LightBend™ Octo 2x2 Bypass MultiMode Fiber Optic Switch

(Bidirectional)

(Protected by U.S. patent 6823102 and pending patents)

DATASHEET

BUY NOW

The LB Series Octo 2x2 Bypass multimode switch integrated 8 simultaneously activated 2x2 Bypass Switches in a single compact format. It is designed for 40G transceiver bypass application. The device connects optical channels by redirecting incoming optical signals into selected output fibers. This is achieved using a patented opto-mechanical configuration and activated via an electrical control signal. Latching operation preserves the selected optical path after the drive signal has been removed. The switch has integrated electrical position sensors. This novel design significantly reduces moving part position sensitivity, offering unprecedented high stability as well as an unmatched low cost. The switch is bidirectional.

We offer tight-bend-fiber version, which reduces the minimum bending radius. This feature enables smaller overall foot print.

Features

- Low Optical Distortions
- High Reliability
- Fail-Safe Latching
- Epoxy-Free Optical Path

Applications

- Channel Blocking
- Configurable Add/Drop
- System Monitoring
- Instrumentation

Specifications

Parameter		Min	Typical	Max	Unit
Operation Wavelength			850, 1310, 1550, 850 & 1310		nm
Insertion Loss [1], [3]			0.5	1.0	dB
Wavelength Dependent Loss				0.25	dB
Cross Talk [2], [3]		35			dB
Return Loss [2], [3]		35			dB
Switching Time			3	10	ms
Repeatability				± 0.02	dB
Durability		10^7			cycle
Optical Power Handling [4]			300	500	mW
Operating Voltage		4.5	5	6	VDC
Operating Current [±10%]	Latching		90		mA
	Non-Latching		124		
Switch Type			Latching / Non-Latching		
Operating Temperature		-5		70	°C
Storage Temperature		-40		85	°C

Notes:

[1]. Insertion loss excludes connector.

[2]. Light source CPR<14dB.

[3]. Our device is designed and optimized for certain laser launch condition which is characterized as CPR value. In general, if application exceeds the specified CPR value, optical performance will become worsen.

[4]. Continuous operation, for pulse operation call.

Warning: **This device must use the reference circuit to driver otherwise it is unstable**

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Rev 01/05/24

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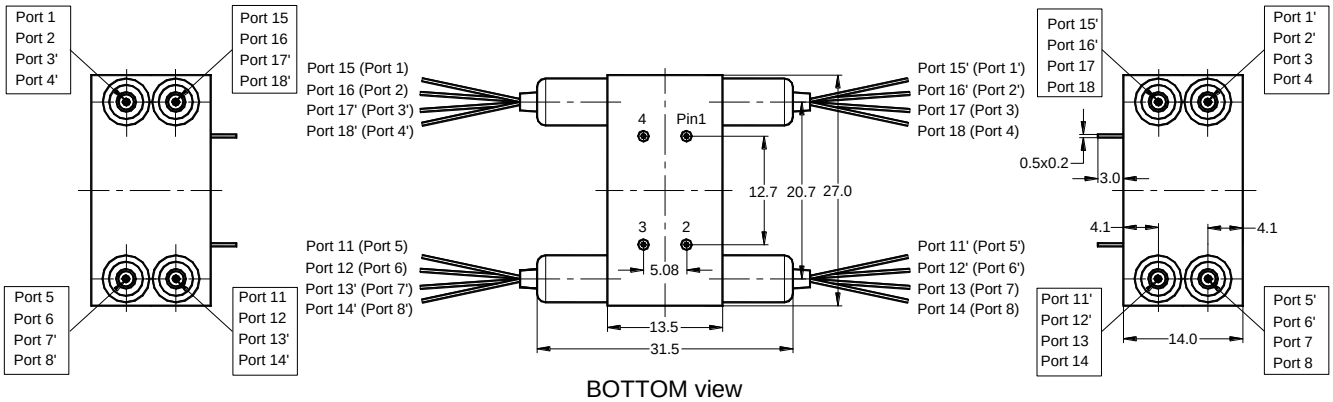
Mechanical Dimensions (mm)



BOTTOM view

Fiber or Loose tube colors:

[1]. Port 1, Port 1', Port 11, Port 11', Port 5, Port 5', Port 15 and Port 15' are Black.

[2]. Port 2, Port 2', Port 12, Port 12', Port 6, Port 6', Port 16 and Port 16' are Red.

[3]. Port 3, Port 3', Port 13, Port 13', Port 7, Port 7', Port 17 and Port 17' are Blue.

[4]. Port 4, Port 4', Port 14, Port 14', Port 8, Port 8', Port 18 and Port 18' are white.

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

Electrical Driving Requirements

The load is a resistive coil which is activated by applying 5V (draw ~ 40mA). However, the current flow direction must be correct otherwise it will cancel the permanent magnet inside causing instability. We strongly recommend to use the reference circuit to avoid major issues. We offer pushbutton elevation driver for verifications or convenient income inspection.

Latching Type

Application Note: Applying a constant driving voltage increases stability. The switches can also be driven by a pulse mode using Agiltron recommended circuit for energy saving.

Optical Path	Electric Drive		Status Sensor
	Pin 1	Pin 4	Pin 2-3
1→1', 2→2', 3→3', 4→4' 11→11', 12→12', 13→13', 14→14' 5→5', 6→6', 7→7', 8→8' 15→15', 16→16', 17→17', 18→18'	5V Pulse	0	Open
3→2', 4→1', 13→12', 14→11' 7→6', 8→5', 17→16', 18→15'	0	5V Pulse	Close

Non-Latching Type

Optical Path	Electric Drive		Status Sensor
	Pin 1	Pin 4	Pin 2-3
1→1', 2→2', 3→3', 4→4' 11→11', 12→12', 13→13', 14→14' 5→5', 6→6', 7→7', 8→8' 15→15', 16→16', 17→17', 18→18'	5V	0	Open
3→2', 4→1', 13→12', 14→11' 7→6', 8→5', 17→16', 18→15'	No Power		Close

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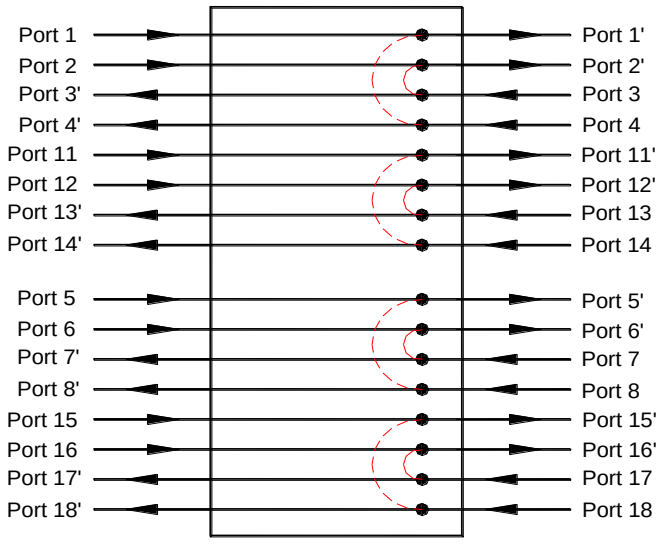
Functional Diagram



LB Octo 2x2 Bypass MM Switch

Ordering Information

	☐☐	☐	☐	☐	☐	☐	☐	☐
Prefix	**Type**	**Wavelength**	**Switch**	**Package**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector**
LOBM- [1]	2x2 = 22 Special = 00	1310 = 3 1550 = 5 850 = 8 850 / 1310 = A Special = 0	Latching = 1 Non-Latching = 2 Special = 0	Standard = 6 Special = 0	MM 50/125 = 5 MM 62.5/125 = 6 OM4 = 7 Special = 0	Bare fiber = 1 900µm tube = 3 Special = 0	0.25m = 1 0.5m = 2 1.0m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 Duplex LC/PC = 8 MTP = 9 LC/UPC = U Special = 0

[1]. **LOBM**: **L**ightBend **O**cto 2x2 **B**ypass **M**ultiMode Switch

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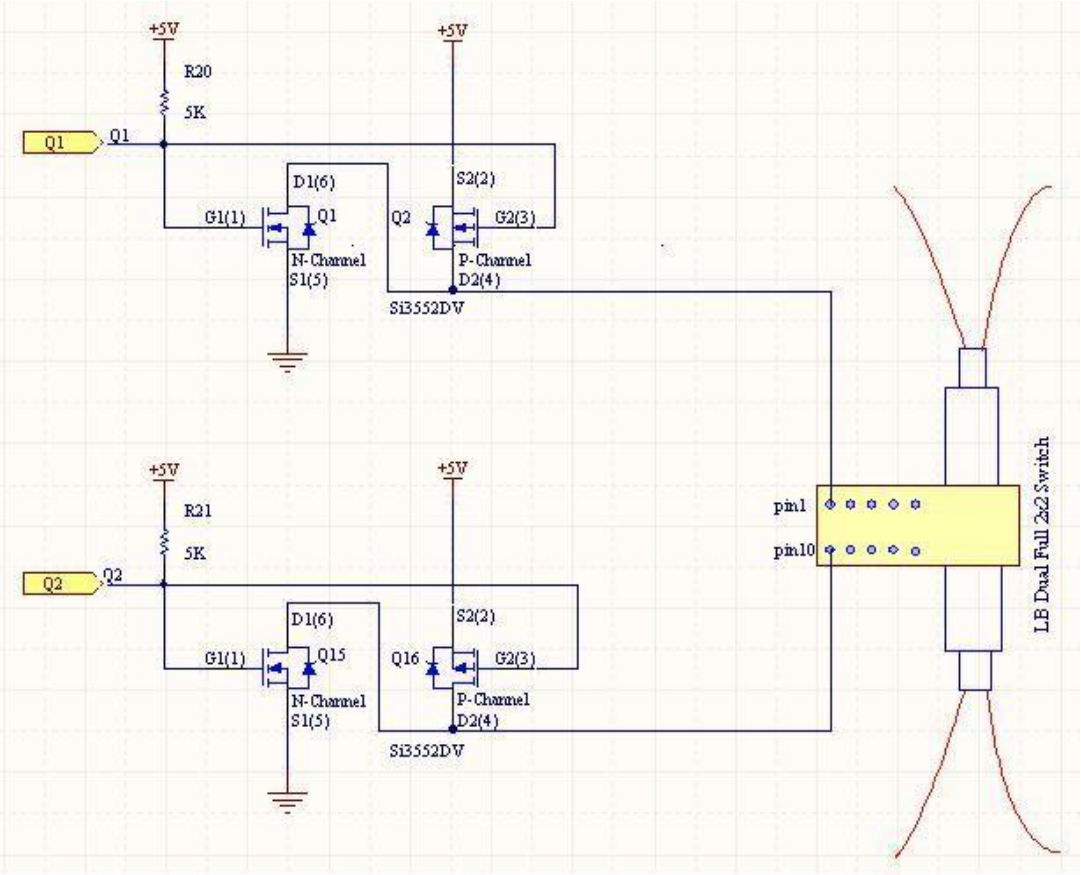
Driver Reference Design



Application Notes

Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness

Fibers with smaller core diameters (<5 μm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

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