FIBER OPTIC 1xN SWITCH

coaxial design

OVERVIEW

sercalo's fiber optic 1xN switches are bidirectional opto-mechanical switches based on a coaxial design where a single MEMS mirror redirects light from a common fiber to one of N ports.

The MEMS technology results in low insertion loss and low crosstalk between channels while keeping a constant switching performance. The switch communicates over a UART or I^{2}C/SMBus. A TTL/CMOS-compatible parallel interface is also available for switches with up to 24 ports.

The MEMS component is hermetically sealed. The laser welded collimator garantees high temperature and long term stability. The part is complies with Telcordia 1221 reliability standards. No epoxy is present in the optical path. The miniature package withstands rugged environments and is well suited for direct mounting on printed circuit boards.

The component is compliant to ROHS requirements 2011/65/EU.

FEATURES

- Low insertion loss
- Reliable
- UART, I^{2}C/SMBus and parallel interface
- Ethernet interface available on request
- ROHS compliant

APPLICATIONS

- *Telecom*
- *Instrumentation*
- *Test and measurement*

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sercalo's COAXIAL TYPE 1xN switch is non latching and breaks the optical connection at power-off, i.e. routing of the common port is not defined at power off. The component works bidirectional, the common port can be used as input or output of the light signal. The optical assembly is laser welded and offers excellent stability over temperature and time.

TECHNICAL SPECIFICATIONS for *Single Mode fiber*

	Unit	Min	Typ	Max
Optical Specifications				
Wavelength range[1]	nm	1250		1670
Insertion loss 1x4[2]	dB		0.4	1.0
Insertion loss 1x8 to 1x16[2]	dB		0.8	1.5
Insertion loss 1x24 to 1x36[2]	dB		1.0	2.0
Crosstalk	dB	50	60	
Polarisation dependent Loss	dB			0.1
Return Loss	dB	50	55	
Wavelength dep. Loss (one band)	dB			0.2
Wavelength dep.Loss (1250-1650 nm)	dB		0.5	1.0
Temperature dependent Loss	dB			0.2
Maximum Power Level[3]	mW			500
Switching time	ms		5	10
Cycle Rate	Hz		10	50
Repeatability[4]	dB			0.01
Durability	cycles		No wear out	
Electrical Specifications				
Supply voltage	V	4.75	5	5.25
Power consumption, normal mode	mW			150
Power consumption, standby	mW		40	
UART speed	baud	9600		115200
SMBus/I^{2}C bus speed	kbps			400
Logic level low	V		0	0.6
Logic level high	V	2.4	5	
Reset inactive voltage[5]	V	2.4	5	
Reset active voltage	V		0	0.9
Reset pulse duration	µs	15		
Package				
Operation temperature	°C	-10		70
Storage temperature	°C	-40		85
Operation humidity (non condensing)	% r.h.	0		95
Pigtail length	cm	50		100
Weight	g		75	
Dimensions	mm		40 x 21 x 8	
ROHS Compliance			2011/65/EU (no exceptions)	

[1] Insertion loss over all bands. By optimizing a single band the max IL value is 0.3 dB lower.
[2] Values at 25°C at 1310 or 1550 nm, without connectors.
[3] It is recommended to turn off the laser during switch transients when switching optical power above 100 mW. [4]For constant temperature and polarization. [5]Through onboard pull-up resistor.

ORDERING INFORMATION

SC	1x8	-	9	R

Switch type:
SC = 1250 – 1670 nm

Network:
1x4, 1x8,
1x12, 1x16,
1x24, 1x32,
1x36

Fiber type:
9 = SMF28ULTRA
7 = SM980 for 1050 nm
4 = SM400 for 630 nm
other fiber types and
wavelengths upon
request

Fiber sleeve type:
B = 250 um bare fibers
R = 8-fibers or 12-fibers ribbon with
250 um acrylate coating

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CONNECTOR PINOUT

Pin number	Description
1	Parallel PD3
2	Parallel PD4
3	Parallel PD1
4	Parallel PD2
5	Parallel STROBE/ENABLE
6	Parallel PD0
7	Ground (GND)
8	Supply voltage (V_{DD})
9	Reserved[4]
10	UART TX data
11	Reserved[4]
12	UART RX data
13	System reset (/RST)
14	SMBus/I^2C SDA
15	SMBus/I^2C SCL
16	Ground (GND)

[4]Let reserved pins unconnected.

PRODUCT DIMENSIONS (IN MILLIMETERS)
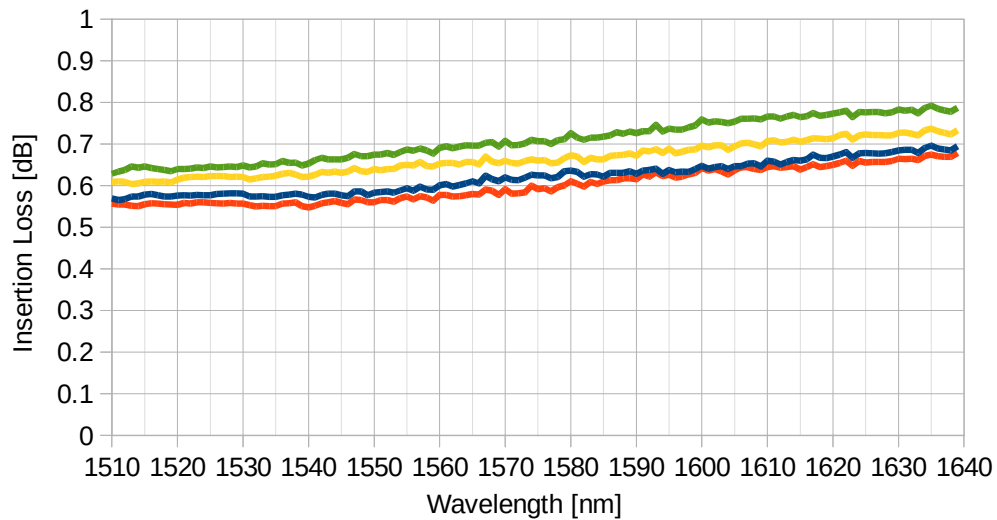

![sercalo logo]
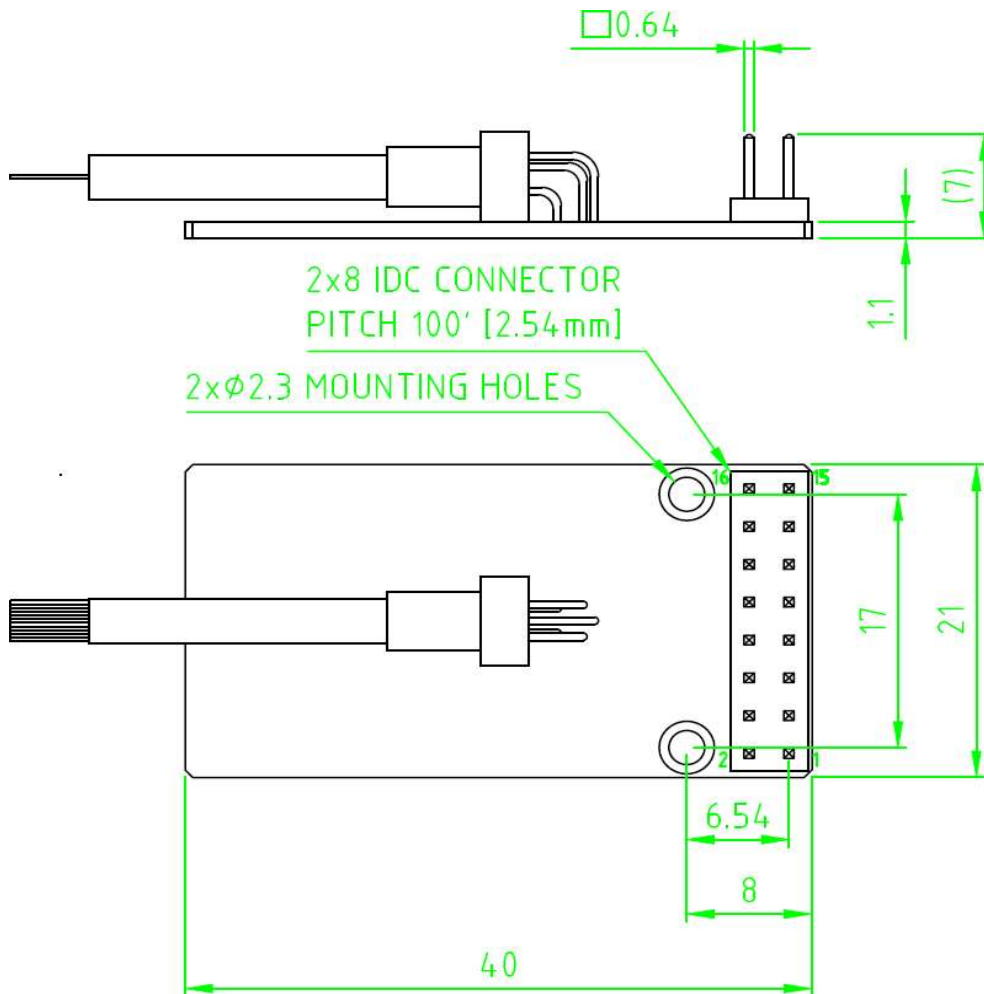
FUNCTIONAL BLOC DIAGRAM
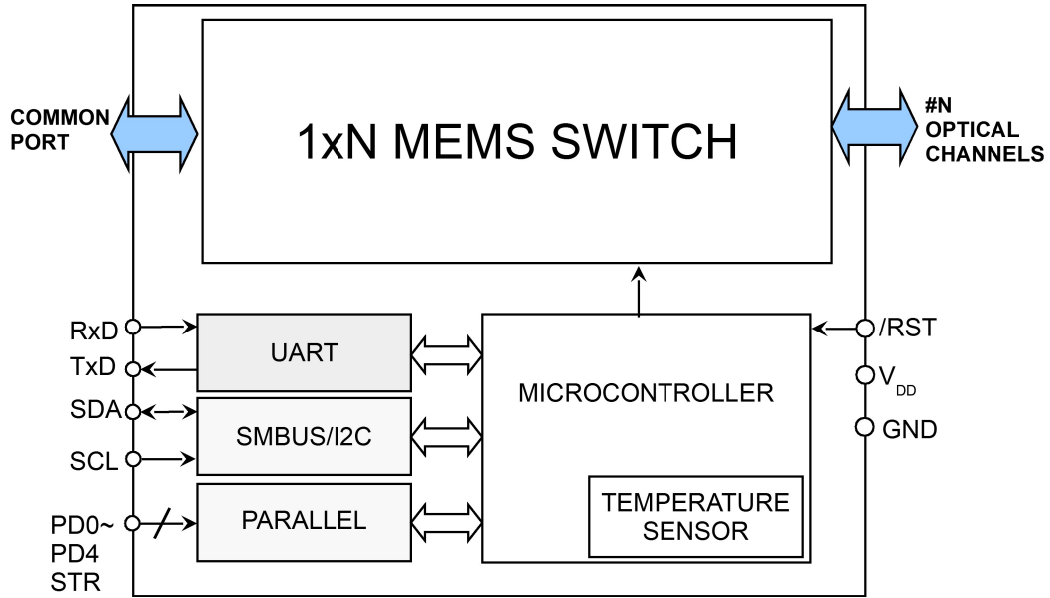
INSERTION LOSS vs. TEMPERATURE (SC 1x8)
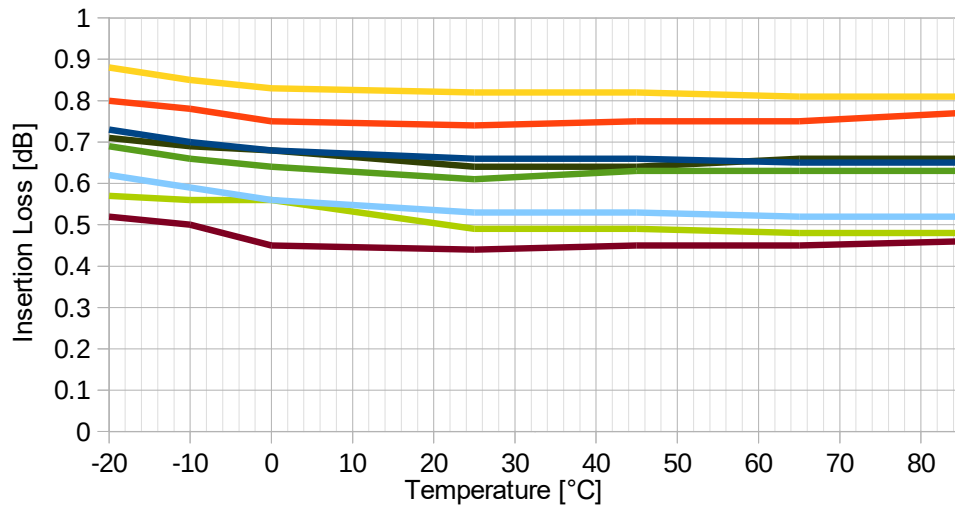
WAVELENGTH DEPENDENT LOSS (SC 1x4)

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OPTICAL RESPONSE TIME

Optical power on target channel

500 us/div
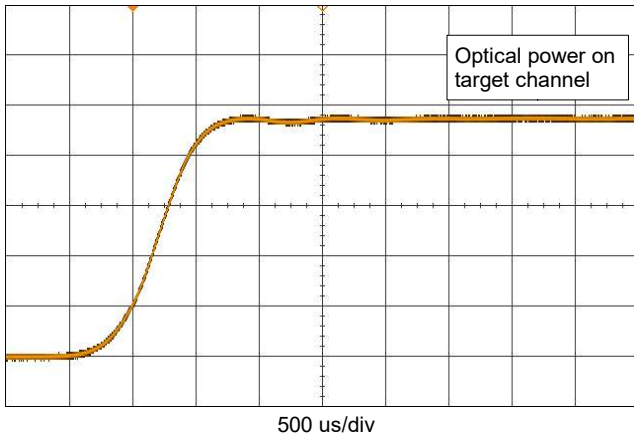
CONTINUOUS SWITCH OPERATION

Optical power on channel #1

Optical power on channel #2

10 ms/div

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