

LightBend™ Straight Dual 2x2 Bypass MultiMode Switch (Bidirectional)

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

Product Description

The LB Series Straight Dual 2x2 Bypass multimode switch 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. Electronic driver is available for this series of switches. The switch is bidirectional.

We offer tight-bend-fiber version, which reduces the minimum bending radius from normal 15 mm to 7 mm. This feature enables smaller overall foot print.



Performance Specifications

LB Straight Dual 2x2 BP MM Switch	Min	Typical	Max	Unit
Operation Wavelength		850 /1310		nm
Insertion Loss*		0.4	0.8	dB
Wavelength Dependent Loss			0.3	dB
Return Loss **	35			dB
Cross Talk **	35	45		dB
Switching Time		3	10	ms
Repeatability			±0.02	dB
Durability	> 10 ⁷			Cycle
Operating Voltage	4.5	5.0	5.5	VDC
Operating Current		30	60	mA
Voltage Pulse Width (Latching)		20		mS
Switching Type		Latching/Non-Latching		
Operating Temperature	-5		70	°C
Optical Power Handling		300	500****	mW
Storage Temperature	-40		85	°C
Package Dimension		24.8L x 11W x 9.5H		mm

* Insertion loss excludes connector.

** Light source CPR<14dB.

*** 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.

**** Continuous operation, for pulse operation call.

Features

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

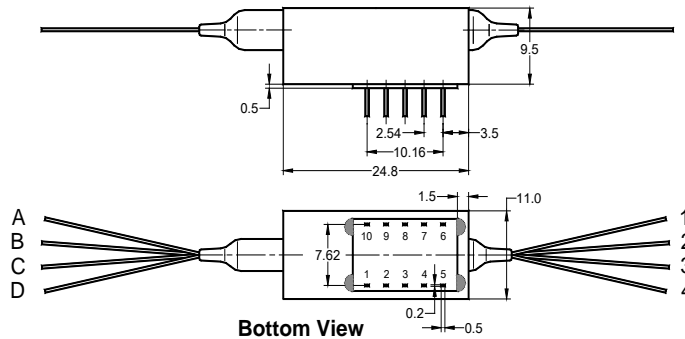
Applications

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

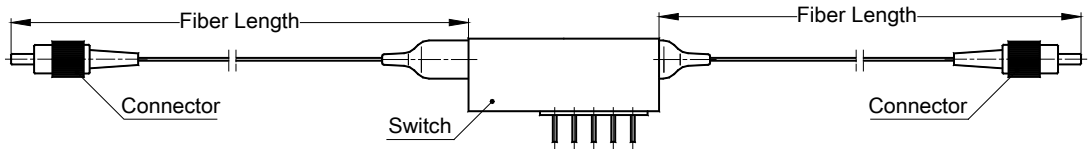


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Mechanical Dimensions (Unit: mm)



Fiber Length Definition



Electrical Driving Requirements

The load is a resistive coil which is activated by applying 5V and draw about 40mA (coil resistance is 125 Ω for latching and 178 Ω for no-latching, respectively). Applying too long pulse for the latching version will heat up the device.

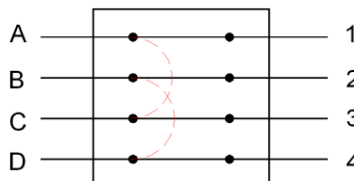
Latching Type

Optical Path		Electric Drive				Status Sensor			
		Pin 1	Pin 5	Pin 6	Pin 10	Pin 2-3	Pin 3-4	Pin 7-8	Pin 8-9
Normal Mode	A→1, B→2 C→3, D→4	N/A	N/A	L(0V)	H (5V Pulse)	Close	Open	Open	Close
Bypass Mode	A→C, B→D	H (5V Pulse)	L(0V)	N/A	N/A	Open	Close	Close	Open

Non-Latching Type

Optical Path		Electric Drive				Status Sensor			
		Pin 1	Pin 5	Pin 6	Pin 10	Pin 2-3	Pin 3-4	Pin 7-8	Pin 8-9
Normal Mode	A→1, B→2 C→3, D→4	N/A	H (5V)	L (0V)	N/A	Close	Open	Open	Close
Bypass Mode	A→C, B→D	N/A				Open	Close	Close	Open

Functional Diagram



LB Strait Dual 2x2 Bypass MM Switch

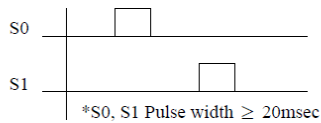
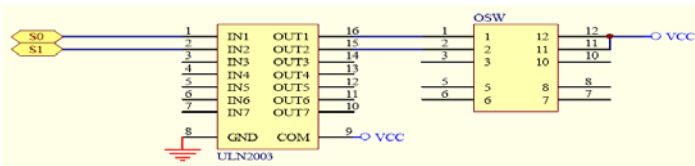
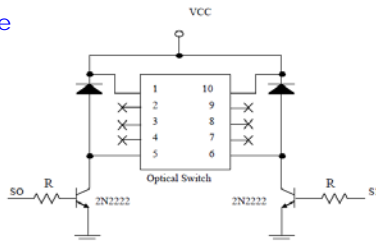
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Ordering Information

LBSW-	Type	Wavelength	Switch	Package	Fiber Type	Fiber Length	Connector	
	Dual 2x2=42 Special=00	1060=1 C+L=2 1310=3 1410=4 1550=5 650=6 780=7 850=8 1310 & 1550=9 850 & 1310=A Special=0	Latching Type=1 Non-Latching Type=3 Special=0	Standard=6 Special=0	50/125=5 62.5/125=6 Special=0	Bare fiber=1 900um 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=7 Duplex LC=8 Special=0

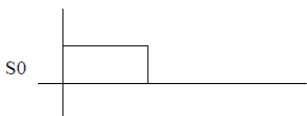
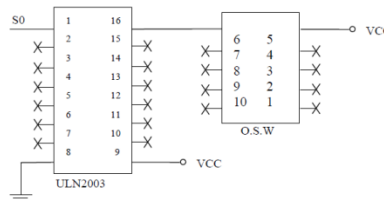
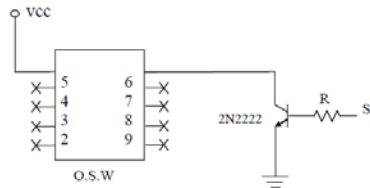
Electrical Driving Example

Latching Type



S0 = High, S1 = Low. To change the OSW state to Ch 1.
S0 = Low, S1 = High. To change the OSW state to Ch 2.

Non-Latching Type



S0 = Low. To change the OSW state to default mode(CH1).
S0 = High. To change the OSW state to CH2.

