

DESCRIPTION

The TX4F-SX4D-01 (TX-SX4) is an optical subassembly (OSA) that transmits four video- or data-channels over one multimode fiber. Each channel is capable of transmitting up to 3.5Gbps. With the driver embedded in the OSA and a ZIF-terminated flex circuit, the TX-SX4 is a fully integrated TOSA versatile enough to be designed in to a variety of systems.



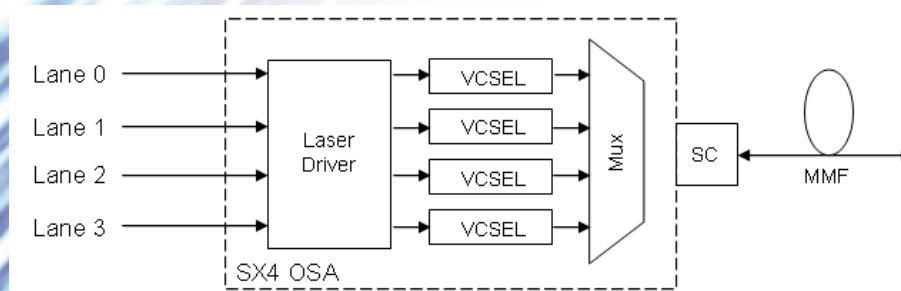
FEATURES

- Multiple signals over one multimode fiber
- On-board laser driver with individual VCSEL control
- Low-stress, highly-flexible connection
- Low power consumption (~ 0.5W)
- Very long distances over MMF
- HDMI compatible input termination

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
TX4F-SX4D-01	4-ch Transmitter Optical Subassembly, 3.5 Gbps per channel
TX4F-SX4D-01C	4-ch Transmitter Optical Subassembly, 3.5 Gbps per channel with Clip
TX4F-SX4D-01H	4-ch Transmitter Optical Subassembly, 3.5 Gbps per channel with Heatsink & Clip

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Storage Temperature ¹	T _s	-40		85	°C
3.3 Volt Supply ¹	V _{CC}	-0.3	3.3	3.6	V
Operating Temperature ^{1,2}	T _a	0		70	°C
Operating Humidity ³	RH			80	%

Notes:

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 dimension drawing for measurement point. Inneos strongly recommends mounting with a heat sink (mounting reference designs may be available)
3. Measured at the ceramic substrate at 70°C.

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Data Rate per Wavelength ¹				3.50	Gb/s
Total Jitter (RMS) per lane ²	T _{J1}		10		ps
Input Differential Impedance			100		Ω
Input Differential Voltage		320		2000	mV _{p-p}
Single-ended Input Voltage		160		1000	mV _{p-p}
Common mode input voltage (AC-coupled input)		0.85	2.6	V _{CC}	V
Operating Supply Voltage	V _{CC}	3.15	3.30	3.45	V
Operating Supply Current	I _{CC}		140		mA

Notes:

1. 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.
2. Based on a jitter-free source. For optimal performance, clocks should be transmitted on Lane 0.

OPTICAL SPECIFICATIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Average Optical Power, per Lane ¹	P _{out}	-3.0	0.0		dBm
Optical Modulation Amplitude	OMA	-6.25			dBm
Center Wavelength – Lane 0	λ ₀		778		nm
Center Wavelength – Lane 1	λ ₁		800		nm
Center Wavelength – Lane 2	λ ₂		825		nm
Center Wavelength – Lane 3	λ ₃		850		nm
Optical Rise/Fall Time ²			100		ps

Notes:

1. I = 5mA, T=25°C. Measured at the end of a 2m section of 62.5μ fiber.
2. Rise and fall times measured from 20 - 80%.

FIBER TRANSMISSION DISTANCE

DATA RATE	SKEW LIMIT	OM1	OM2	OM3	UNITS
3.50 Gbps	None	100	200	500	m
	2.42ns	100	200	400	m
	1.78ns	100	200	294	m

Note: Maximum distance is for the worst-case fiber characteristics; however, termination and coupling losses could significantly reduce this distance.

DESCRIPTION

The P1RX4C-SX4x-01 (SX4 ROSA) is an optical subassembly (OSA) that receives and demultiplexes up to four video- or data-channels from one multimode fiber. The ROSA is capable of supporting up to 3.5 Gbps per channel on each of the 4-channels. With the TIA and Limiting Amplifier embedded in the OSA and a ZIF-terminated flex circuit, the SX4 ROSA is a fully integrated receiver versatile enough to be designed in to a variety of systems.



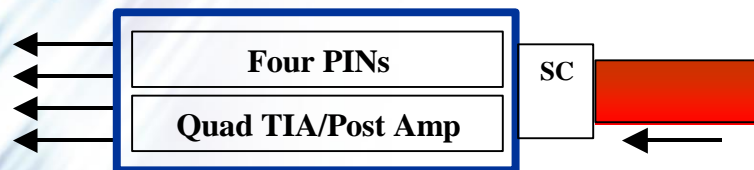
FEATURES

- Up to 4 x 3.5 Gbps over **one** multimode fiber
- Integrated TIA and Limiting Amp
- Low-stress, highly flexible ZIF connection
- Low power consumption
- CML outputs

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
P1RX4C-SX4D-01	4-ch Receiver Optical Subassembly, 3.5 Gbps per channel
P1RX4C-SX4D-01C	4-ch Receiver Optical Subassembly, 3.5 Gbps per channel with Clip
P1RX4C-SX4D-01H	4-ch Receiver Optical Subassembly, 3.5 Gbps per channel with Heatsink & Clip
P1RX4C-SX4V-01	4-ch Receiver Optical Subassembly, 1.65 Gbps per channel
P1RX4C-SX4V-01C	4-ch Receiver Optical Subassembly, 1.65 Gbps per channel with Clip
P1RX4C-SX4V-01H	4-ch Receiver Optical Subassembly, 1.65 Gbps per channel with Heatsink & Clip

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNITS
Storage Temperature ¹	T _{st}	-40	85	°C
3.3 Volt Supply	V _{CC}	-0.3	4	V
Electrostatic Discharge ²	ESD		2k	V
Ceramic (substrate) Temperature ³	T _a	0	70	°C

Notes:

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. All pins; Based on Human body model.
3. See outline drawing for measurement point. Inneos strongly recommends mounting with a heat sink (mounting reference designs may be available).

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Data Rate per Channel ¹ P1RX4C-SX4D-01 P1RX4C-SX4V-01	D _R			3.50 1.65	Gb/s
Low Frequency Cutoff	F _{CUTOFF}		175		kHz
Differential Output Voltage ²	V _{OD}	400	650		mV _{p-p}
Loss of Signal Output Low ³	LOS			0.7	V
Loss of Signal Output High	LOS	2			V
3.3 Volt Supply Current	I _{CC}		127		mA

Notes:

1. Requires DC-balanced data pattern and max run rate of 80 bits.
2. CML interface through a 100-ohm differential load.
3. This output is asserted low when a loss of signal is detected on any Lane.

OPTICAL CHARACTERISTICS

PARAMETER (PER CHANNEL)	SYMBOL	MIN	TYP	MAX	UNITS
Receive Wavelength – Lane 0			778		nm
Receive Wavelength – Lane 1			800		nm
Receive Wavelength – Lane 2			825		nm
Receive Wavelength – Lane 3			850		nm
Peak Optical Power	P _{in}		0.0	4.2	dBm
OMA Sensitivity		-14.25	-16.00		dBm
Return Loss			12		dB