

14. Optical Switches

a. 1xN Optical Switches (1x1)

a. 1xN Optical Switches

b. 2xN Optical Switches

c. 4xN Optical Switches



Product Description

ShinKwang I&C 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 ≥ 20 msec 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	9um Core Single Mode			50um or 62.5um Core Multi Mode			Unit
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Wavelength Range	1280 ~ 1340 / 1520 ~ 1625			850 / 1300			nm
Insertion Loss ¹		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 ²			3.5			3.5	ms
Absolute Optical Input Power			500			500	mW
Relay Coil Resistance	Latching: 125±10% / Non-Latching: 178±10%						
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
Status Sensor Contact Resistance			50			50	mΩ
Switching Life Expectancy	3*10 ⁷			3*10 ⁷			Cycles
Operation Temperature	-20		70	-20		70	℃
Storage Temperature	-40		85	-40		85	℃
Operation Humidity	5		95	5		95	%RH
Storage Humidity	5		95	5		95	%RH
Dimension (H×W×L)	Normal Type: 8.8×11×30 / Mini Type: 7.7×11×22.6						mm
Weight	<20						g

b. 2xN Optical Switches

2X2 (DUAL 1X1) REVERSE TYPE OPTICAL SWITCH

Product Description

ShinKwang I&C Inc. 2x2(Dual 1x1)-Z non-latching type II optical switch (OSW) features low insertion loss, low driving power, small size, and high switching speed. The switch is designed for use in optical fiber communication networks and measurement instruments. The optical switch must be actuated to select or change between two states. Lightwave Link's 2x2(Dual 1x1)-Z non-latching type II optical switch reverts to a default state upon loss of driving power or control signal. The Default State for this non-latching type optical switch is "OFF" state (i.e. with electrical power supply and light passes through the OSW). ShinKwang I&C 2x2(Dual 1x1)-Z non-latching type II optical switch fully complies with RoHS Directive 2002/95/EC

FEATURES

- Smallest Size
- Low Insertion-Loss
- Fast Switching Speed
- PCB Mountable
- Available in Single Mode / Multi Mode
- Available in Non-Latching Type
- 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	9um Core Single Mode			50 / 62.5um Core Multi Mode			Unit
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Wavelength Range	1280 ~ 1340 / 1520 ~ 1625			850 / 1300			nm
Insertion Loss ¹		0.5	1.0		0.3	0.8	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			3.5		3.5		ms
Absolute Optical Input Power			500		500		mW
Relay Coil Resistance	Non-Latching: 178±10%						
Operating Current	Non-Latching: 28±10%						mA
Operating Voltage	4.5	5.0	5.5	4.5	5.0	5.5	VDC
Power Consumption	Non-Latching: 140±10%						mW
Status Sensor Contact Resistance			50		50		mΩ
Switching Life Expectancy	3*10 ⁷			3*10 ⁷			Cycles
Operation Temperature	-5		70	-20		70	°C
Storage Temperature	-40		85	-40		85	°C
Dimension (H×W×L)	Normal Type: 8.8×11×30 / Mini Type: 7.7×11×22.6						mm
Weight	<25						g

c. 4xN Optical Switches

4X4 Optical Bypass Box



Product Description

The 4x4 Optical Bypass Box utilizes fiber-to-fiber technology over an angled surface to achieve ultra low losses and crosstalk. It is suitable for all bi-directional protection switching applications where premise-side connectivity is not required in the bypass state. Compact and competitive cost, this optical switch provides excellent performance on your network. ShinKwang I&C 4x4 optical bypass box fully complies with RoHS Directive 2002/95/EC (2008/385/EC).

FEATURES

- Compact Format
- Low Return-Loss
- Available in Single Mode / Multi Mode
- PCB Mountable
- Non-Latching Type

APPLICATIONS

- Node Bypass Protection

Performance Specification

Parameter	9um Core Single Mode			50um or 62.5um Core Multi Mode			Unit
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Wavelength Range	1280 ~ 1340 / 1520 ~ 1625			850 / 1300			nm
Straight Insertion Loss ¹		0.5	1.0		0.4	0.8	dB
Bypass Insertion Loss ¹		0.8	1.6		0.6	1.3	dB
Return Loss ¹		-50	-55				dB
PDL			0.1			0.1	dB
WDL			0.3			0.3	dB
Crosstalk			-80			-80	dB
Repeatability			±0.1			±0.1	dB
Switching Time			5			5	ms
Absolute Optical Input Power			500			500	mW
Relay Coil Resistance	178±10%						
Operating Current	120±10%						mA
Operating Voltage	4.5	5.0	5.5	4.5	5.0	5.5	VDC
Power Consumption	140±10%						mW
Status Sensor Contact Resistance			50			50	mΩ
Switching Life Expectancy	3*10 ⁷			3*10 ⁷			Cycles
Operation Temperature	-5		70	-20		70	℃
Storage Temperature	-40		85	-40		85	℃
Operation Humidity	5		95	5		95	%RH
Storage Humidity	5		95	5		95	%RH
Dimension (H×W×L)	22×108×126						mm
Weight	<305						g