SLC210-3-X-XXX Optical SONET/SDH OC-12 --- +3.3V Small Form Factor 2x10 Transceiver --- 622 MBaud

ORDERING INFORMATION

SLC210 - 3 - X - X X X

DATA OUTPUTS
C - CML
P - PECL

GROUND CLIP
N - No Ground Clip
G - Gang Mount (.550)
I - Individual Mount (.660)

RX POWER MONITOR
Blank - No Rx. Power Monitor
R - With Rx. Power Monitor

WAVELENGTH
2 - 1300nm (Short Reach)
2M - 1300nm (Intermediate Reach)

COMMUNICATION PROTOCOL
3 - SONET/SDH OC-12, 622MBaud

Features

- 622 Mbps SONET/SDH OC-12 Compliant
- LVTTL Signal Detect Output
- LVTTL Transmitter Disable Input
- Tx Bias monitor
- Tx Power monitor
- Optional Rx Power monitor
- Low profile fits Mezzanine Card Applications
- Single +3.3V Power Supply
- LVPECL or CML Outputs
- Wave Solderable / Aqueous Washable

PRODUCT OVERVIEW

The SLC210-3-X-XXX Small Form Factor MSA optical transceivers are high performance integrated duplex data links for bi-directional communication over optical fiber. The SLC210-3-X-XXX module is specifically designed to be used in single mode SONET/SDH OC-3 applications. Stratos SFF 2x10 transceivers are provided with optional receiver power monitor which enable monitoring of photodetector current. The SLC210-3-X-XXX transceiver is provided with an LC receptacle which is compatible with the industry standard LC connector. The Stratos Lightwave SFF transceivers measure 0.532 inches in width. These transceivers provide double port densities by fitting twice the number of transceivers into the same board space as a 1x9 transceiver. This saves on system costs and can reduce overall design time. The SLC210-3-X-XXX operates at +3.3V.

This optoelectronic transceiver module is a class 1 laser product compliant with FDA Radiation Performance Standards, 21 CFR Subchapter J. This component is also class 1 laser compliant according to International Safety Standard IEC-825-1.

LONG WAVELENGTH LASER

The SLC210-3-X-XXX is provided with single mode optics. The single mode laser provides highly reliable single mode communications which meets or exceeds SONET/SDH OC-12 distance requirements.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTES
Storage Temperature	Tstg	-40	85	°C	
Soldering Temperature			260	°C	10 seconds on leads only
Supply Voltage	Vcc		6.0	V	Vcc - ground
Supply Current	Icc		330	ma	
Power Dissapation			1.15	W	

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Ambient Operating Temperature	Ta	0		70	°C	
Supply Voltage	Vcc	3.135	3.3	3.465	VDC	

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PERFORMANCE SPECIFICATIONS -- ELECTRICAL **Ta = 25° C, Vcc =3.3V**

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Supply Current	Icc			200	mA	°0C<Ta<70°C, 3.135 V< Vcc <3.465 V
TRANSMITTER						
PECL Data Input (Differential)		0.7		2	Vpp	DC coupled inputs, External Bias and Termination
CML Data Input (Differential)					Vpp	DC coupled inputs, External Bias and Termination
Input Impedance (Differential)	Zin		100		Ohms	Externally Terminated
Bias Monitor	Ibias		10		Ohms	3K Standoff; Fig. 1A & 1B
Power Monitor	Ipwr		200		Ohms	3K Standoff; Fig. 1A & 1B
TX_DISABLE Input Voltage - High	V_{IH}	2.2			V	
TX_DISABLE Input Voltage - Low	V_{IL}			0.6	V	
RECEIVER						
PECL Data Output (Differential)		500		1570	mVpp	DC coupled outputs, External Bias and Termination
CML Data Output (Differential)		200		1200	mVpp	DC coupled outputs, External Bias and Termination
TTL Signal Detect (Assert Time)	t(SDa)			100	µs	Measured on transition - Low to High
TTL Signal Detect (Deassert Time)	t(SDd)			350	µs	Measured on transition - High to Low

SLC210-3-2-XXX PERFORMANCE SPECIFICATIONS -- OPTICAL Single Mode Laser **Ta = 25° C, Vcc =3.3V**

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
TRANSMITTER						
Optical Center	λ	1266	1310	1360	nm	
RMS Spectral Width	Δλ			4	nm	RMS
Optical Transmit Power	Popt	-15		-8	dBm	average @ 1310 nm
Extinction Ratio	Er	8.2			dB	P1/P0
RECEIVER						
Optical Center	λ	1266	1310	1360	nm	
Optical Input Power	Pr	-23		-8	dBm	average power for BER < 1.0E-10

SLC210-3-2M-XXX PERFORMANCE SPECIFICATIONS -- OPTICAL Single Mode Laser **Ta = 25° C, Vcc =3.3V**

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
TRANSMITTER						
Optical Center	λ	1266	1310	1360	nm	
RMS Spectral Width	Δλ			4	nm	RMS
Optical Transmit Power	Popt	-15		-8	dBm	average @ 1310 nm
Extinction Ratio	Er	8.2			dB	P1/P0
RECEIVER						
Optical Center	λ	1266	1310	1360	nm	
Optical Input Power	Pr	-28		-8	dBm	average power for BER < 1.0E-10

TERMINATION CIRCUITS

Inputs to the SLC210 transmitter are DC coupled and Externally terminated with 100 ohms differential. These transceivers can operate with PECL logic levels. The input signal must have at least a 0.35 V peak-to-peak (single ended) signal swing. Output from the receiver section of the module is also DC coupled and is expected to drive into a 100 ohm differential load. Different termination strategies may be required depending on the particular MUX/DEMUX chip set used.

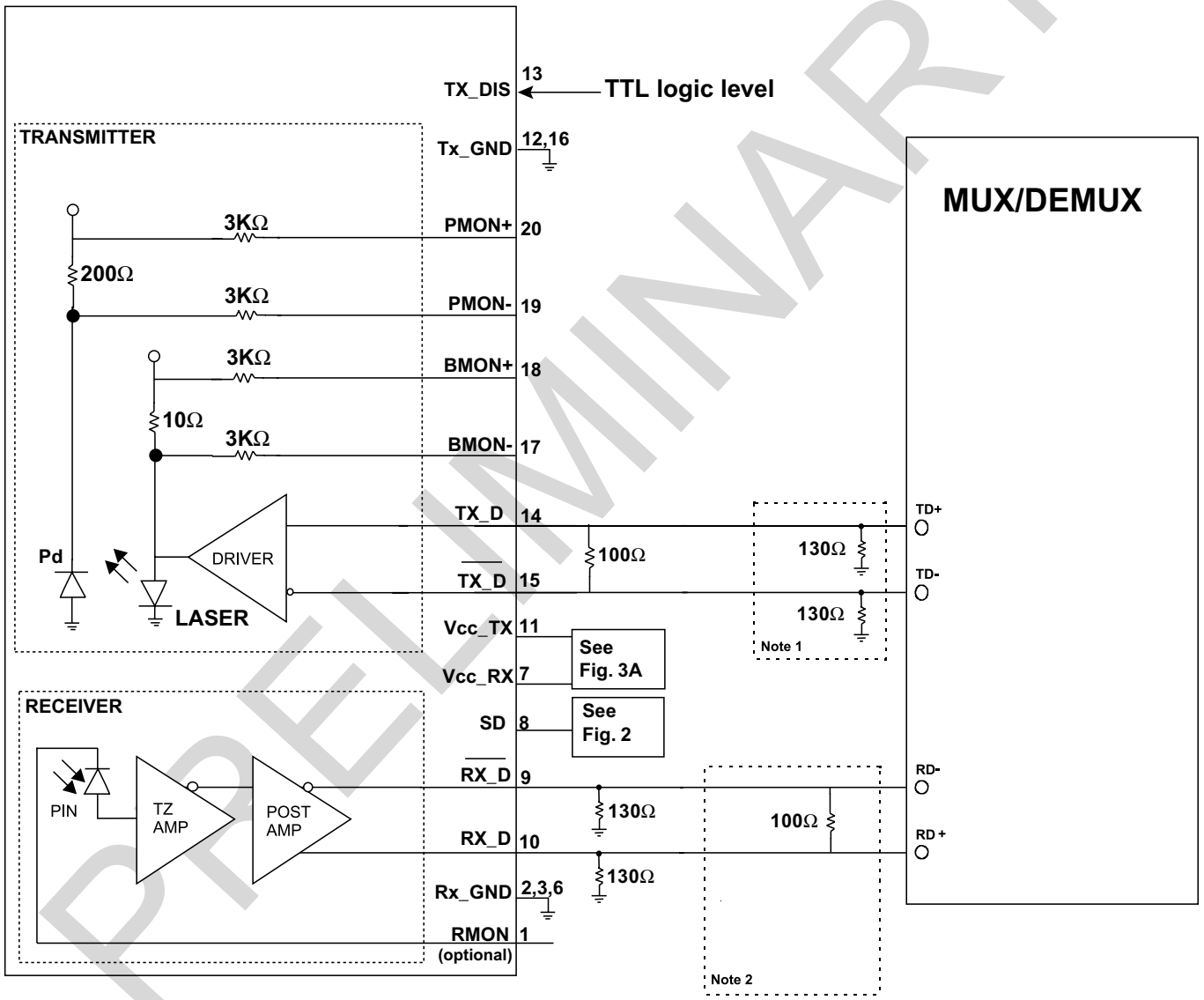


Figure 1A: Recommended TRANSMIT and RECEIVE (PECL) Data Terminations

Notes:

1. Consult the MUX/DEMUX manufacturer's applications information for biasing required for TD+, TD- outputs. Some multiplexer outputs are internally biased and may not need external bias resistors.
2. Consult MUX/DEMUX manufacturer's data sheet and application data for appropriate receiver input biasing network.

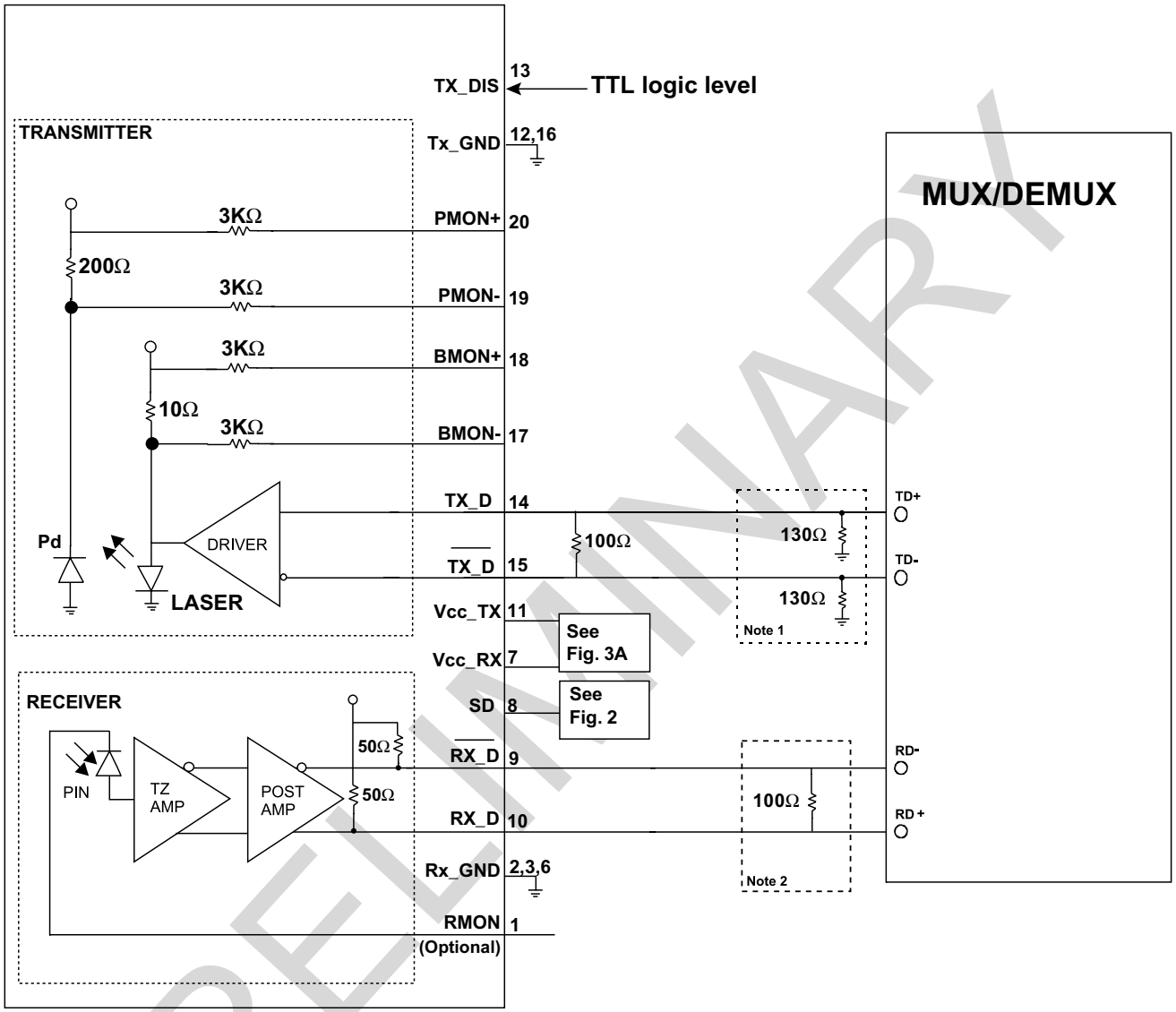


Figure 1B: Recommended TRANSMIT and RECEIVE (CML) Data Terminations

Notes:
1. Consult the MUX/DEMUX manufacturer's applications information for biasing required for TD+, TD- outputs. Some multiplexer outputs are internally biased and may not need external bias resistors.
2. Consult MUX/DEMUX manufacturer's data sheet and application data for appropriate receiver input biasing network.

SIGNAL DETECT

The SLC210 transceivers are equipped with TTL signal detect outputs. The TTL option eliminates the need for a PECL to TTL level shifter in most applications. The SFF adhoc industry standard provides for a TTL level SIgnal Detect output.

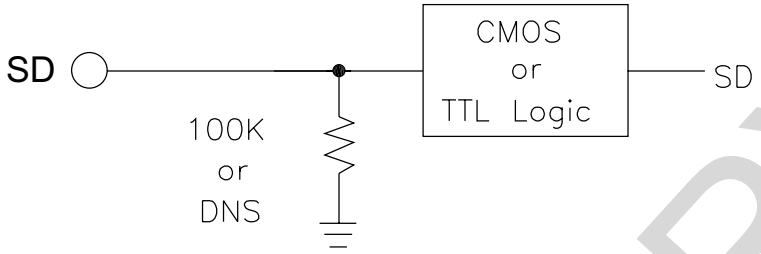
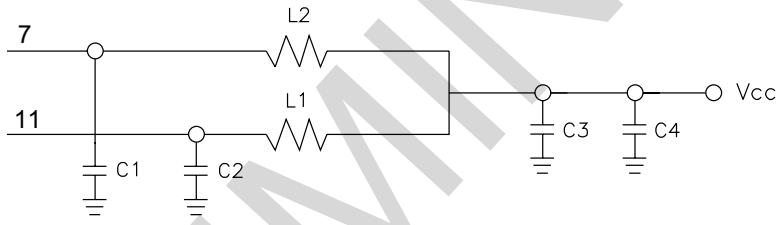


Figure 2. Suggested Signal Detect Coupling

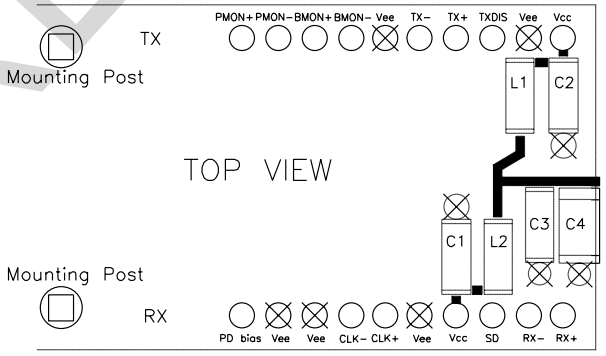
POWER COUPLING

A suggested layout for power and ground connections is given in figure 4B below. Connections are made via separate voltage and ground planes. The mounting posts are at case ground and should not be connected to circuit ground. The ferrite bead should provide a real impedance of 50 to 100 ohms at 100 to 1000 MHz. Bypass capacitors should be placed as close to the 10-pin connector as possible.



VALUES:
C1, C2 = 1000pF, COG
C3, = 0.1uF
C4, = 10uF, Ta
L1, L2 = Real impedence of 50 to 100 Ohms to 1000 MHz.

Figure 3A. Suggested Power Coupling - Electrical Schematic



VALUES:
C1, C2 = 1000pF, COG
C3, = 0.1uF
C4, = 10uF, Ta
L1, L2 = Real impedence of 50 to 100 Ohms to 1000 MHz.

NOTE:
1.) Components shown are placed on the bottom layer and are viewed through the board.

LEGEND:
Vcc PLANE CONNECTION
CIRCUIT GROUND PLANE CONNECTION
CASE GROUND

Figure 3B. Suggested Power Coupling - Component Placement

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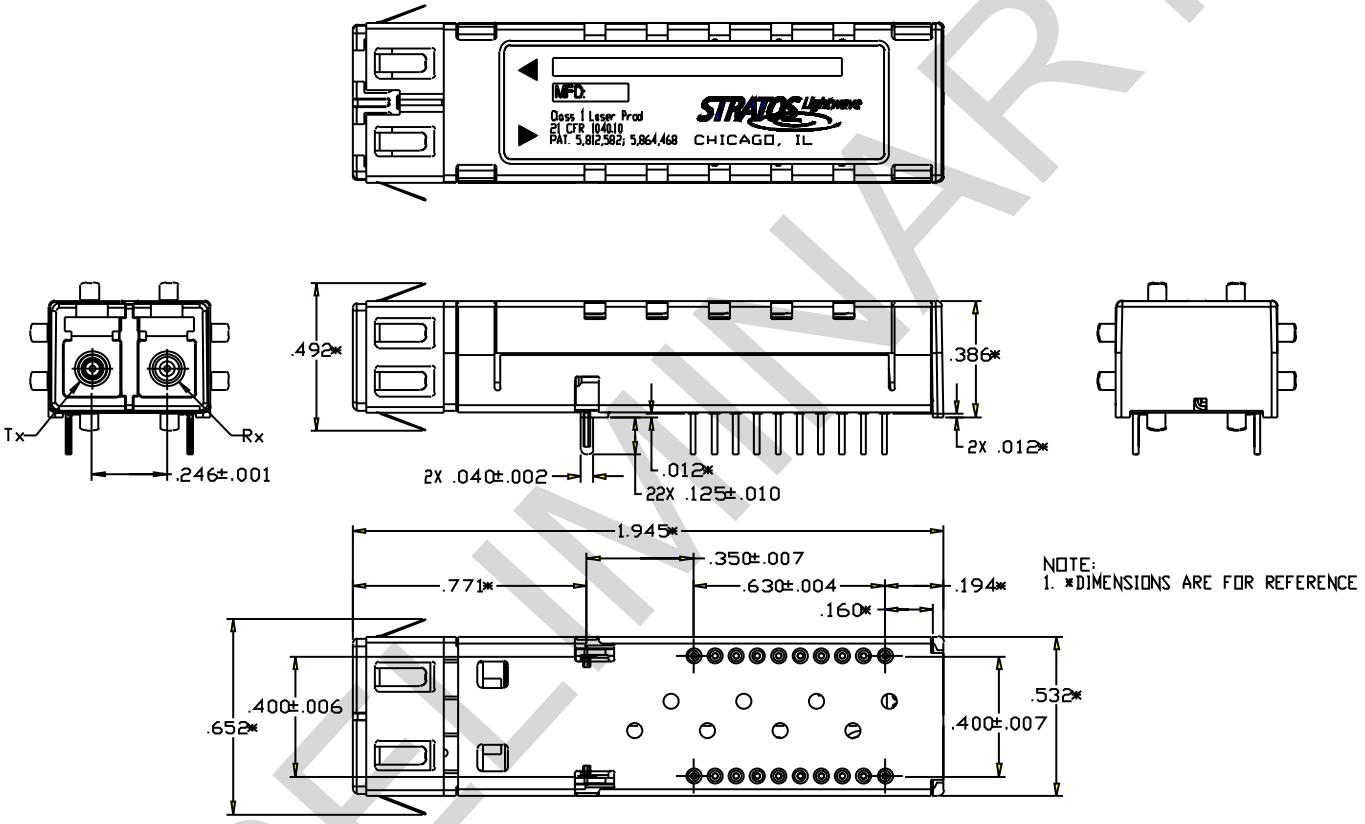
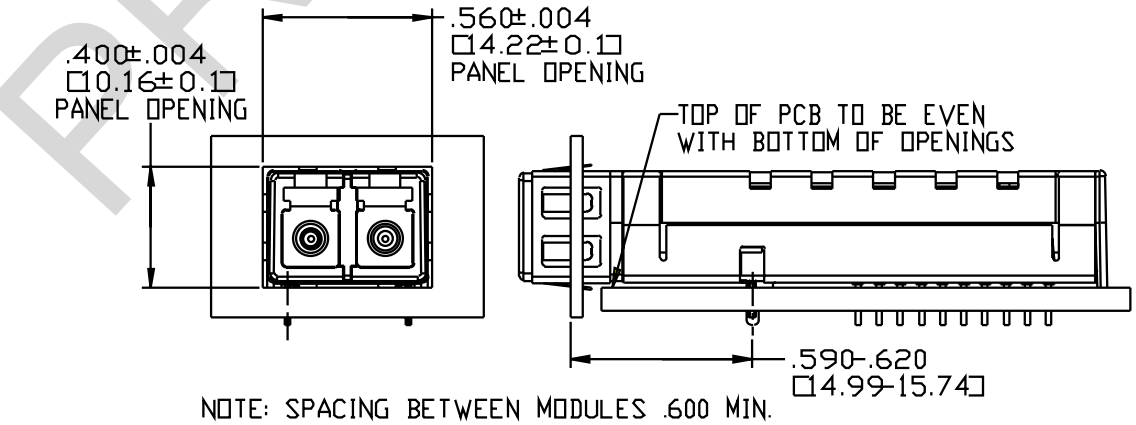
EMI and ESD CONSIDERATIONS

Stratos Lightwave optoelectronic transceivers offer a metal case and a special chassis grounding clip. As shown in the drawing, this clip connects the module case to chassis ground when installed flush through the panel cutout. The grounding clip in this way brushes the edge of the cutout in order to make a proper contact. The use of a grounding clip also provides increased electrostatic protection and helps reduce radiated emissions from the module or the host circuit board through the chassis faceplate. The attaching posts are at case potential and may be connected to chassis ground. They should not be connected to circuit ground.

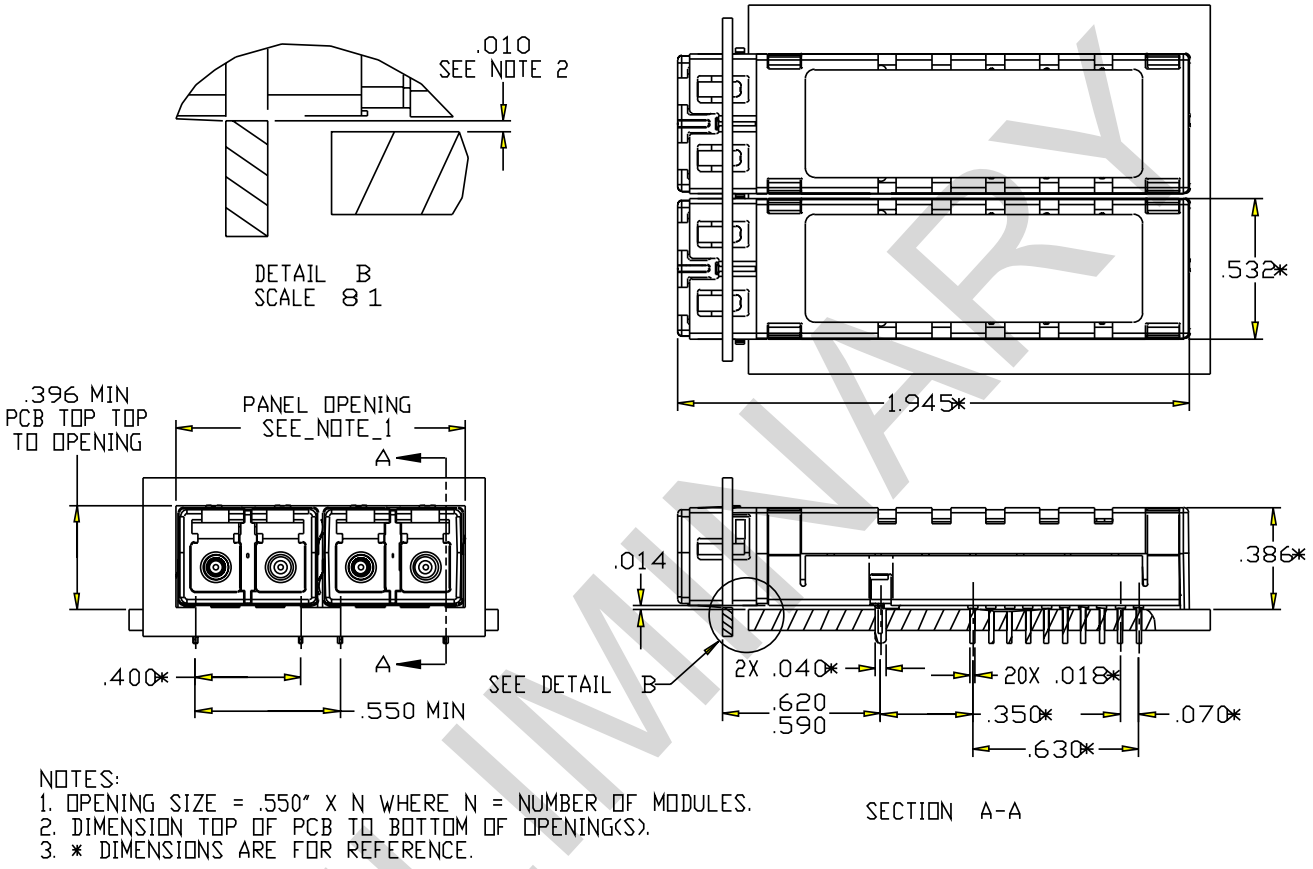
MECHANICAL DIMENSIONS (Individual Mount) –



PANEL CUTOUT DIMENSIONS

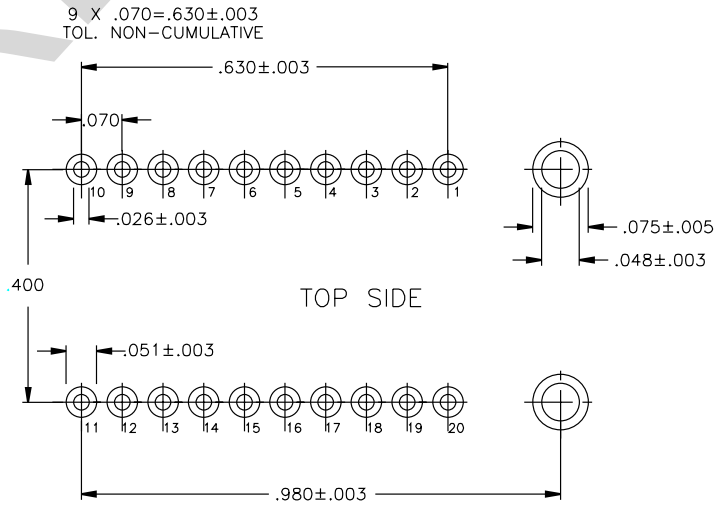


MECHANICAL DIMENSIONS (Gang Mount) –



NOTES:
1. OPENING SIZE = .550" X N WHERE N = NUMBER OF MODULES.
2. DIMENSION TOP OF PCB TO BOTTOM OF OPENING(S).
3. * DIMENSIONS ARE FOR REFERENCE.

SUGGESTED PCB LAND PATTERN



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PHYSICAL DESCRIPTION

The SLC210 features a compact design with a standard LC duplex connector for fiber optic connections. The 10-pin connector (70 mil spacing) provides the electrical connection for all operation. With a height of 9.8 mm the SLC210 fits mezzanine card applications. An epoxy encapsulation provides excellent protection from environmental hazards and assists in heat dissipation for all components. Two wave-solderable posts are provided for attaching the package to the circuit board without the need for multiple attachment operations.

ELECTRICAL INTERFACE, PIN DESCRIPTIONS

PIN	SYMBOL	NOTES	PIN	SYMBOL	NOTES
1	RMON	Receiver power monitor (optional)[1]	11	Vcc	Transmitter 3.3V
2	Vee	Receiver Ground	12	Vee	Transmitter Ground
3	Vee	Receiver Ground	13	TDis	Transmitter Disable
4	NIC	No Internal Connection	14	TD+	Transmitter Data+
5	NIC	No Internal Connection	15	TD-	Transmitter Data-
6	Vee	Receiver Ground	16	Vee	Transmitter Ground
7	Vcc	Receiver 3.3V	17	BMON-	Transmitter Bias Monitor-
8	SD	Signal Detect	18	BMON+	Transmitter Bias Monitor+
9	RX-	Receiver data-	19	PMON -	Transmitter Power Monitor -
10	RX+	Receiver data+	20	PMON +	Transmitter Power Monitor +
ATTACHING POSTS		The attaching posts are at case potential and may be connected to chassis ground. They are isolated from circuit ground.			

* If this option is used, connect to Rx monitor circuit or Vcc. Otherwise, leave pin 1 open.

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