

Switch Protection Module


Key Features

- Low insertion loss
- Fast switching time
- Protocol and bit-rate independent
- Built-in monitors

Applications

- Protecting and restoring optical communication networks
- Increasing reliability in the optical physical layer

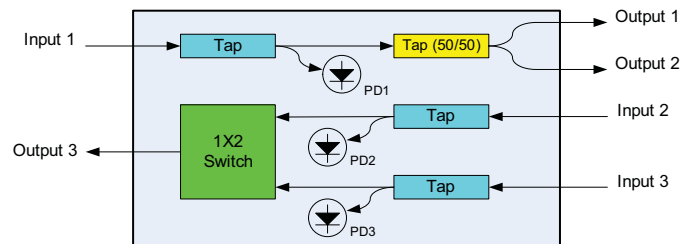
The JDSU switch protection module offers quick protection and restoration to prevent data loss due to cable failure, port failure, or catastrophic failures. An optical signal is split into diversely routed fibers. When a failure occurs, a 1x2 switch in the module selects the optical signal from the backup fiber.

This physical layer solution is able to isolate failures with a faster recovery time and simpler implementation compared to other protection solutions. It can be directly mounted on printed circuit boards. The solution is also Telcordia qualified for maximum reliability.

Compliance

- Telcordia GR-1312-CORE qualified

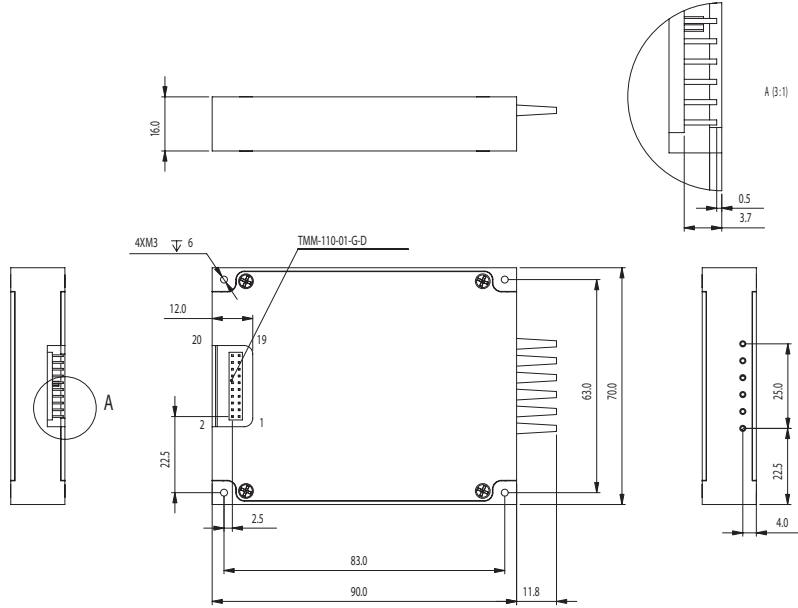
Various packages and protection mechanisms are available upon request.

Functional Diagram


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Dimensions Diagram

(Specifications in mm unless otherwise noted.)



Pinout

Pin#	Signal name	Type I/O	Description
1	+5VDC	Power	Power supply
2	AGND	Power	Analog ground
3	A1	Input	Switch electrical drive
4	NA		Not applicable
5	B1	Output	Switch status
6	NA		Not applicable
7	AGND	Power	Analog ground
8	AGND	Power	Analog ground
9	PD1_OUTPUT	Output	PD 1 analog output
10	PD2_OUTPUT	Output	PD 2 analog output
11	PD3_OUTPUT	Output	PD 3 analog output
12	NA		Not applicable
13	NA		Not applicable
14	NA		Not applicable
15	I2C_SCL	Input	EEPROM I2C serial clock
16	I2C_SDA	Input/Output	EEPROM I2C serial data
17	I2C_WP	Input	EEPROM write protection
18	ID	Output	Module identify pin
19	DGND	Power	Digital ground
20	DGND	Power	Digital ground

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Control Signal Correspond to Switch Status

Control Signals (A1)	Status Signals (B1)	Optical Path Configuration
0	0	Input 2 to Output 3
1	1	Input 3 to Output 3

EEPROM Data Map

Address	Description	Length (Bytes)	Value	Data Type
0x0000	Vendor ID	5	JDSU	String
0x0005	Product P/N	10		String
0x000F	Catalog number	20		String
0x0023	Serial number	20		String
0x0037	Spec rev	5	002	String
0x003C	Manufacture date	10	YYMMDD	String

Note:

1. There is semicolon at the end of each information.
2. Fill with '0xFF' in the spare bytes.

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Specifications

Parameter	Condition		Specification
Optical			
Wavelength range	Wavelength span #1		1510 to 1610 nm
	Wavelength span #2		1270 to 1350 nm
Insertion loss ^{1,2}	Input 1 to Outputs 1 & 2	Maximum	3.8 dB
	Inputs 2 & 3 to Output 3	Maximum	1.2 dB
Polarization dependent loss		Maximum	0.2 dB
Wavelength dependent loss	To the wavelength span #1 and #2 respectively	Maximum	0.5 dB
Switching time ³		Maximum	5 ms
Switch cross talk		Minimum	55 dB
PD tap ratio ⁴	All paths	Typical	2%
Return loss		Minimum	45 dB
Switch type ⁵			Latching
Electrical			
Switching voltage		Minimum	4.5 V
		Maximum	5.5 V
Switching current		Minimum	18 mA
		Maximum	32 mA
Switching pulse width		Minimum	20 ms
Tap monitor responsivity	Relative to the input optical power which in range of -23 dBm to +23 dBm	Typical	40 mV/dB
PD Output voltage	at 0 dBm	Typical	1.8 V
Switch status out voltage	Input 3 on	Minimum	4.75 V
		Maximum	5.25 V
	Input 2 on	Minimum	0 V
		Maximum	0.5 V
PD dark current ⁶		Maximum	1 nA
Mechanical			
Dimensions			90.0 x 70.0 x 16.0 mm
Fiber type	All ports		Corning SMF-28 or equivalent with 900 μ m tight buffer

1. Excluding connectors. Add 0.2 dB for each connector.

2. Insertion loss is defined over whole operating wavelength range, temperature range and all polarization states.

3. The switching time is defined as the period starting from 90% of the rising edge of the electrical trigger pulse, ending at 90% of the steady state optical power level of the rising edge at output port, as measurement from an oscilloscope with adequate bandwidth.

4. This parameter is only for information, isn't tested.

5. When there is a power failure to the optical switch, the switch should retain the switching state with no change in insertion loss.

6. Guaranteed by design

Absolute Maximum Rating¹
Parameter
Specification

Operating case temperature range		-5 to 70 °C
Transport and storage case temperature range		-40 to 85 °C
Operating relative humidity (non-condensing) ²		5 to 85%
Transport and storage relative humidity		5 to 90%
Optical input power	Maximum	27.0 dBm
Electrical power consumption under normal operating conditions	Maximum	2W

1. The device must not show any degradation after the following conditions have been applied for short term. Short term is defined as less than 96 consecutive hours and less than a total of 15 days over a one year period.
2. The relative humidity for short-term limits is 5 to 90%, but not to exceed 0.024 kg water / kg of dry air.

Ordering Information

For more information on this or other products and their availability, please contact your local JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at customer.service@jdsu.com.

Sample: SPM-000010

SPM-00000

Code	Fiber Length ¹	Code	Connector Type
1	1 meter	0	No connector
2	2 meters	1	FC/PC
		2	FC/APC
		3	SC/PC
		4	SC/APC
		5	LC/PC
		6	MU

Note:

1. Tolerance is ± 0.1 m.