

SPECIFICATION

Classification:

Product Code: MU55-808-02 Rev: 2

Part Description: High Power Module MU55-808-02, 200/220, 0.22NA

Product Line: High Power MM Un-Cooled Laser Module

Responsible Engineer: S. Busurin

Spec Number:

SWSPEC - 070

Revision: 02

Department: Engineering, Marketing and Sales

Type of Specification: Product Specification, Basic Overview

1.0 Product Specification:

1.1 Scope

Specification for an un-cooled 808 nm Multi-Mode Pump Module with more than 55W light output power. The package design is based on a compact, dust-sealed OEM package. It has isolated contacts and a single output fiber.

Non-qualified product. Refer to SvetWheel Terms and Conditions.

1.2 Specification Parameters

1.2.1 Max Ratings

Parameter	Symbol	Min	Max	Unit	Condition / Comment
ESD			500	V	HBM, C=100pF, R=1.5 kOhm
Storage temperature		0	75	°C	Non-condensing
Lead Soldering Temp.			250	°C	
Lead Soldering Time			10	sec	
Operating case temperature		15	45	°C	Reliability impacted if operating point deviates from reference condition
Relative Humidity		5	95	%	Transport, non-condensing
		5	75	%	Operating, non-condensing ¹⁾
Maximum current			9	A	< 1min
Fiber bend radius		50		mm	

¹⁾ A relative humidity of <55% is recommended for long term stability due to the epoxy sealing of the package. Operation outside of the recommended range may cause irreversible or latent chip and/or module damage.

1.2.2 Laser Module E/O

Parameters at 25 °C Heat sink temperature and the use of a thermal interface material rated for a thermal contact resistance of less than 1.0 cm K/W (0.155 in K/W).

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating current*	I_{op}		8.0	9.0	A	55W ex-fiber minimum
Forward voltage*	V		13.0	14.0	V	55W ex-fiber minimum
Threshold current	I_{th}	0.7	0.9	1.1	A	
Center wavelength	Λ_c		805		nm	55W ex-fiber
Spectral width	$\Delta\lambda$				nm	FWHM of power
Spectral width	$\Delta\lambda$		3.5	4.0	nm	90% of power

*Remark: Min/Max values reflect recognized uncertainties not only from performance variations, but also uncertainties from measurement setup. Data need to be aligned with customer data based on prototype sample testing.

Module spectrum data measurement:

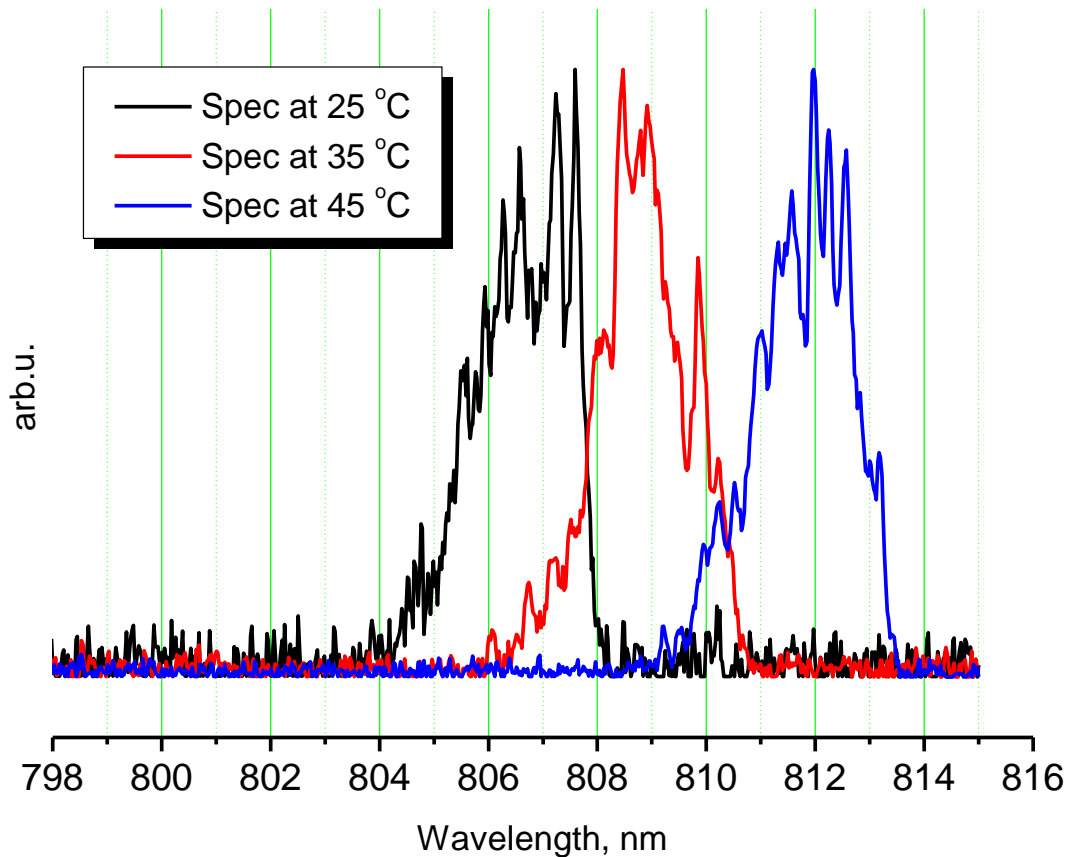


Fig. 1. Typical spectrum data

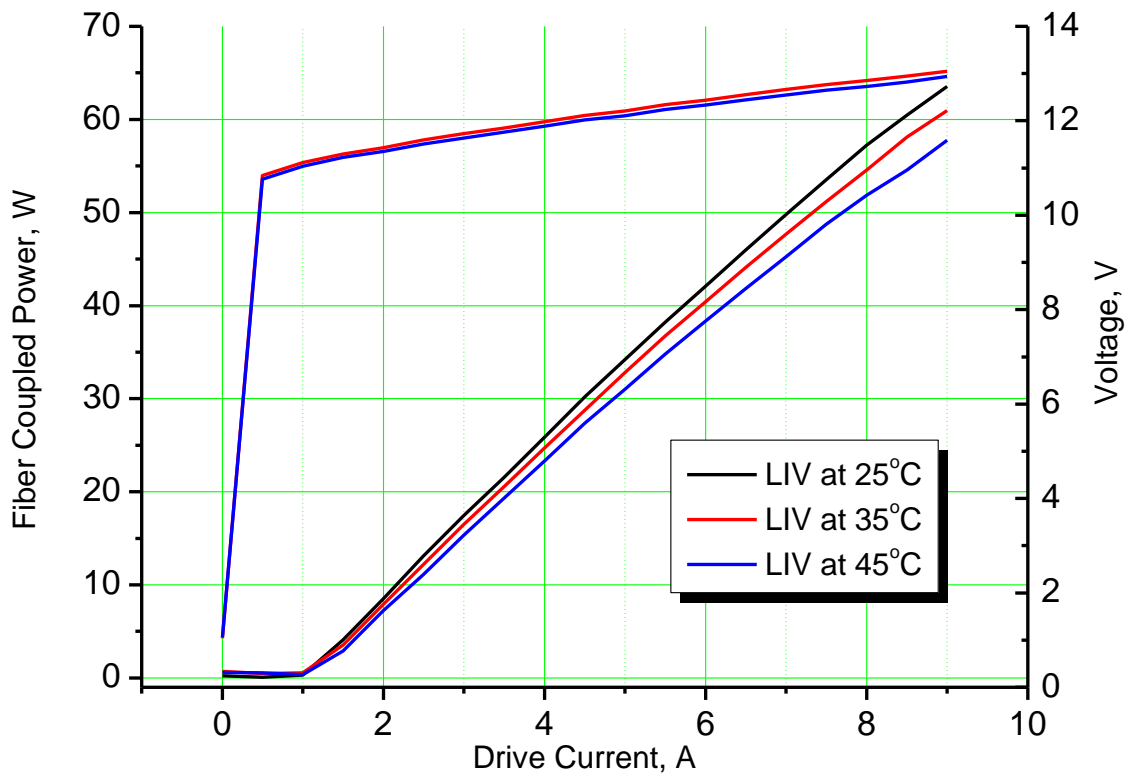


Fig. 2. Typical LIV characteristics

1.2.3 Hermeticity

Parameter	Symbol	Min	Max	Unit	Condition
Package hermeticity					Dust sealed OEM package

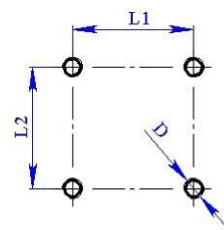
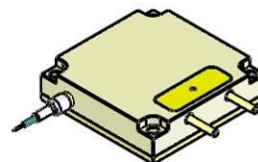
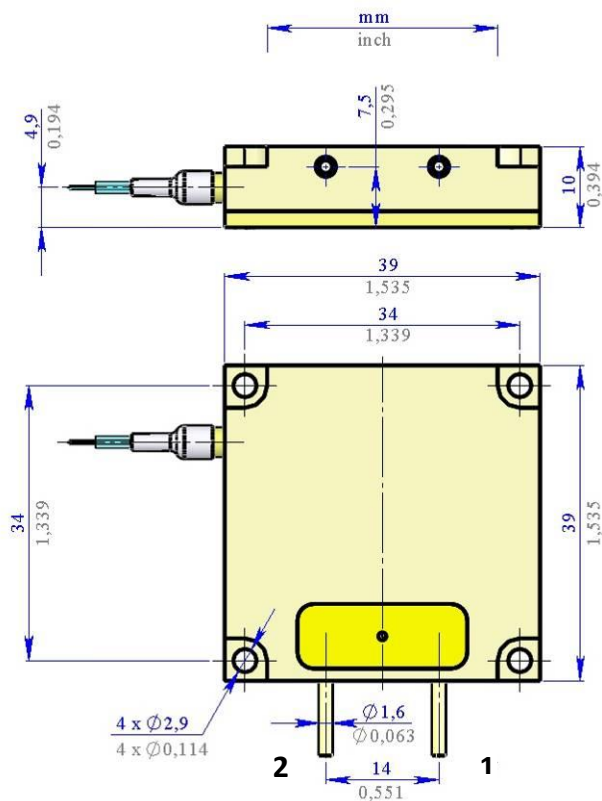
1.2.4 Fiber

Parameter	Min	Typ	Max	Unit	Remark
Fiber type					Multi-Mode Step Index
Buffer diameter	380	400	450	um	Acrylate material
Cladding diameter	215	220	225	um	
Core diameter	198	200	205	um	
Numerical aperture	0.19	0.22	0.22		
Pigtail length	3.0	3.5	3.6	m	
Connector	Bare fiber				SMA-905 is optional

1.2.5 Pinout

Pin	Function
1	Laser anode (+)
2	Laser cathode (-)

1.2.6 Design layout and Mechanical Dimensions



Heat-sink mounting layout.

See details in paragraph 3. Mechanical Interface with Heat Sink

2.0 Product Reliability Estimates:

2.1. Expected module survival time is calculated for 90% and 70% survival rate over time in hours:

Estimate#	Fiber Output Power, W	Heatsink Temp., °C	Failure Criteria 10%, Hours		Failure Criteria 30%, Hours		Drive Current, A	
			0 chip failure	1 chip failure	0 chip failure	1 chip failure	0 chip failure	1 chip failure
1	55	25	7800		26400		8.1	
2	55	15	14600		50700		7.7	
3	50	35	7500		25500		7.8	
4	45	45	7900		26800		7.4	
5	50	20	18400	64000	62400	134000	7.2	8.2

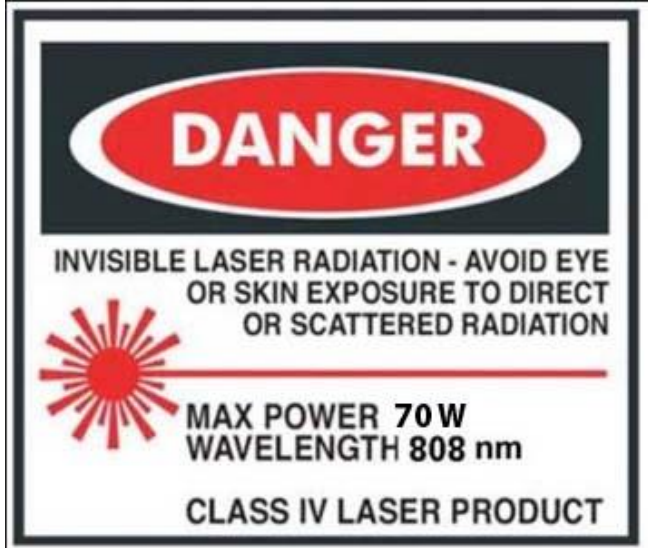
2.2. Power degradation over life of the product at constant electrical current and heat sink temperature will not exceed 10%

3.0 Mechanical Interface with Heat Sink

	METRIC, mm	ENGLISH, in
L1	34	1.339
L2	34	1.339
THREAD(D)	M2.5-6H 6mm DP	#3-48UNC .25 DP
SCREW	SOC HD HEX M2.5 x 12mm	SOC HD HEX #3-48UNCx1/2
SCREW SUPPLIER	McMaster-Carr PN 92290A062	McMaster-Carr PN 92196A102

A thermal interface gasket is required to be installed between a module and heat sink. Panasonic's thermally conductive Pyrolytic Graphite Sheet (PGS) is been found to be an effective material. The product can be purchased at Digikey catalog:

<http://www.digikey.com/PTM/PTMPartList.page?site=us&lang=en&ptm=13077>



This product complies with
21CFR 1040.10

List Associated Quality System Documents
SPEC-1779-7060817701
SPEC-1607-70608160702

4.0 Revision History:

Revision Number: 2

Latest Revision Date: 07.07.2013

Latest Approval Date: 07.07.2013

Reason for Change: Test results update

Revision	Sec/ Para Changed	Change Made:	Date
Prelim., 1	N/A	Initial Issue of Document Based on SWSpec - 065	24 Mar 2013
2	1.2.2/ Spectral width 1.2.4/ Pigtail length 2.1/ Life Expectancy	3.5 nm (typ), added 4.0 (max), Min – 3.0 m, typ – 3.5, max 3.6 Table data	7 July 2013

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5.0 Electronic Notification List: ULE

6.0 Approvals:

First Approver's Signature

Name: Andrey Sokortov

Title: Engineering manager

Second Approver's Signature

Name: Sergey Busurin

Title: Quality manager

Third Approver's Signature

Name: Vladimir Solodovnikov

Title: VP