



PART NUMBER 0785L-27A
 ITEM NAME 785 NM SLM LASER (FBG; SM FIBER)

PRODUCT DATASHEET



DESCRIPTION

FBG stabilized 785 nm SLM lasers were developed for confocal Raman spectroscopy. It provides spatially filtered TEM₀₀ beam and narrow spectrum with superior side mode suppression ratio of ~50dB. Fiber Bragg Grating based 785 nm laser has many advantages over traditional VBG based and later fiber-coupled external cavity lasers. First of all, it provides better beam quality and focusability, power tuning and callibration (for stabilized central wavelength, but not for true SLM operation) and considerable cost savings.

Integrated Optics is the first company to commercialize visible FBG stabilized lasers for spectroscopy applications.

Note:

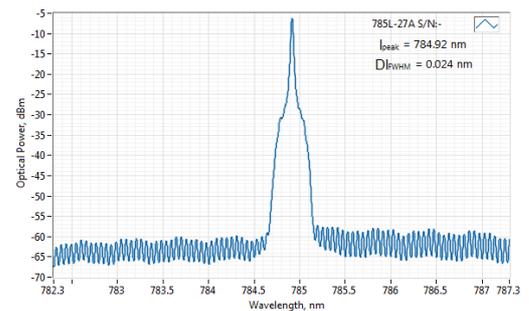
In optical systems with strong back-reflections (e.g. more than 10%), the laser must be protected by using an optical isolator with at least 20 dB isolation. Typical applications include interferometry, confocal microscopy (especially working with reflective samples), etc. Failure to comply with these requirements will render the warranty void for cases of COD (Catastrophic Optical Damage) of laser diode facets.

SPECIFICATIONS

Specifications updated: 30 September 2020

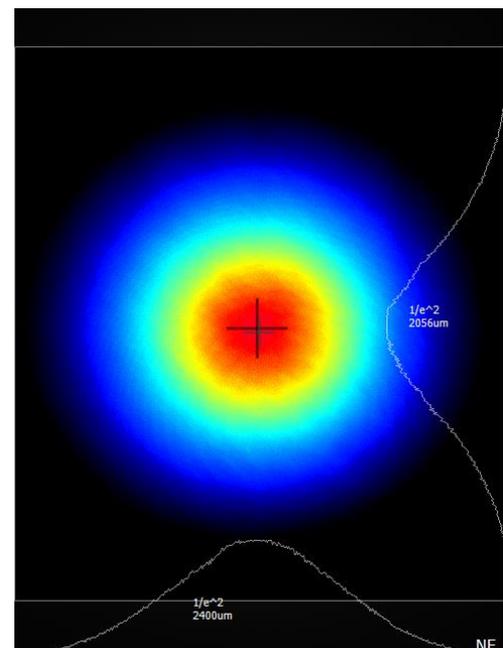
Parameter	Minimum Value	Typical Value	Maximum Value
Central Wavelength, nm	784.9	785	785.1
Longitudinal modes	-	Single	-
Spectral line width FWHM, pm	-	5 ¹	1
Output power, mW	5	80 ²	90
Side-mode suppression ratio (SMSR), dB	40	50	60
Power stability, % (RMS, 8 hrs)	-	0.2 ³	1
Power stability, % (peak-to-peak, 8 hrs)	-	2 ⁴	3
Noise, % (RMS, 20 Hz to 20 MHz)	-	0.25 ⁵	0.6
Transversal modes	-	TEM ₀₀	-
Polarization direction	-	Random	5.3
Control interface type	-	UART ⁶	-
Operation mode	-	APC (CW)	-
Modulation bandwidth, MHz	-	10 ⁷	-
Input voltage, VDC	4.8	5	5.3
External power supply requirement	-	+5 V DC, 1.5 A	-
Dimensions, mm	-	50 x 30 x 18 ⁸	-
Fiber Length, m	0.95	1	1.1
Heat-sinking requirement, °C/W	-	1	-
Optimum heatsink temperature, °C	15	20	30
Warm up time, mins (cold start)	0.2	1	2
Temperature stabilization	-	Internal TEC	-
Overheat protection	-	Yes	-

TYPICAL SPECTRUM



Typical spectrum of 0785 nm diode laser. Measured with 20 pm resolution.

TYPICAL NEAR FIELD



DRAWING

Drawing of 785 nm SLM Laser (FBG; SM Fiber)

Storage temperature, °C (non-condensing)	-10	-	50
Net weight, kg	0.1	0.12	0.14
Max. power consumption, W	0.4	2	10
Warranty, months (op. hrs)	-	14 (10000) ⁹	-
RoHS	-	Yes	-
CE compliance	-	- General Product Safety Directive (GPSD) 2001/95/EC - (EMC) Directive 2004/108/EC	-
Laser Safety Class	-	3B	-
OEM lasers are not compliant with	-	IEC60825-1:2014 (compliant using additional accessories)	-
Country of origin	-	Lithuania	-

¹ Measured with a scanning Fabry-Perot interferometer having 7.5 Mhz resolution, with scanning frequency of about 10 Hz. Interferometer testing is not provided for each laser being manufactured, the standard test is OSA measurement with 10-20 pm resolution instead.

² Output power of FBG lasers can be changed with fairly good repeatability of spectrum.

³ The long term power test is carried out at constant laser body temperature (+/-0.1 °C) using an optical power meter with an input bandwidth of 10 Hz. The actual measurement rate has a period of about 20 seconds to 1 minute.

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⁵ Noise level is measured with a fast photodiode connected to an oscilloscope. The overall system bandwidth is from 2 kHz to 20 MHz.

⁶ Break-out-boxes AM-C8 and AM-C3 can be used for conversion of UART communication to either USB or RS232.

⁷ TTL digital modulation up to 10 MHz.

⁸ Excluding control interface pins and an output window/fiber assembly.

⁹ Whichever occurs first. The laser has an integrated operational hours counter.

Note: Product specifications are subject to change without prior notice to improve reliability, function or design or otherwise.