



LightBend™ Dual Mini 2x2 Bypass Multimode Fiberoptic Switch (Bidirectional)

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

Product Description

The LB Series Dual Mini 2x2 Bypass multimode OptoMechanical Fiberoptic switch integrated 2 simultaneously activated 2x2 Bypass switches in a single compact format. 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 from normal 15 mm to 7 mm. This feature enables smaller overall foot print.

Performance Specifications

Parameter	Min	Typical	Max	Unit
Operation Wavelength	Single Band: 850, 1310, 1410, 1550 Dual Band: 850 and 1310			nm
Insertion Loss ^{1 2 3}		0.6	1.0	dB
Wavelength Dependent Loss			0.30	dB
Return Loss ^{1 2 3}	35			dB
Cross Talk ^{1 3}	35			dB
Switching Time		3	10	ms
Repeatability			±0.02	dB
Durability	10 ⁷			Cycle
Operating Voltage	4.5	5	6	VDC
Operating Current		30	60	mA
Voltage Pulse Width (Latching Type)		20		mS
Switching Type	Latching/Non-Latching			
Operating Temperature	-5		70	°C
Optical Power Handling ⁴		300	500	mW
Storage Temperature	-40		85	°C
Package Dimension	28.0L x 20.7W x 8.0H			mm

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.

Features

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

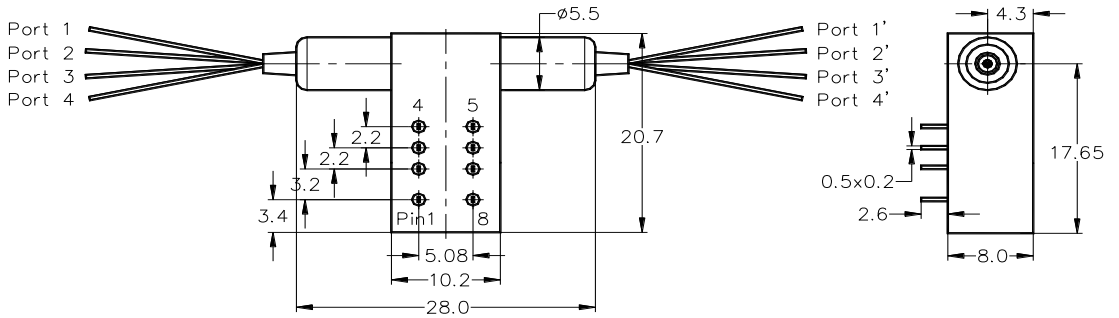
Applications

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



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Mechanical Dimensions (Unit:mm)



*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.

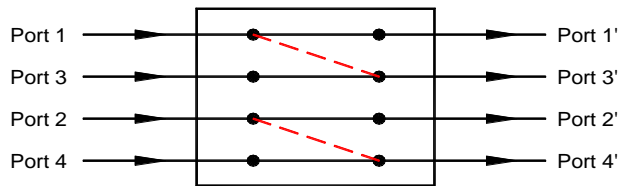
Latching Type

Optical Path	Electric Drive		Status Sensor			
	Pin 1	Pin 8	Pin 2-3	Pin 3-4	Pin 5-6	Pin 6-7
1→1', 2→2' 3→3', 4→4'	GND	5V Pulse	Close	Open	Open	Close
1→3', 2→4'	5V Pulse	GND	Open	Close	Close	Open

Non-Latching Type

Optical Path	Electric Drive		Status Sensor			
	Pin 1	Pin 8	Pin 2-3	Pin 3-4	Pin 5-6	Pin 6-7
1→1', 2→2' 3→3', 4→4'	No Power		Close	Open	Open	Close
1→3', 2→4'	5V	GND	Open	Close	Close	Open

Functional Diagram



LB Dual Mini 2x2 Bypass MM Switch

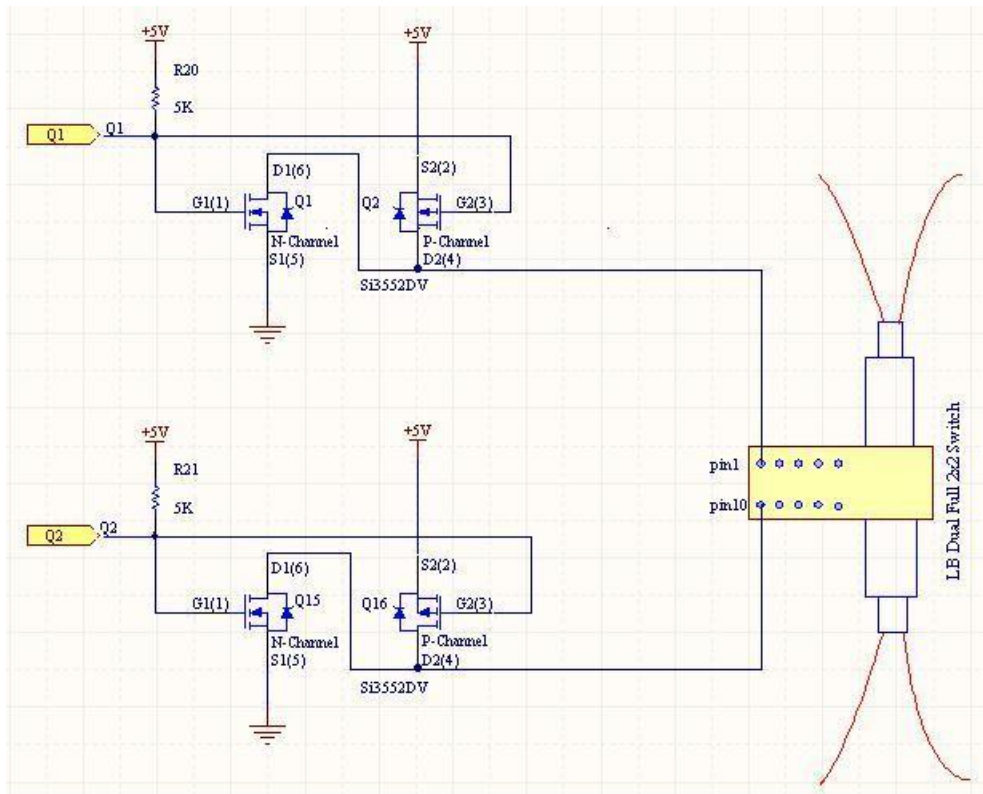
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Ordering Information

Prefix	Type	Wavelength	Switch	Package	Fiber Type	Fiber Cover	Fiber Length	Connector
LMDB- ^[1]	Dual 2x2=22 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=1 Non-Latching=2 Special=0	Standard=1 Special=0	50/125=5 62.5/125=6 OM4=7 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

[1]. LMDB - Light Bend Mini Dual Bypass Switch.

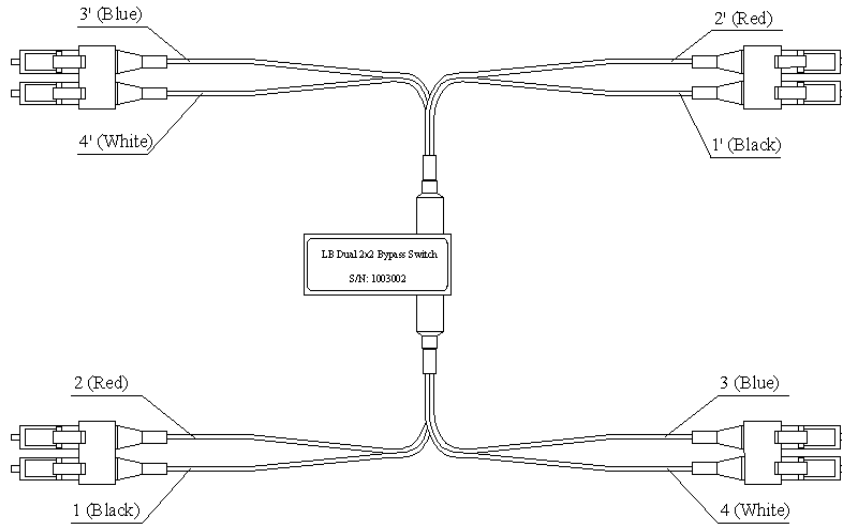
Driver Reference Design



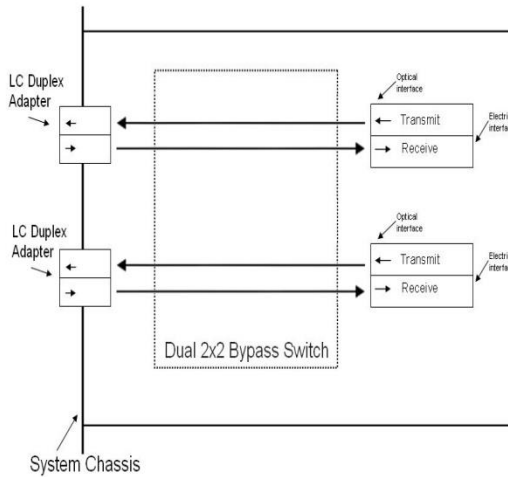
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Application

Prepared with 4 duplex LC connectors and customized fiber length for convenient installation



Normal Mode



Bypass Mode

