (W)	I <sub>max</sub> (A)	U <sub>max</sub> (V)	ACR (Ohm)	Ambient Temperature
69	11.9	3.1	6.2	1.5	+27°C / 300K
74	13.1	3.1	6.9	1.7	+50°C / 323K
80	14.1	3.1	7.5	1.9	+75°C / 348K
81	14.4	3.0	7.7	2.0	+85°C / 358K

Unloaded manufacturer TEC specs, for guidance only

## PIN Out

Pin Out	Connection	Pin Out	Connection
1	TEC Cooler (+)	8	N/C
2	Thermistor	9	N/C
3	N/C	10	Laser diode (+)
4	N/C	11	Laser diode (-)
5	Thermistor	12	N/C
6	N/C	13	N/C
7	N/C	14	TEC Cooler (-)



## NOTES

All values are subject to Laser Diode availability.  
The module should be mounted on a suitable heat sink with a thermal compound

Alter Technology UK offers a limited warranty covering workmanship for all Drummond builds as they are supplied in the understanding they are engineering samples for OEM Integration, and as such laser safety/system classification is the responsibility of the integrator. For full details of this warranty coverage, please contact Alter Technology.

Please note that Alter Technology provides no reliability or life span data or warranty on these modules.

Alter Technology follows a policy of continuous product improvement and thus specifications are subject to change without notice.

## Custom Capability

- Higher power versions using optimised AR coatings
- Higher power electrical inputs (for TEC control)
- Specialist inert gas sealing environments
- Back-facet power monitoring diode
- Single mode VCSEL options
- Low power multi-mode
- Internal optical isolation
- Space qualification through our partners, Alter Technology Spain
- Short wavelengths (400 nm)

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