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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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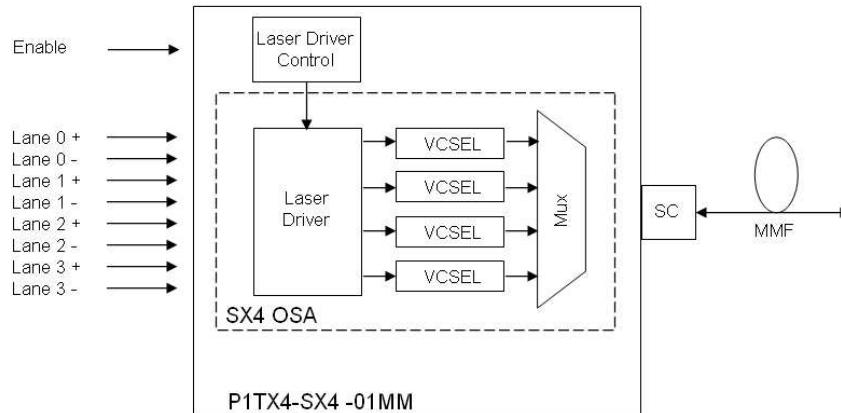
1.0 Description

The P1TX4C-SX4x-01MM (TX-SX4 Module) is an optical subassembly (OSA) that transmits four video- or data-channels over one multimode fiber. Each channel is capable of transmitting up to 1.65Gbps (model = V) or 3.5Gbps (model = D). With a microcontroller preprogrammed for optimal optical transmission on board, TX-SX4 module is a fully integrated electrical to optical transmitter versatile enough to be designed in to a variety of systems.



2.0 Features

- Multiple signals over one multimode fiber
- Integrated microcontroller for laser driver control
- ~ 0.5W power consumption
- Metal enclosure with SC optical interface



This device is **EXTREMELY SENSITIVE** to Electrostatic Discharge (ESD). At a minimum, all handling must be performed in accordance with an ANSI-compliant ESD Control Program (ANSI/ESD S20.20-2007) to mitigate possible ESD-induced damage. Reliability and life of the device will be adversely affected if these precautions are not met.



This device is a Class 3R Laser device (per IEC 60825-1:2007) and can cause damage to eye sight if used improperly. Refer to ANSI Z136 for proper handling and usage of Class 3R devices.



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| ORIGINATOR: | | C. ENG | | DATE: | | 7/8/2011 | |
| OMRON | P1TX4C-SX4x-01MM Product Specification | | | DOCUMENT NO. | | REV | |
| | | | | DOC002106 | | A | |
| SHEET 1 OF 6 | | | | | | | |

3.0 Absolute Maximum Ratings

| Parameter | Symbol | Min | Typ | Max | Units |
|--------------------------------------------|--------|------|-----|-----|--------|
| Storage Temperature ¹ | Tst | -40 | | 85 | °C |
| 3.3V Supply Voltage | VCC1 | -0.3 | | 3.6 | V |
| Operating Surface Temperature ² | Ta | 0 | | 65 | °C |
| Operating Humidity ³ | RH | | | 80 | % |
| Durability – SC Connector | | | 200 | | cycles |
| Durability – Plug-down Connector | | | 50 | | cycles |

4.0 Optical Characteristics

| Parameter (per Channel) | Symbol | Min | Typ | Max | Units |
|-------------------------------------------------------------------------|--------|-------|------------|-----|-------|
| Average Optical Power, per Lane ⁴ | Pout | -3.0 | 0.0 | | dBm |
| Optical Modulation Amplitude | | -6.25 | | | dBm |
| Center Wavelength – Lane 0 | | | 778 | | nm |
| Center Wavelength – Lane 1 | | | 800 | | nm |
| Center Wavelength – Lane 2 | | | 825 | | nm |
| Center Wavelength – Lane 3 | | | 850 | | nm |
| Optical Rise/Fall Time ⁵ P1TX4C-SX4V-01 P1TX4C-SX4D-01 | | | 200 100 | | ps |

¹ Stresses listed may be applied without causing damage. Functionality at or above the values listed is not implied. Exposure to these values for extended periods may affect reliability.

² See outline drawing for measurement point.

³ Non condensing, 80% RH.

⁴ I= 5mA, T=25°C. Measured at the end of a 2m section of 62.5µ fiber.

⁵ Rise and fall times measured from 20 - 80%

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| | | | | DOC002106 | | A | |
| SHEET 2 OF 6 | | | | | | | |

5.0 Electrical Specifications

| Parameter | Symbol | Min | Typ | Max | Units |
|---------------------------------------------------------------------------|---------------------|------|------|--------------|-------|
| Data Rate per Wavelength ⁶ P1TX4C-SX4V-01 P1TX4C-SX4D-01 | | | | 1.65 3.50 | Gb/s |
| Total Jitter (RMS) per lane ⁷ | T _{J1} | | 10 | | ps |
| Input Differential Impedance | | | 100 | | ohm |
| Input Differential Voltage | | 320 | | 2000 | mVp-p |
| Single-ended Input Voltage | | 160 | | 1000 | mVp-p |
| Common mode input voltage (AC-coupled input) | | 0.85 | 2.6 | VCC | V |
| Operating Supply Voltage | V _{cc-Vee} | 3.15 | 3.30 | 3.45 | V |
| Operating Supply Current | I _{cc} | | 140 | | mA |

6.0 Fiber Transmission Distance⁸

| Data Rate | Skew Limit | OM1 | OM2 | OM3 | Units |
|-----------|------------|-----|-----|------|-------|
| 1.65 Gbps | None | 200 | 400 | 1000 | m |
| | 2.42ns | 200 | 400 | 400 | m |
| 3.50 Gbps | None | 100 | 200 | 500 | m |
| | 2.42ns | 100 | 200 | 400 | m |
| | 1.78ns | 100 | 200 | 294 | m |

⁶ Requires DC-balanced data pattern and a max run length of 80 bits. Measured with input signals conforming to HDMI rev 1.3a, section 4.2.4, figure 4-18.

⁷ Based on a jitter-free source. For optimal performance, clocks should be transmitted on Lane 0

⁸ Max distance considers the worst-case conditions. Actual distance may be up to 4x specified distance.

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| | | | | DOC002106 | | A | |
| SHEET 3 OF 6 | | | | | | | |

7.0 Pin Numbers and Descriptions

The TX-SX4 plugs into a 30 pin connector. For information on the specifications of the connector, contact Hirose (DF12(4.0)-30DP-0.5V(86)).

| Pin # | Signal | Name | Description |
|-------|--------|-------------------|-----------------------------------------------|
| 1 | GND | Ground | Ground |
| 2 | NC | No connect | No Connect ⁹ |
| 3 | + IN0 | Ch 0 + Data Input | Positive differential input for 778nm channel |
| 4 | NC | No connect | No Connect ⁹ |
| 5 | - IN0 | Ch 0 - Data Input | Negative differential input for 778nm channel |
| 6 | NC | No connect | No Connect ⁹ |
| 7 | + IN1 | Ch 1 + Data Input | Positive differential input for 800nm channel |
| 8 | NC | No connect | No Connect ⁹ |
| 9 | - IN1 | Ch 1 - Data Input | Negative differential input for 800nm channel |
| 10 | NC | No connect | No Connect ⁹ |
| 11 | + IN2 | Ch 2 + Data Input | Positive differential input for 825nm channel |
| 12 | NC | No connect | No Connect ⁹ |
| 13 | - IN2 | Ch 2 - Data Input | Negative differential input for 825nm channel |
| 14 | NC | No connect | No Connect ⁹ |
| 15 | + IN3 | Ch 3 + Data Input | Positive differential input for 850nm channel |
| 16 | NC | No connect | No Connect ⁹ |
| 17 | - IN3 | Ch 3 - Data Input | Negative differential input for 850nm channel |
| 18 | EN | Enable | 3.3V=normal operation, 0V turns off lasers |
| 19 | GND | Ground | Ground |
| 20 | NC | No connect | No Connect ⁹ |
| 21 | NC | No connect | No Connect ⁹ |
| 22 | NC | No connect | No Connect ⁹ |
| 23 | NC | No connect | No Connect ⁹ |
| 24 | NC | No connect | No Connect ⁹ |
| 25 | NC | No connect | No Connect ⁹ |
| 26 | NC | No connect | No Connect ⁹ |
| 27 | NC | No connect | No Connect ⁹ |
| 28 | VCC | Voltage Input | +3.3 volt input |
| 29 | GND | Ground | Ground |
| 30 | VCC | Voltage Input | +3.3 volt input |

8.0 Laser Safety

The P1TX4C-SX4x-01 meets Class-3 requirements.

⁹ NC = No Connect. Do not connect anything to this PIN.

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| | | | | DOC002106 | | A | |
| SHEET 4 OF 6 | | | | | | | |

9.0 Environmental Standards

Omron Network Products designs and manufactures its products to minimize the negative impact on our environment. As such, the P1TX4C-SX4-01MM conforms to a variety of environmental and safety standards

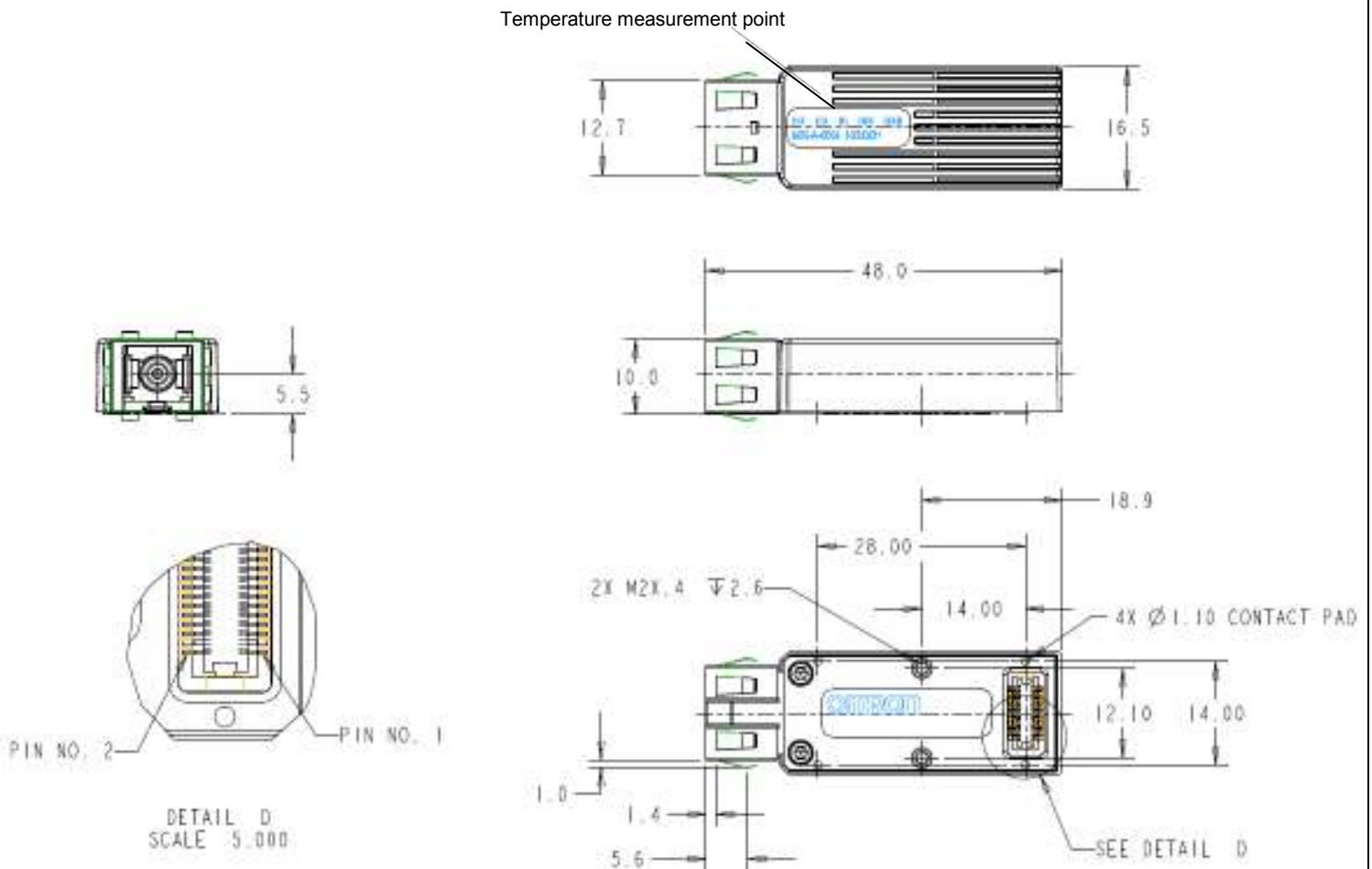
| Standard | Compliant | Certificate Available |
|----------|-----------|-----------------------|
| RoHS | Yes | Yes |

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|-------------|----------------------------------------|---------------------------|----------|
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| OMRON | P1TX4C-SX4x-01MM Product Specification | DOCUMENT NO. DOC002106 | REV A |
| | | SHEET 5 OF 6 | |

10.0 Dimensions

The SX4 TOSA is designed to work with a standard SC ferrule only. Insertion of any other type may result in damage.

Dimensions (mm) and orientation are for reference only.



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| | | | | SHEET 6 OF 6 | | | |