

## **MINIATURE FIBER OPTIC MEMS SWITCH**

### **OVERVIEW**

The **sercalo** sx series are miniature opto-mechanical switches for fiber optic communication systems and submodules. The switch is available in latching or non-latching variants, with 1x1, 2x1, 2x2, The switch offers smallest size, ease of integration and the established solid state reliability of Sercalo's MEMS components.

### **FEATURES**

- 23 x 10 x 6 mm size
- Low Cost
- TTL or CMOS logic
- latching
- 2x2, 2x1, 1x1 variants
- single or multimode fiber

### **APPLICATIONS**

- Protection Switching
- Reconfiguration
- Optical Subsystems
- Array integration

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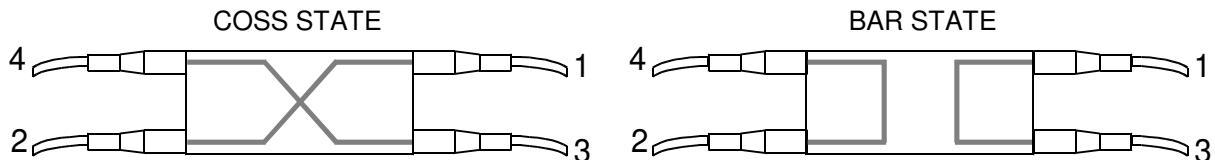
**sercalo**

## DESCRIPTION

In the **Sercalo** sx switches the optical switching function is realised by a silicon MEMS chip, on which a mirror can be moved in and out of the optical path by electrostatic actuation. The miniature SX switch is only available in its latching variant where a bistable suspension mechanism keeps the last selected state in power off.

To operate the switch 5V and 0V are applied on pins 1 and 2, which are used by the internal DC-DC converter to supply a high voltage for the actuator control. CMOS or TTL logic levels on pins 3-4 control the electrostatic actuator.

To set the switch state in the *latching variant*, pin 3 respectively pin 4 are set to logic high (5V) for 20 ms and the corresponding switch state is selected. At rest pins 3 and 4 should be pulled to 0 V and must not be floating.



### TECHNICAL SPECIFICATIONS (for single mode fibres<sup>1</sup>)

	Unit	Min	Typ	Max
<b>Switch</b>				
Wavelength Range <sup>1</sup>	nm	1240		1640
Insertion Loss <sup>2</sup>	dB		0.4	1.0
Crosstalk	dB		75	60
Return Loss	dB		55	50
Polarisation Dependent Loss	dB		0.03	0.07
Repeatability <sup>3</sup>	dB			0.002
Switching Time	ms		0.5	1
Durability	cycles		10 <sup>9</sup>	
<b>Integrated Driver</b>				
Supply Voltage <i>V<sub>cc</sub></i> (pin 1)	V	3.2	3.3 or 5	5.25
Current Consumption <i>I<sub>cc</sub></i> (pin 1)	mA		1	45
Logic Level Low (pins 3, 4)	V			0.3
Logic Level High (pins 3, 4)	V	3.0		
Selection Pulse Width	ms	20	20	
<b>Package</b>				
Operation Temperature	°C	0		70
Storage Temperature	°C	-40		70
Size (L x W x H) – for single	mm		23.2 x 10.1 x 5.9	
Size (L x W x H) – for dual	mm		23.2 x 10.1 x 7.9	

<sup>1</sup> for multimode: range: 600 – 1700 nm; IL @ 1300 nm: <1.2 dB max; CT max: >40 dB; RL max: 35 dB; resp. time: <20ms.

<sup>2</sup>value @ 25 °C, without connectors. <sup>3</sup>for constant temperature and polarisation.

### ORDERING INFORMATION

SX L T - 2x2 - 9 N

**Switch type**  
L = latching

**river Type**  
= TTL / CMOS

**Variants**  
2X2  
2X1 (no port 4)  
1X1 (no ports 4,2)

**Fibre type**  
9 = SMF28  
50= MM 50  
52= MM 62

**Fibre pigtail type**  
N = loose tube 0.9mm  
B = bare fibre 0.25mm

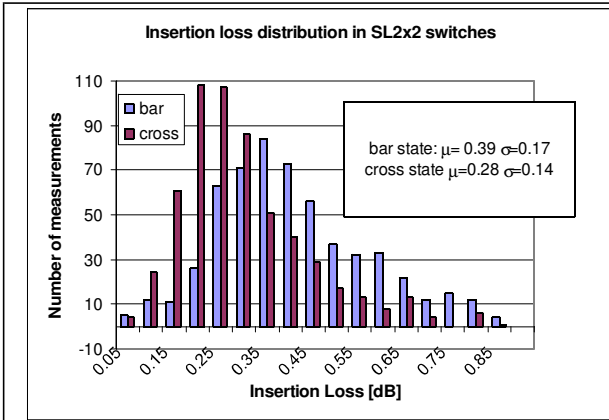


Figure 1: Insertion loss distribution

Figure 2: spectral response over temperature

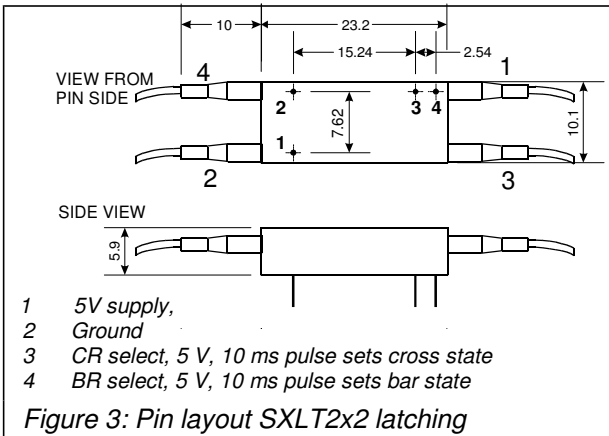


Figure 3: Pin layout SXLT2x2 latching

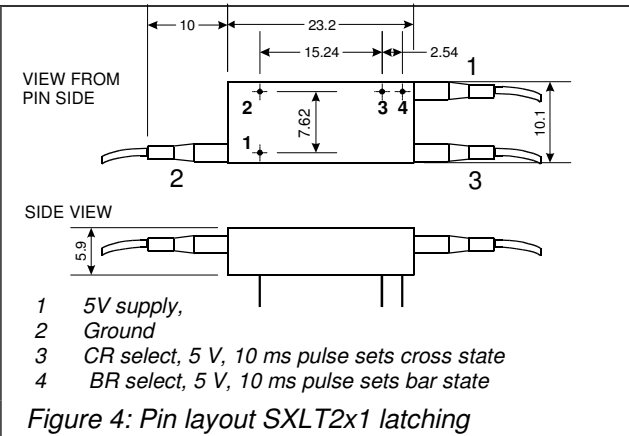


Figure 4: Pin layout SXLT2x1 latching

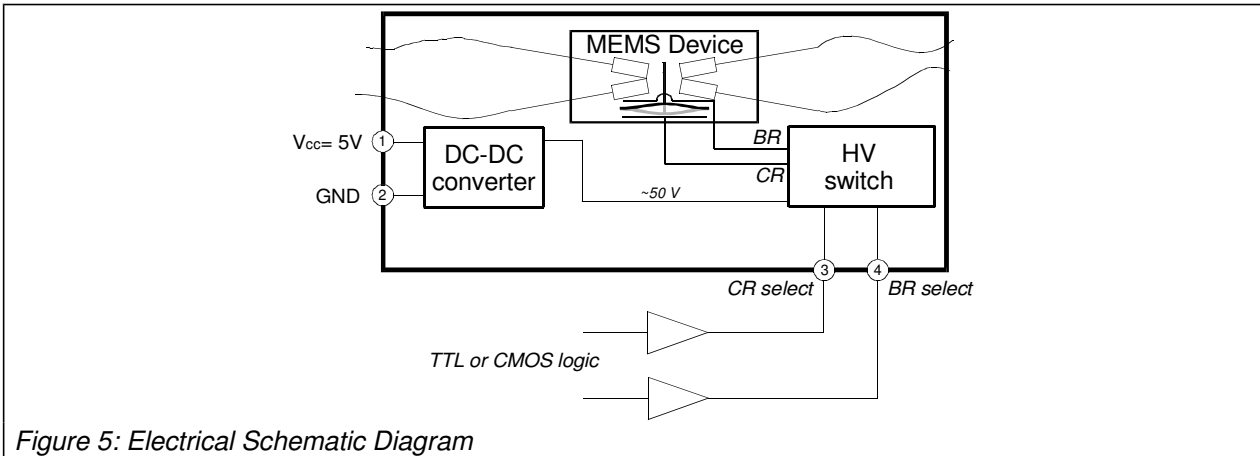


Figure 5: Electrical Schematic Diagram