

# Flexible Small Channel Count Switch Module

## SQ Series



### Key Features

- High optical performance
- High repeatability
- Latching or non-latching
- Field configurable default non-latch channel
- Wide choice of configurations
- Off position (optional)
- Status feedback
- Common package size for all configurations

### Applications

- Incorporation into customized switch assemblies for test and measurement applications
- Network monitoring and testing
- Sensor switching
- Source/detection selection
- Research and development (R&D)

### Safety Information

- Complies with GR-1073

The JDSU SQ series optical switch is a highly flexible module with high optical performance in latching or non-latching applications. The full feature set and large number of optical configurations available in a common package and interface make it ideal for a wide spectrum of applications.

The switch connects one or two channels to one of several (up to eight) channels. Both single-mode (SM) and multimode (MM) versions are available. This switch is also available in multi-pack configurations, for example 2 x 4, 2 x 6, 2 x 8 D configuration (Duplex 1 x 2, 1 x 3, 1 x 4).

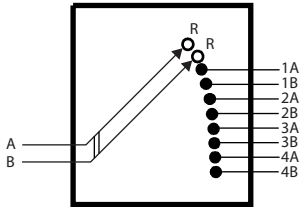
While in operation, the switch connects optical channels by using prisms to redirect the signal from an input port into a selected output port. Using collimating optics minimizes the insertion loss (IL) and improves the repeatability and stability of the optical parameters. The switches are optically passive, and therefore, are transparent to signaling formats.

Configurations can be manufactured for bi-directional performance as a factory option.

# 2

## D Configuration

(SQ switch shown with OFF position option)



## Continued

### SQ Series Configurations

The common package may be ordered in optical configurations as follows:

- 1 x 3 up to 1 x 8
- 2 x 4, 2 x 6, 2 x 8 D configuration (Duplex 1 x 2, 1 x 3, 1 x 4)
- Dual 1 x 2
- SM or MM fiber
- 900 mm buffered fiber or 3 mm cable

All units are customer-configurable as:

- Latching
- Non-latching
- Default channel for non-latch operation

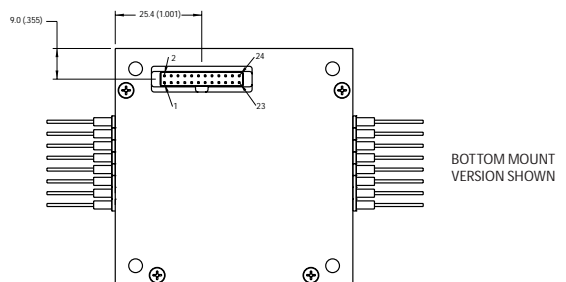
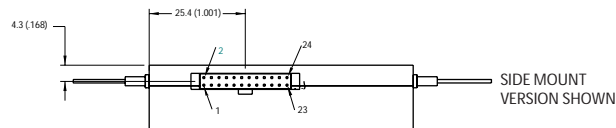
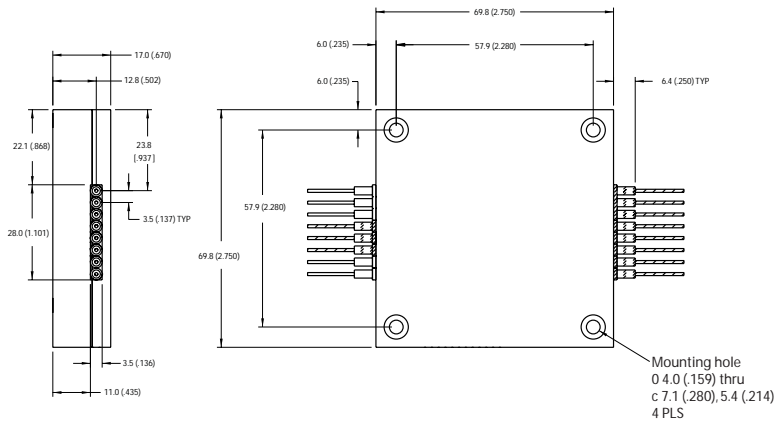
Electrical interfaces available include:

- 2 x 12 male header on the side
- 2 x 12 male (recessed) on the bottom (for PCB mounting)

The 2 x N configuration allows for mass reconfiguration of optical paths. It provides simultaneous connections of 2 inputs to a number of outputs.

## Dimensions Diagram

(Specifications in mm [inches] unless otherwise noted.)

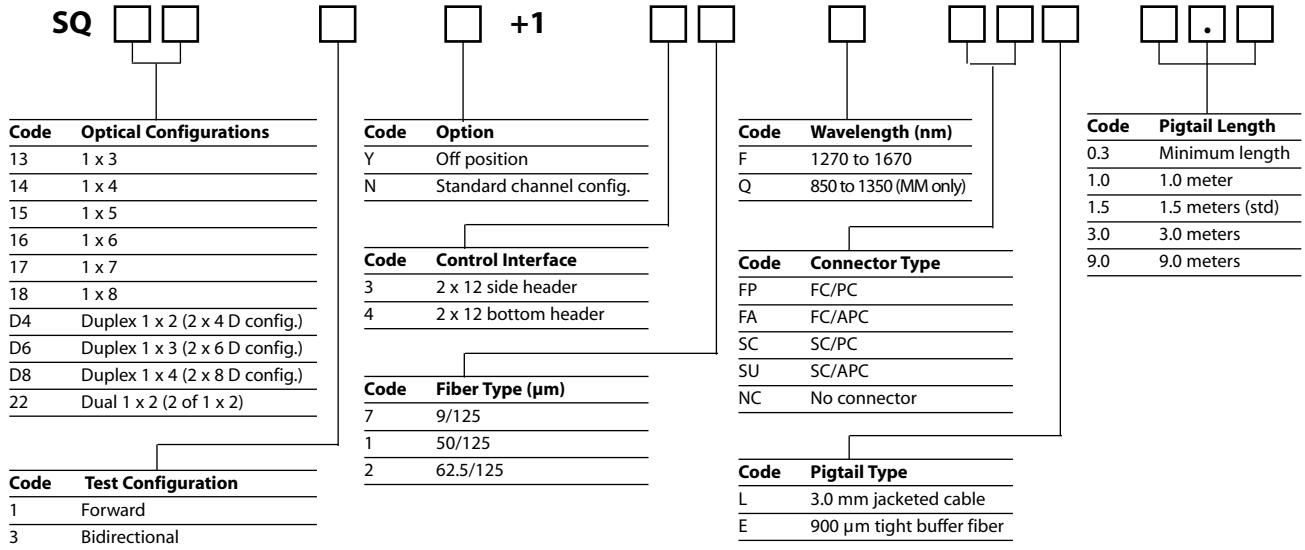


### 3

#### Specifications

Parameter	Single-mode (SM)	Multimode (MM)
Wavelength range	850 to 1350 nm or 1270 to 1670 nm	850 to 1350 nm
Fiber type	9/125 $\mu\text{m}$	50/125 $\mu\text{m}$ , 62.5/125 $\mu\text{m}$
Fiber jacket size	900 $\mu\text{m}$ fiber, 3.0 mm cable	
Configuration	1 x 3 to 1 x 8 Dual 1 x 2 (2 independent 1 x 2's) Duplex 1 x 2 (2 x 4 "D") Duplex 1 x 3 (2 x 6 "D") Duplex 1 x 4 (2 x 8 "D")	
Optical connectors	FC/PC, FC/APC, SC/PC, SC/APC, LC/PC, no connector	
Length	0.3 to 9.9 m ( $\pm 5$ cm for lengths under 1 m, $\pm 5\%$ for lengths 1 m or greater)	
Test orientation	Standard, bi-directional	
Insertion loss (IL) <sup>2</sup> (includes one FC/PC connection)		
1 x 3, 1 x 4, Dual 1 x 2, 2 x 4 "D"	< 1.1 dB	< 1.0 dB
1 x 5, 1 x 6, 1 x 7, 1 x 8, 2 x 6 "D", 2 x 8 "D"	< 1.25 dB	< 1.15 dB
Return loss (RL) (excludes connectors)		
Selected port SM	> 55 dB	> 55 dB
Selected port MM	> 30 dB	> 30 dB
Polarization dependent loss (PDL)		
1 x 3, 1 x 4, Dual 1 x 2, 2 x 4 "D"	< 0.08 dB	-
1 x 5, 1 x 6, 1 x 7, 1 x 8, 2 x 6 "D", 2 x 8 "D"	< 0.10 dB	-
IL stability <sup>3</sup>		
1 hour	$\pm 0.02$ dB	$\pm 0.02$ dB
24 hours	$\pm 0.05$ dB	$\pm 0.05$ dB
Repeatability <sup>4,5</sup>		
1 x 3, 1 x 4, Dual 1 x 2, 2 x 4 "D"	< 0.01 dB (p-p)	( $\pm 0.005$ dB)
1 x 5, 1 x 6, 1 x 7, 1 x 8, 2 x 6 "D", 2 x 8 "D"	< 0.02 dB (p-p)	( $\pm 0.01$ dB)
Crosstalk/isolation		
Selected port to other ports	< -60 dB	< -50 dB
Bi-directional - non-selected to other non-selected	< -50 dB	< -40 dB
Optical input power	300 mW max	
Lifetime	> 10 million cycles	
Switching time	< 20 ms	
Control interface	Configurable TTL	
Operating voltage (DC) <sup>2,6</sup>	5.0 V DC $\pm 10\%$ at 100 mA (300 mA max during switching)	
Qualification testing	GR1073 for Central Office 182 g (1 x 8, 1.5 meters of 900 $\mu\text{m}$ fiber, FC/PC connectors)	
Operating temperature	0 to 60 °C	
Storage temperature	-40 to 85 °C	
Humidity (relative, non-condensing)		
Operating	< 90 % at 23 °C, < 20 % at 60 °C	
Storage	< 90 % at 60 °C, < 40 % at 85 °C	
Dimensions (W x H x D)	70 x 17 x 70 mm	
Weight	119 g (1 x 8, 1.5 meters of 900 $\mu\text{m}$ fiber, no connectors)	

1. Unless otherwise specified, all specifications at start of life at 23 °C  $\pm 3$  °C and 45 % RH  $\pm 5$  %.  
2. At 23 °C  $\pm 3$  °C at specified test wavelengths (850/1310 MM or 1310/1550 SM) and optical input power of -25 to 0 dBm.  
3. Drift of any channel at  $\pm 3$  °C deviation of ambient temperature without changing channels (excludes repeatability).  
4. Repeatability as per Telcordia GR-1073-CORE (100 cycles, max-min/peak-to-peak).  
5. Measured between two consecutive readings over 100 cycles.  
6. At 23°C. Over full temperature range: 5.0 V  $\pm 5\%$ .

**Ordering Information**
**Sample: SQ141N+137FFPL1.0**


If the configurations available do not meet your performance requirements, please contact our global sales and customer service team to discuss the potential for specialized solutions.

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