

## 2X4 BYPASS OPTICAL SWITCH

### Product Description

Lightwave Link Inc. 2x4 Bypass optical switch with R15 Corning® ClearCurve® XB or equivalent Optical Fiber is designed for use in optical fiber communication networks and measurement instruments. The switch consists of two ports that selectively transmits, redirects, or blocks optical power in a fiber optic transmission line. The optical switch must be actuated to select or change between two states. Furthermore, for the Latching type, it only takes an electrical pulse width with duration  $\geq 20\text{msec}$  to change the state. As a result, it consumes low electric energy to operate the optical switch. Lightwave Link Inc. 2x4 Bypass optical switch fully complies with RoHS Directive 2002/95/EC (2008/385/EC).

### Features

- Smallest Size
- Low Insertion-Loss
- Fast Switching Speed
- PCB Mountable
- Available in Single Mode / Multi Mode
- RoHS Compliance

### Applications

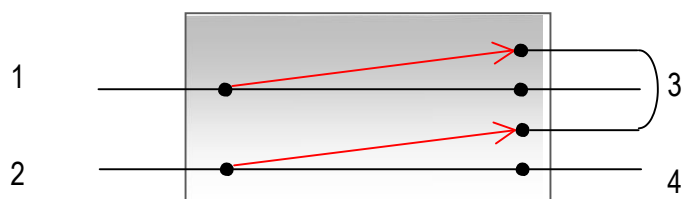
- Optical network protection and restoration
- Optical network monitoring
- Reconfigurable add/drop multiplexers
- Transmission equipment protection
- Research and development
- Wavelength router

### Performance Specification

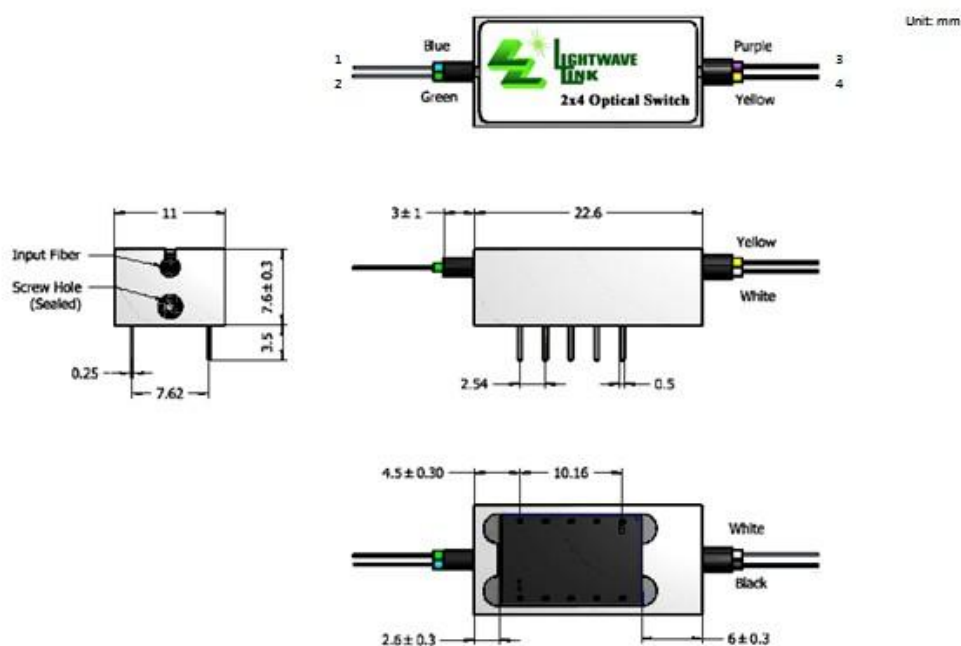
Parameter	9μm Core Single Mode			50μm or 62.5μm Core Multi Mode			Unit
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Wavelength Range <sup>1</sup>	1260~1630			850/1300			nm
Straight Insertion Loss <sup>2</sup>	1.0			0.5			dB
Bypass Insertion Loss <sup>2</sup>	2.0			1.0			dB
Return Loss	-50						dB
PDL	0.1						d
WDL	0.3						dB
Crosstalk	-80			-80			dB
Repeatability	±0.1			±0.1			dB
Switching Time <sup>3</sup>	3.5			3.5			ms
Absolute Optical Input Power	500			500			mW
Operating Current	Latching:40±10% / Non-Latching: 28±10%						mA
Operating Voltage	4.5	5.0	5.5	4.5	5.0	5.5	VDC
Power Consumption	Latching: 200±10% / Non-Latching: 140±10%						mW
Switching Life Expectancy	3x10 <sup>7</sup>			3x10 <sup>7</sup>			Cycles
Operation Temperature-Normal	-5		70	-5		70	°C
Operation Temperature-Special	-20		70	-20		70	°C
Storage Temperature	-40		85	-40		85	°C
Operation Humidity	5		95	5		95	%RH
Storage Humidity	5		95	5		95	%RH
Dimension (H*W*L)	7.6 x 11 x 22.6						mm
Ring Size	Inner ring dimension ≥ 4						cm
Weight <sup>4</sup>	10						g

1. Special wavelength would be upon request.
2. Optical parameters excluded connectors.
3. A minimum  $\geq 20\text{ms}$  pulse is recommended for latching type of switch.
4. The product weight excluded optical connectors.

## Function Diagram



## Physical Dimension







## PIN Description

Pin Number	Latching Pin Function	Non-Latching Pin Function
1	Bypass activation terminal(+)	N/C
2	Straight Monitor	Straight Monitor
3	Monitor Common	Monitor Common
4	Bypass Monitor	Bypass Monitor
5	Bypass activation terminal(-)	Straight activation terminal(+)
6	Straight activation terminal(-)	Straight activation terminal(-)
7	Bypass Monitor	Bypass Monitor
8	Monitor Common	Monitor Common
9	Straight Monitor	Straight Monitor
10	Straight activation terminal(+)	N/C

## Operation of the Optical Switch

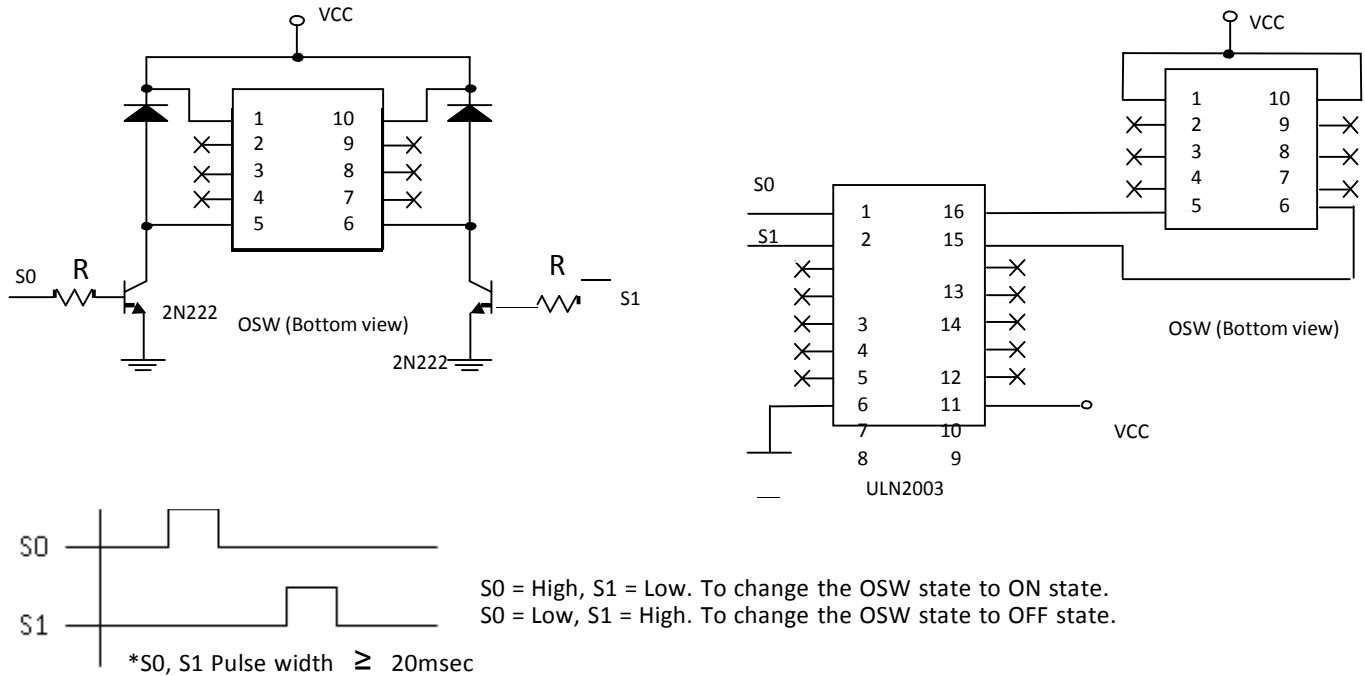
Relay Type	PIN OSW State	1	5	6	10	PIN Connection	Remark
Latching Type	1↔2	H	L	-	-	3, 4 pin closed ; 2, 3 pin open 7, 8 pin closed ; 8, 9 pin open	Bypass
	1↔3	-	-	L	H	2, 3 pin closed ; 3, 4 pin open 8, 9 pin closed ; 7, 8 pin open	Straight
	2↔4	-	-	L	H	2, 3 pin closed ; 3, 4 pin open 8, 9 pin closed ; 7, 8 pin open	Straight
Non-Latching Type	1↔2	-	-	-	-	3, 4 pin closed ; 2, 3 pin open 7, 8 pin closed ; 8, 9 pin open	Bypass (Default)
	1↔3	-	H	L	-	2, 3 pin closed ; 3, 4 pin open 8, 9 pin closed ; 7, 8 pin open	Straight
	2↔4	-	H	L	-	2, 3 pin closed ; 3, 4 pin open 8, 9 pin closed ; 7, 8 pin open	Straight

## Ordering Information

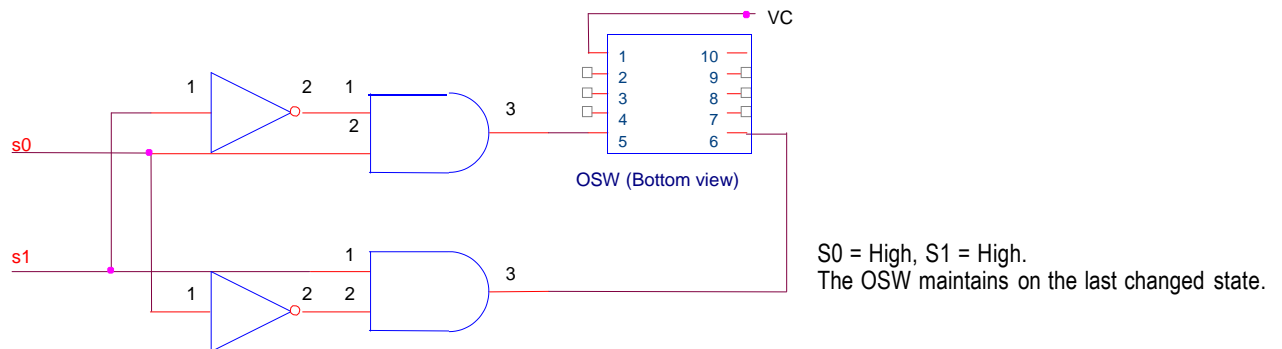
<b>FOBWE ...</b>	<b>2 ...</b>	<b>4 ...</b>				
Product Version	Input	Output	Operation Function	Fiber Type	Fiber Cabling	Connector Type
	No. of Input	No. of Output	L: Latching N: Non-Latching	9: 9/125μm 50: 50/125μm 62: 62.5/125μm	B: Bare fiber L: 900μm loose tube	1: None 2: FC/PC 3: FC/APC 4: SC/APC 5: SC/PC 6: MU/PC 7: ST/PC
						8: LC/PC 9: SC/UPC A: MT/RJ B: MU/UPC C: FC/UPC D: LC/APC E: LC/UPC

## Application Circuitry for Latching Type

To provide sufficient power to switch, two application circuits using 2N2222 BJT and ULN2003 Darlington pair IC are showed below.



## The Recommend Circuitry for S0 and S1 Stand High Level Simultaneously



## Application Circuitry for Non-Latching Type

To provide sufficient power to switch, two application circuits using 2N2222 BJT and ULN2003 Darlington pair IC are showed below.

