

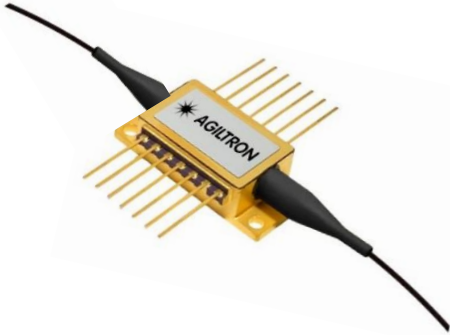
Ultrafast Fiber Optical Shutter/Switch – 1ns



1550nm, SM, PM

DATASHEET

[Return to the Webpage](#)



The UFSS is an ultra-fast fiber optical shutter or 1x1 switch based on a semiconductor amplifier, offering a rapid switching speed of approximately 1 ns. It combines low polarization sensitivity, wide optical bandwidth, and a high extinction ratio. Utilizing the gain and absorption properties of a multiple quantum well (MQW) structure, the UFSS provides effective light blocking without introducing reflections, making it ideal for high-performance and precision applications. Designed to handle high gain and signal levels, the UFSS ensures reliable operation at input power levels of 15 dBm or higher. It is housed in an industry-standard 14-pin butterfly package and available with either single-mode (SM) or polarization-maintaining (PM) fiber pigtailed, terminated with FC/APC connectors. For PM fiber models, the connector key is aligned to the slow axis. An all-in-one plug-and-play benchtop version is also offered, integrating the driver and power supply, with an SMA front control input and a 100-240 VAC power input at the back for convenience. This versatile optical switch is tailored for advanced optical systems demanding fast, precise signal control.

Features

- SM, PM Fiber
- Low Polarization Sensitivity
- Wide Optical Bandwidth
- High Extinction Ratio
- 14-pin Butterfly Package
- Key-Aligned to the Slow Axis

Applications

- High Speed Optical Switching
- Test
- Instrumentation



Specifications

Parameter	Min	Typical	Max	Unit
Operating Current		500		mA
Operating Wavelength	1528		1562	nm
Optical Isolation (P_{IN}/P_{OUT}) @ 0 mA & 1550 nm)	42			dB
Extinction Ratio ((On/Off @ $P_{IN} = -20$ dBm & 1550 nm))		60		dB
Switching Speed		1		ns
Max Output Power for CW Input Signal		17		dBm
Max Output Power for Modulated Input Signal		9		dBm
Saturation Output Power (@ -3 dB)	12	14		dBm
Small Signal Gain Across BW (@ $P_{IN} = -20$ dBm)	10	13		dB
Polarization Dependent Gain		1	1.8	dB
Noise Figure		8.0	9.5	dB
Forward Voltage		1.6	1.8	V
Chip Length		1.5		mm
Waveguide Refractive Index		3.2		
TEC Current		0.23	1.5	A
TEC Voltage		0.5	4.0	V
Thermistor Resistance		10		k Ω
Fiber Type		SMF-28-J9		
Fiber Length		1.5 \pm 0.1		m
Fiber Connector		FC/APC		

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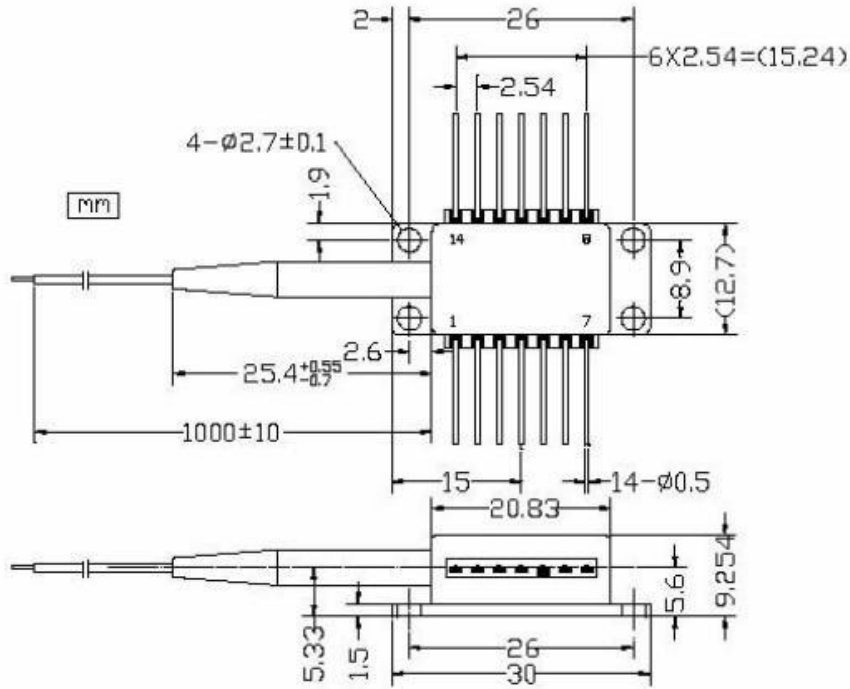
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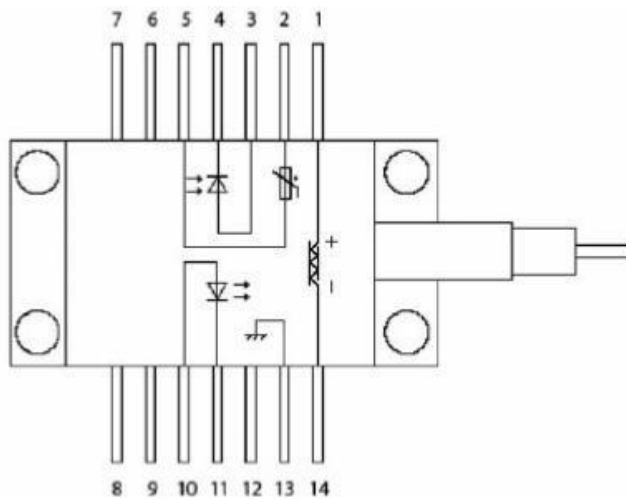
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Mechanical Dimension (mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

PIN Assignment



14-pin BTF Package

PIN	Function
1	Peltier Cooler (+)
2	Thermistor
3	Monitor Anode (+)
4	Monitor Cathode (-)
5	Thermistor
6	NC
7	NC
8	NC
9	NC
10	Laser Anode (+)
11	Laser Cathode (-)
12	NC
13	Case Ground
14	Peltier Cooler (-)

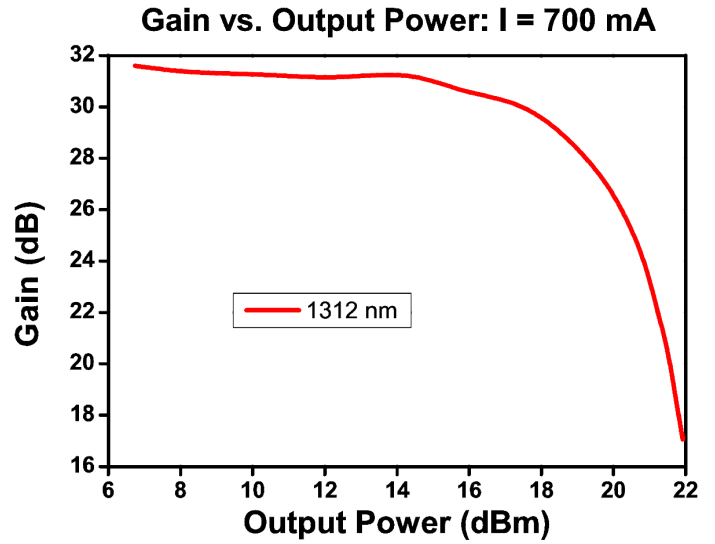
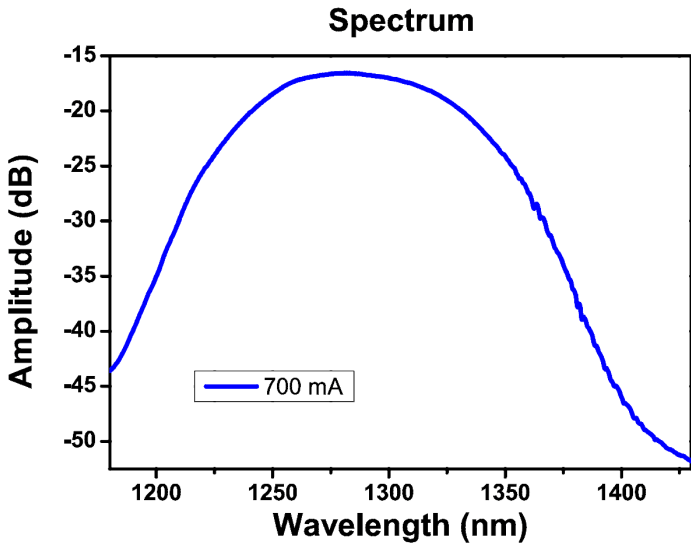
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Typical Spectrum



Ordering Information

Prefix	Wavelength	Output Power	Isolator	TEC Cooling	Driver	Fiber Type	Fiber Buffer	Fiber Length	Connector
	15	<input type="checkbox"/>	<input type="checkbox"/>	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
UFSS-	1550nm = 15 Special = 0	12dBm = 1 18dBm = 2	Non = 1 Output = 2 Input = 3 Output/Input = 3	Yes = 2	Non = 1 Yes = 2	SM28 = 1 PM1550 = 5 PM1310 = 3 Special = 0	0.9mm Tube = 3 Special = 0	1.0 m = 1 Special = 0	FC/APC = 3 Special = 0

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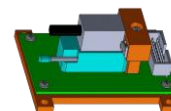
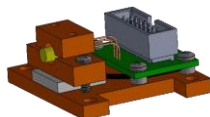
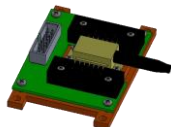


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Benchtop Matching Driver



The Agiltron HSLD series benchtop control kit provides a cost-effective solution for easy mounting and precise control of 14-pin diode lasers. It features low-noise drive electronics with high-speed switching, a constant current drive, and an integrated temperature control unit to ensure optimal operating conditions. The system is equipped with front fiber output connectors and an SMA trigger input. Its user-friendly interface includes an intuitive LCD display and dual rotating knobs for independent adjustment of output power and temperature. The HSLD series also includes a universal power supply compatible with 100 to 240 VAC, making it a versatile and reliable tool for diode laser operation.



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DATASHEET

Caution Electrostatic Sensitivity



- Never touch laser diode and the module using hands
- Always use protections when handle a laser diode
- Recommend mounting the laser diode using an ionic gun and ESD finger cots



Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class 1M laser product. This device has been classified with the FDA/CDRH under accession number 0220191. All versions of this laser are Class 1M laser products, tested according to IEC 60825-1:2007 / EN 60825-1:2007. An additional warning for Class 1M laser products. For diverging beams, this warning shall state that viewing the laser output with certain optical instruments (for example eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. For collimated beams, this warning shall state that viewing the laser output with certain instruments designed for use at a distance (for example telescopes and binoculars) may pose an eye hazard.

Wavelength = 1.3/1.5 μm .

Maximum power = 30 mW.



*Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

*IEC is a registered trademark of the International Electrotechnical Commission.