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1x1 Optical Switch

Product Description

Lightwave Link Inc. 1x1 optical switch 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 ≧20msec to change the state. As a result, it consumes low electric energy to operate the optical switch. Lightwave Link Inc. 1x1 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

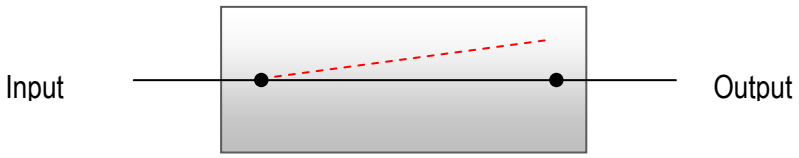
- Optical network protection and restoration
- Optical network monitoring
- Reconfigurable add/drop multiplexers
- Transmission equipment protection
- Research and development
- Wavelength router

Performance Specification

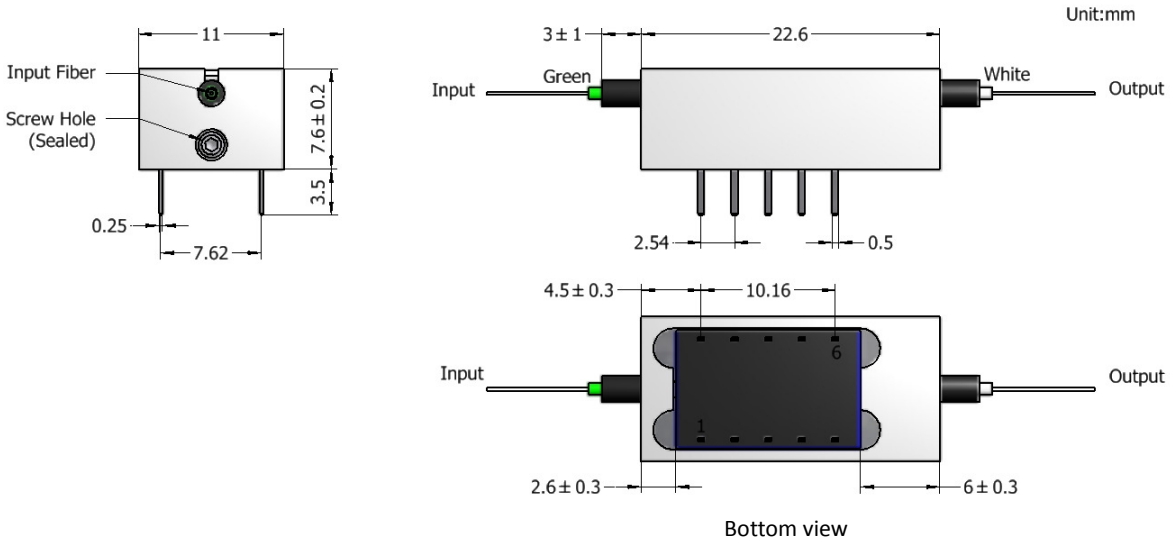
Parameter	9μm Core Single Mode			50μm or 62.5μm Core Multi Mode			Unit
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Wavelength Range [1]		1260~1630			850/1300		nm
Insertion Loss [2]		0.5	1.0		0.3	0.6	dB
Return Loss		-50					dB
PDL			0.1				dB
WDL			0.3				dB
Crosstalk		-80			-80		dB
Repeatability			±0.1			±0.1	dB
Switching Time [3]			3.5			3.5	ms
Absolute Optical Input Power			500			500	mW
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	$3x10^7$			$3x10^7$			Cycles
Operation Temperature-Normal	-5		70	-5		70	℃
Operation Temperature-Special	-20		70	-20		70	℃
Storage Temperature	-40		85	-40		85	℃
Operation Humidity	5		85	5		85	%RH
Storage Humidity	5		85	5		85	%RH
Dimension (H*W*L)	7.6 x 11 x 22.6						mm^3
Weight [4]	10						g

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

Function Diagram



Physical Dimension



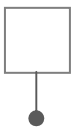
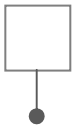
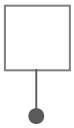
PIN Description

Pin Number	Latching Pin Function	Non-Latching Pin Function
1	〝ON〞 activation terminal(+)	N/C
2	Monitor 〝OFF〞 state	Monitor 〝OFF〞 state
3	Monitor Common	Monitor Common
4	Monitor 〝ON〞 state	Monitor 〝ON〞 state
5	〝ON〞 activation terminal(-)	〝OFF〞 state activation terminal(+)
6	〝OFF〞 activation terminal(-)	〝OFF〞 state activation terminal(-)
7	Monitor 〝ON〞 state	Monitor 〝ON〞 state
8	Monitor Common	Monitor Common
9	Monitor 〝OFF〞 state	Monitor 〝OFF〞 state
10	〝OFF〞 activation terminal(+)	N/C

Operation of the Optical Switch

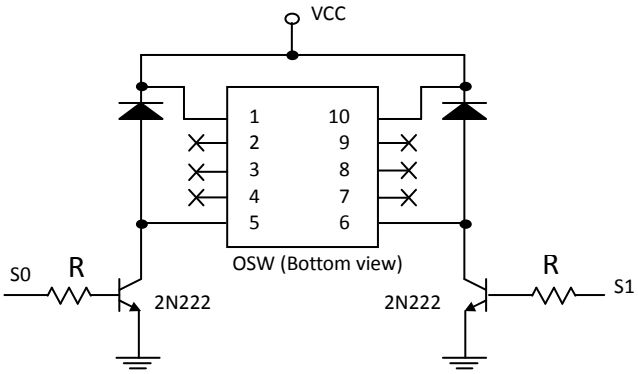
Relay Type	PIN / OSW State	1	5	6	10	PIN Connection	Remark
Latching Type	ON	H	L	-	-	3 , 4 pin closed ; 2 , 3 pin open 7 , 8 pin closed ; 8 , 9 pin open	
	OFF	-	-	L	H	2 , 3 pin closed ; 3 , 4 pin open 8 , 9 pin closed ; 7 , 8 pin open	
Non-Latching Type	ON	-	-	-	-	3 , 4 pin closed ; 2 , 3 pin open 7 , 8 pin closed ; 8 , 9 pin open	Default
	OFF	-	H	L	-	2 , 3 pin closed ; 3 , 4 pin open 8 , 9 pin closed ; 7 , 8 pin open	

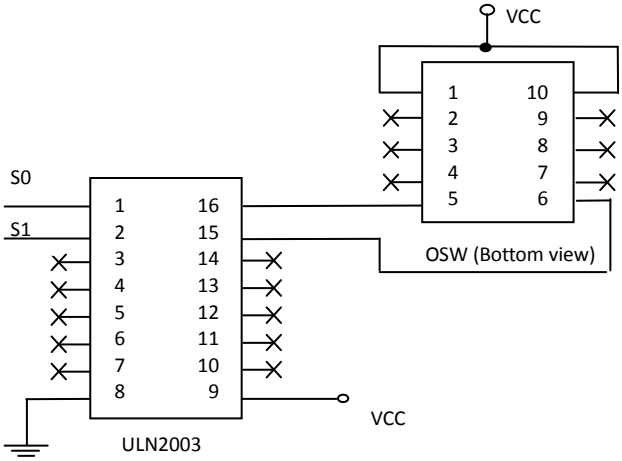
Ordering Information

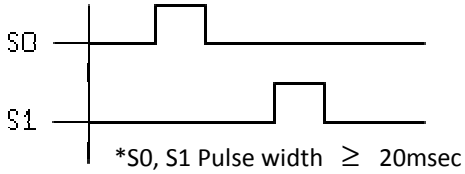
FOSWA -	**1** -	**1** -	 –	 –	 –		
Product Version	Input	Output	Operation Function	Fiber Type	Fiber Cabling	Connector Type	
	No. of Input	No. of Output	L: Latching N: Non-Latching	9: 9/125μm 50: 50/125μm 62: 62.5/125μm	B: Bare fiber L: 900μm loose tube	1: None 2: FC/PC 3: FC/APC 4: SC/APC 5: SC/PC 6: 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.



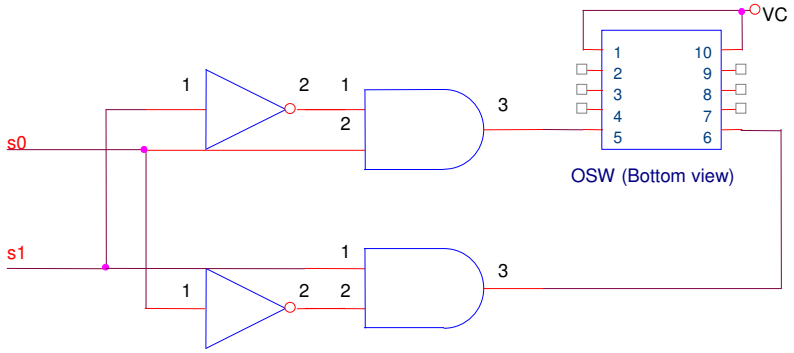




*S0, S1 Pulse width ≥ 20msec

S0 = High, S1 = Low. To change the OSW state to ON state.
S0 = Low, S1 = High. To change the OSW state to OFF state.

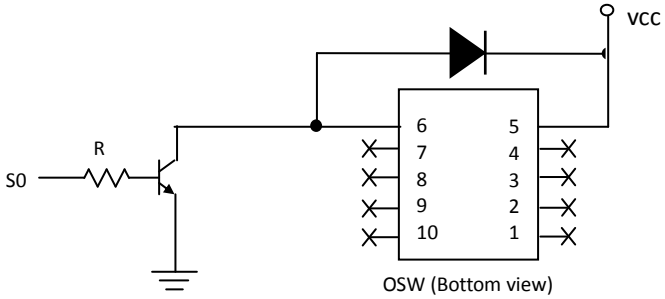
The Recommend Circuitry for So and S1 Stand High Level Simultaneously

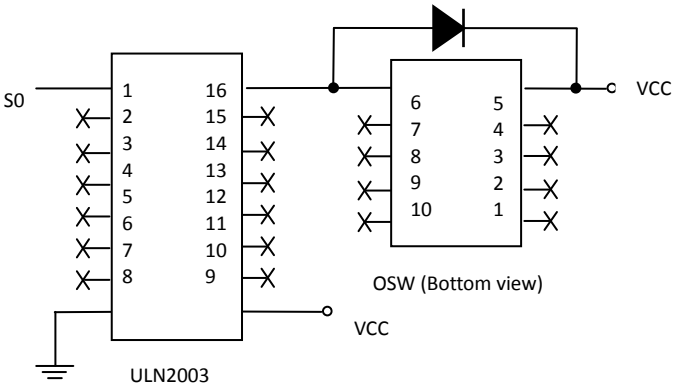


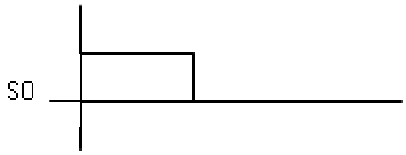
S0 = High, S1 = High.
The OSW maintains on the last changed state.

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.







S0 = Low. To change the OSW state to default mode(ON).
S0 = High. To change the OSW state to OFF.