

# FiberMax785

Fiber Pigtailed 785nm Laser Module



## Description

FiberMax785 is a fiber-pigtailed red laser module delivering superior performance for today's demanding electro-optic applications. Based on Blue Sky Research laser packaging technology, the FiberMax785 provides excellent coupling efficiency and stability in a cost effective package. The thermally stable design of the FiberMax785, based on our standard FiberMAX packaging technology, is a proven, stable package with many thousands of lasers operating in demanding applications. The units are offered with Multimode, Polarization Maintaining Single Mode or Single Mode fiber, 3mm or 0.9mm jacketing and a range of collimator options.



## Optical and Electrical Characteristics\*

Item	Symbol	Unit	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Test Condition
Test Conditions												
Optical power	P <sub>O</sub>	mW	-	5	-	-	10	-	-	50	-	T <sub>c</sub> =25°C
Threshold current	I <sub>TH</sub>	mA	8	12	25	-	15	25	-	35	55	T <sub>c</sub> =25°C
Operating current	I <sub>OP</sub>	mA	-	22	40	30	45	60	-	135	190	T <sub>c</sub> =25°C
Operating voltage	V <sub>OP</sub>	V	-	2.2	2.4	1.6	1.9	2.3	-	2.3	2.8	T <sub>c</sub> =25°C
Lasing wavelength	λ	nm	775	788	800	770	785	800	775	783	795	T <sub>c</sub> =25°C
Monitor current	I <sub>MON</sub>	mA	0.5	-	1.5	0.5	-	1.5	0.05	0.19	0.6	T <sub>c</sub> =25°C
Electrical pin out			A, B, E			A, B, E			A,B			

## Absolute Maximum Rating

Item	Symbol	Unit	Min	Max	Test Condition
Operating temperature	T <sub>OPR</sub>	°C	-10	+50	
Storage temperature	T <sub>STG</sub>	°C	-40	+85	
LD reverse voltage	V <sub>R</sub> (LD)	V	-	2	T <sub>c</sub> =25°C
PD reverse voltage	V <sub>R</sub> (PD)	V	-	30	T <sub>c</sub> =25°C

## Fiber Specs

### Single mode fiber w/ 3mm, 900um or metal protective jacketing

Item	Symbol	Unit	Min	Typ	Max
Fiber numerical aperture	NA		-	0.13	
Mode Field Diameter @ 630nm	MFD	um	3.5	4.0	4.5
Length	L	meter	-	1	-

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## Polarization maintaining fiber w/ 3mm, 900um or metal protective jacketing

Item	Symbol	Unit	Min	Typ	Max
Fiber numerical aperture	NA		-	0.11	
Mode Field Diameter @ 630nm	MFD	um	4.5	5.0	5.5
Length	L	meter	-	1	-
Polarization Extinction Ratio	PER	dB	17	20	-

*Note: Polarization and slow axis is aligned to the keyway on the connector.  
The keyway is narrow Key for FC/APC connector.*

## Multimode fiber w/ 3mm, 900um or metal protective jacketing

Item	Symbol	Unit	Min	Typ	Max
Fiber numerical aperture	NA		-	0.22	
Core Diameter	MFD	um	50	50	100
Length	L	meter	-	1	-

## Collimator Options (SM or PM)

Type	M	N	P	Q
Beam Diameter ( $1/e^2$ , mm, $\pm 25\%$ )	0.8	1.3	1.9	3.2
Divergence (mrad)	<1.2	<0.8	<0.5	<0.4

## FiberMax785 PART ORDERING TABLE

### FMXL-785-ZZZ-Q-FCW

XXX = Wavelength

785 = 785nm

**Example:**

**FMXL-785-010-P-A0B**

**785 = 785 nm wavelength**

**010 = 10 mW output**

**P = PM Fiber 3mm jacket**

**A = FC/APC connector**

**0 = no collimator**

**B = B type pin out**

ZZZ = Power Out

005 = 5mW

010 = 10mW

050 = 50mW

Q = Cable Type

T = 900um / SMF

S = 3mm / SMF

M = 900um / PMF

P = 3mm / PMF

A = 3mm/62.5 MMF

B = 3mm/50 MMF

E=900um/SMF28

F=3mm/SMF28

K=3mm Armor/SMF

N=3mm Armor/PMF

F = Connector

0 = No connector

S = SC/PC

G = SC/APC

F = FC/PC

A = FC/APC

R = ferrule only

C = Collimator

0 = None

M = 0.8 mm

N = 1.3 mm

P = 1.9 mm

Q = 3.2 mm

W = Pin out

A

B

E

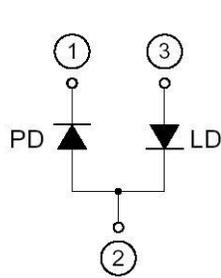
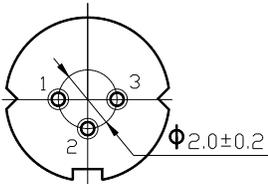
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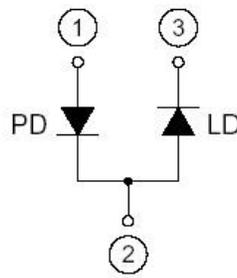


**Shipping Data Includes:**  $I_{OP}$ ,  $I_{TH}$ ,  $I_{MON}$  at  $P_o$  @ 25C, L-I curve, V-I curve, and L-  $I_{MON}$  curve to  $P_o$   
Each purchased FiberMax is provided with test data.  
Please refer to this data before using the FiberMax.

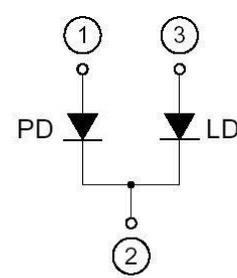
## Electrical Pin Out Configurations Available



A Pin Out

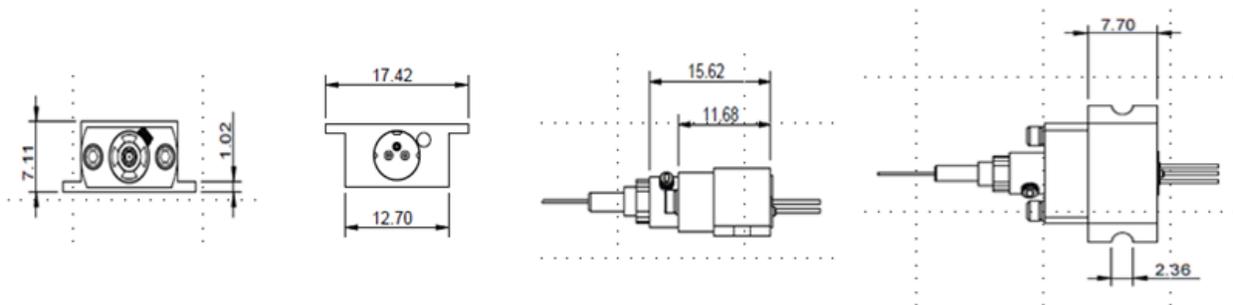


B Pin Out



E Pin Out

## Mechanical Outline



Blue Sky Research is able to manufacture additional wavelength FMXL's, and has the capability to use 3.8, 5.6 and/or 9.0 mm TO packages.

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## Handling Care and Precautions for Use of FiberMax™ Modules

### 1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a FiberMax module is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- a. FiberMax modules may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- b. The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

### 2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

### 3. Prevention of Breakdown due to Static Electricity

FiberMax modules may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the module and reduction of reliability unless the following precautions are taken:

- a. Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- b. Anyone working with a FiberMax module should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- c. Soldering irons should be grounded to protect laser modules from voltage leaks.
- d. During operation of the FiberMax module, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- e. Any container for carriage and storage should be static-protected.
- f. Avoid using laser modules in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser module.

### 4. Package Handling

- a. The laser module package should not be cut off, reworked, or deformed. Care should be taken when handling the fiber to avoid kinking it.
- b. Do not touch the ferrule end. Any scratch or contamination may result in reduction of optical characteristics.
- c. Remove small contaminants on the ferrule surface carefully using a soft cotton tip stick with a small amount of methyl alcohol.

### 5. Safety

The output light from laser modules is harmful to a human body even if it is invisible. Avoid looking at the output light of a FiberMax module directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.

