OVERVIEW
The SX series are miniature opto-mechanical switches for fiber optic communication systems and submodules. The switch is available in latching variants, with 1x1, 2x1, 2x2. The switch offers smallest size, ease of integration and the established reliability of Sercalo’s MEMS components.

The package is one of the smallest in the industry. It is optimized for low cost production while maintaining high reliability. The component meets Telcordia 1221 quality standards.

FEATURES
• 23 x 10 x 6 mm size
• TTL or CMOS logic
• Latching
• 2x2, 2x1, 1x1 variants
• Single or multimode fiber

APPLICATIONS
• Protection Switching
• Reconfiguration
• Optical Subsystems
• Array integration

ORDERING INFORMATION
Switch type
SXLA = latching
SXNA = non-latching
Variants
2x2
1x2 (no port 4)
1x1 (no ports 4,2)
Fibre type
9 = SMF28
X = bend insensitive fiber
50 = MM 50
62 = MM 62
OM4 = MM50-om4
Sleeve type
N = Loose Tube (0.9 mm)
B = bare fiber
Pigtail length
10 = 100 cm
63 = 30 cm
Port No & Connector type
NC= no connector
FP= FC-PC
FA=FC-APC (narrow key)
LP=LC-PC

CONTACT
Sercalo Microtechnology Ltd.
Landstrasse 151, 9494 Schaan
Principality of Liechtenstein
Tel. +423 237 57 97    Fax. +423 237 57 48
www.sercalo.com      Email: info@sercalo.com

Information in this datasheet is believed to be correct but Sercalo reserves the right to change specifications without notice at any time. [90- 1053-11]
DESCRIPTION

In the 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 available as latching variant where a bistable suspension mechanism keeps the last selected state in power off. The non-latching type (i.e. SXNA) is not recommended for new designs.

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 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.

![Switch Diagram]

**TECHNICAL SPECIFICATIONS** *(for single mode fibres)*

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Switch</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wavelength Range</td>
<td>nm</td>
<td>1240</td>
<td></td>
<td>1640</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>dB</td>
<td>0.4</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Crosstalk</td>
<td>dB</td>
<td>75</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Return Loss</td>
<td>dB</td>
<td>55</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Polarisation Dependent Loss</td>
<td>dB</td>
<td>0.03</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>dB</td>
<td></td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Switching Time</td>
<td>ms</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Durability</td>
<td>cycles</td>
<td></td>
<td></td>
<td>10^9</td>
</tr>
<tr>
<td><strong>Integrated Driver</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Voltage Vcc (pin 1)</td>
<td>V</td>
<td>3.2</td>
<td>3.3 or 5</td>
<td>5.25</td>
</tr>
<tr>
<td>Current Consumption Icc (pin 1)</td>
<td>mA</td>
<td>1</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Logic Level Low (pins 3, 4)</td>
<td>V</td>
<td></td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Logic Level High (pins 3, 4)</td>
<td>V</td>
<td>3.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selection Pulse Width</td>
<td>ms</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td><strong>Package</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation Temperature</td>
<td>°C</td>
<td>0</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>°C</td>
<td>-40</td>
<td></td>
<td>85</td>
</tr>
<tr>
<td>Size (L x W x H) – for single</td>
<td>mm</td>
<td>23.2 x 10.1 x 6.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 for multimode: range: 600 – 1700 nm; IL @ 1300 nm: <1.0 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.

**Figure 1**: Insertion loss distribution

**Figure 2**: Spectral response over temperature
Figure 3: Pin layout SXLA2x2 latching

Figure 4: Pin layout SXLA2x1 latching

Figure 5: Electrical Schematic Diagram