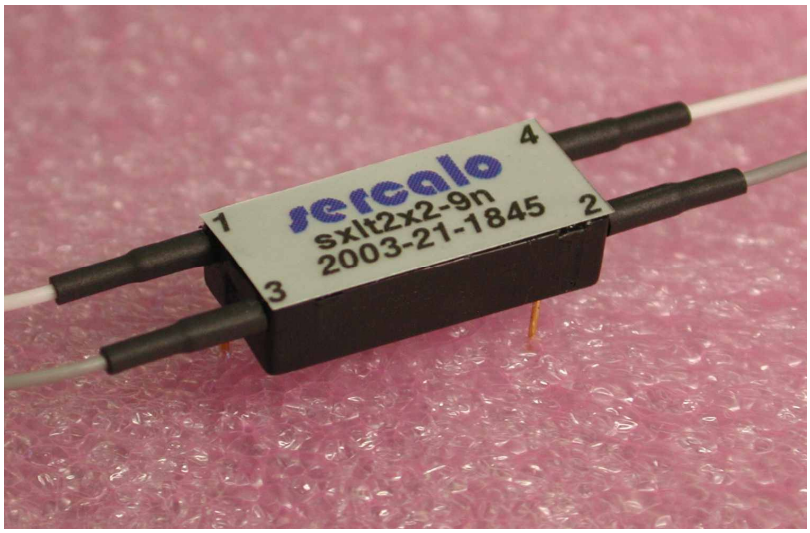

MINIATURE FIBER OPTIC MEMS SWITCH

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.

The plastic package is one of the smallest in the industry. It is optimized for low cost production while maintaining high reliability comparable to a solid state device. The component is designed to meet Telcordia 1221 quality standards.

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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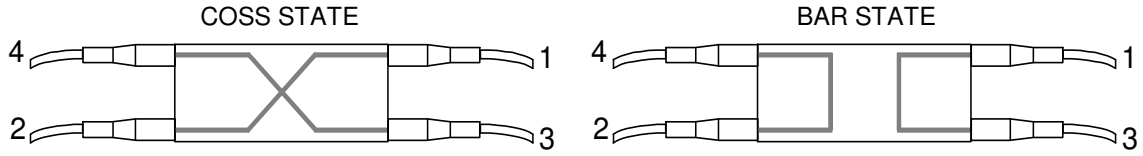
DESCRIPTION

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[1])*

	Unit	Min	Typ	Max
Switch				
Wavelength Range[1]	nm	1240		1640
Insertion Loss[2]	dB		0.4	1.0
Crosstalk	dB		75	60
Return Loss	dB		55	50
Polarisation Dependent Loss	dB		0.03	0.07
Repeatability[3]	dB			0.002
Switching Time	ms		0.5	1
Durability	cycles		10^9	
Integrated Driver				
Supply Voltage *Vcc (pin 1)*	V	3.2	3.3 or 5	5.25
Current Consumption *Icc (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	
Package				
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	

[1] ***for multimode****: range: 600 – 1700 nm; IL @ 1300 nm: <1.2 dB max; CT max: >40 dB; RL max: 35 dB; resp. time: <20ms.*
[2]*value @ 25 °C, without connectors.* [3]*for constant temperature and polarisation.*

ORDERING INFORMATION

SX	L	T	-	2x2	-	9	N

Switch type
L = latching

Driver Type
T = TTL / CMOS

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

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

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

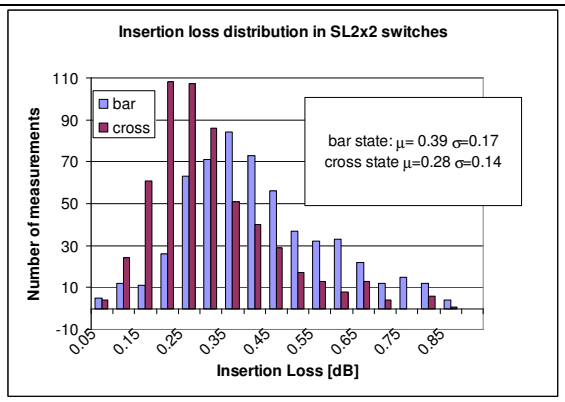


Figure 1: Insertion loss distribution

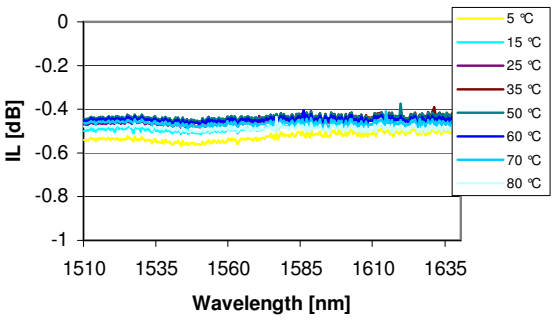
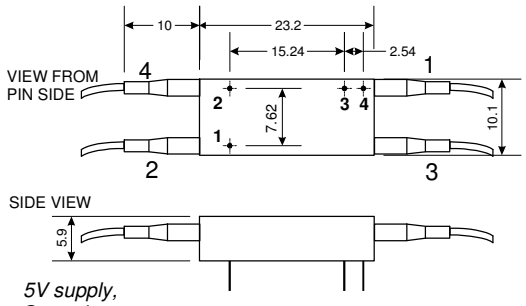
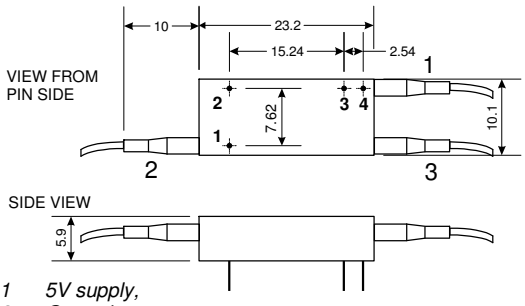


Figure 2: spectral response over temperature



1 5V supply,
2 Ground
3 CR select, 5 V, 10 ms pulse sets cross state
4 BR select, 5 V, 10 ms pulse sets bar state

Figure 3: Pin layout SXLT2x2 latching



1 5V supply,
2 Ground
3 CR select, 5 V, 10 ms pulse sets cross state
4 BR select, 5 V, 10 ms pulse sets bar state

Figure 4: Pin layout SXLT2x1 latching

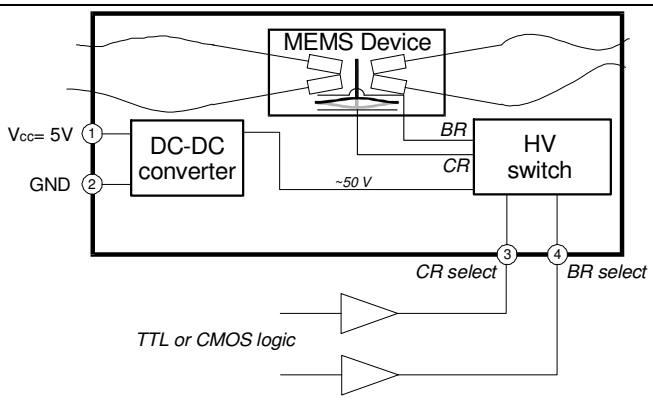


Figure 5: Electrical Schematic Diagram