

Professional high-speed optical transceiver

**OPN-S8F15-120SC2 / OPN-S8F15-120SC2I / OPN-S8F15-120SC2-EMG /
OPN-S8F15-120SC2I-EMG / OPN-S8F15-120ST2 / OPN-S8F15-120ST2I /
OPN-S8F15-120FC2 / OPN-S8F15-120FC2I / OPN-S8F15T-120SC2 /
OPN-S8F15T-120SC2I / OPN-S8F15T-120SC2-EMG /
OPN-S8F15T-120SC2I-EMG / OPN-S8F15T-120ST2 / OPN-S8F15T-120ST2I
OPN-S8F15T-120FC2 / OPN-S8F15T-120FC2I
3.3V / 1550 nm / 622 Mbps RoHS Compliant Optical Single-Mode Transceiver**

PRODUCT FEATURES

- Duplex SC Single Mode Transceiver: OPN-S8F15-120SC2
- Duplex ST Single Mode Transceiver: OPN-S8F15-120ST2
- Duplex FC Single Mode Transceiver: OPN-S8F15-120FC2
- Long-Reach SONET OC-12 / SDH STM-4 (L-4.2) Compliant
 - 1550 nm DFB LD Transmitter
 - Industry Standard 1 x 9 Footprint
 - Single +3.3 V Power Supply
 - Distance up to 120 km
 - RoHS Compliant
 - 0 to 70°C Operating: OPN-S8F15T-120ST2
 - -50 to 85°C Operating: OPN-S8F15T-120ST2I
 - PECL Signal Detection Output: OPN-S8F15-120ST2
 - TTL Signal Detection Output: OPN-S8F15T-120ST2
 - LED Multisourced 1 x 9 Transceiver Interchangeable
 - Wave Solderable
- Class 1 Laser International Safety Standard IEC 60825 Compliant

APPLICATIONS

- ATM 622 Mbps Links
- SONET / SDH Equipment Interconnect
 - Fibre Channel 532 Mbps Links

PRODUCT DESCRIPTION

The OPN-S8F15T-120ST2 series single mode transceiver is a low power, high performance module for bi-directional serial optical data communications such as SONET OC-12 / SDH STM-4. This module is designed for single mode fiber and operates at a nominal wavelength of 1550 nm. The transmitter section uses a multiple quantum well 1550 nm DFB laser and is a class 1 laser compliant according to International Safety Standard IEC 60825. The receiver section uses an integrated InGaAs detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC. A PECL logic interface simplifies interface to external circuitry.

ORDER INFORMATION

P/No.	Bit Rate (Mb/s)	SONET / SDH	Distance (km)	Wavelength (nm)	Voltage (V)	Package	Temp. (°C)	TX Power (dBm)	RX Sens. (dBm)	RoHS Compliant
OPN-S8F15T-120ST2	622		120	1550 DFB	3.3	1X9 SC/ST/FC	0 to 70	5 to 0	-34	Yes
OPN-S8F15T-120ST2I	622		120	1550 DFB	3.3	1X9 SC/ST/FC	-50 to 85	5 to 0	-34	Yes

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Absolute Maximum Ratings					
Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	Tstg	-50	85	°C	
Operating Temperature	Topr	0 -50	70 85	°C	OPN-S8F15T-120ST2 OPN-S8F15T-120ST2I
Soldering Temperature	---		260	°C	10 seconds on leads only
Power Supply Voltage	Vcc	0	3.6	V	
Input Voltage	---	GND	Vcc	V	
Output Current	Iout	0	30	mA	

Recommended Operating Conditions					
Parameter	Symbol	Min	Typ	Max	Units
Power Supply Voltage	Vcc	3.1	3.3	3.5	V
Operating Temperature	Topr	0 -50		70 85	°C / OPN-S8F15T-120ST2 °C / OPN-S8F15T-120ST2I
Data Rate		50	622		Mb/s
Power Supply Current	Icc			260	mA

Transmitter Specifications (0°C < Topr < 70°C, 3.1V < Vcc < 3.5V)						
Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical						
Optical Transmit Power	Po	0	---	5	dBm	1
Output Center Wavelength	λ	1480	1550	1580	nm	
Output Spectrum Width	$\Delta\lambda$	---	---	1	nm	-20 dB Width
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	10	---	---	dB	
Output Eye	Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957					
Optical Rise Time	tr			1.2	ns	10% to 90% Values
Optical Fall Time	tf			1.2	ns	10% to 90% Values
Relative Intensity Noise	RIN			-116	dB/Hz	
Total Jitter	TJ			0.55	ns	2
Electrical						
Data Input Current – Low	IIL	-350			μA	
Data Input Current – High	IiH			350	μA	
Differential Input Voltage	V _{IH} - V _{IL}	300			mV	
Data Input Voltage – Low	V _{IL} - V _{CC}	-2.0		-1.58	V	3
Data Input Voltage -- High	V _{IH} - V _{CC}	-1.1		-0.74	V	3

Notes: 1. Output power is power coupled into a 9/125 μm single mode fiber.

2. Measured with a 2²³-1 PRBS with 72 ones and 72 zeros.

3. These inputs are compatible with 10K, 10KH and 100K ECL and LVPECL inputs.

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Receiver Specifications (0°C < Topr < 70°C, 3.1V < Vcc < 3.5V)						
Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical						
Sensitivity	---	---	---	-34	dBm	1
Maximum Input Power	Pin	-9		---	dBm	
Signal Detect -- Asserted	Pa	---	---	-34	dBm	Transition: low to high
Signal Detect -- Deasserted	Pd	-43	---	---	dBm	Transition: high to low
Signal detect -- Hysteresis		1.0	---		dB	
Wavelength of Operation		1100	---	1600	nm	
Electrical						
Data Output Voltage – Low	V _{OL} - V _{CC}	-2.0		-1.58	V	2
Data Output Voltage – High	V _{OH} - V _{CC}	-1.1		-0.74	V	2
Signal Detect Output Voltage -- Low	V _{OL} - V _{CC}	-2.0		-1.58	V	OPN-S8F15-120ST2
Signal Detect Output Voltage -- High	V _{OH} - V _{CC}	-1.1		-0.74	V	
Signal Detect Output Voltage -- Low	V _{SDL}			0.8	V	OPN-S8F15T-120ST2
Signal Detect Output Voltage -- High	V _{SDH}	2.0			V	

Notes: 1. Minimum sensitivity and saturation levels at BER=1E-10 for a 2²³-1 PRBS with 72 ones and 72 zeros.

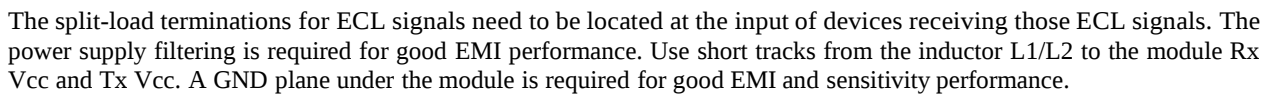
2. These outputs are compatible with 10K, 10KH and 100K ECL and LVPECL outputs.

CONNECTION DIAGRAM

Receiver Signal Ground	1 (Rx GND)		○
Receiver Data Out	2 (RD+)		N/C
Receiver Data Out Bar	3 (RD-)		
Signal Detect	4 (SD)		
Receiver Power Supply	5 (Rx Vcc)	TOP VIEW	
Transmitter Power Supply	6 (Tx Vcc)		
Transmitter Data In Bar	7 (TD-)		
Transmitter Data In	8 (TD+)		N/C
Transmitter Signal Ground	9 (Tx GND)		○

PIN	Symbol	Notes
1	Rx GND	Directly connect this pin to the receiver ground plane
2	RD+	See recommended circuit schematic
3	RD-	See recommended circuit schematic
4	SD	Active high on this indicates a received optical signal
5	Rx Vcc	+3.3V dc power for the receiver section
6	Tx Vcc	+3.3V dc power for the transmitter section
7	TD-	See recommended circuit schematic
8	TD+	See recommended circuit schematic
9	Tx GND	Directly connect this pin to the transmitter ground plane

RECOMMENDED CIRCUIT SCHEMATIC

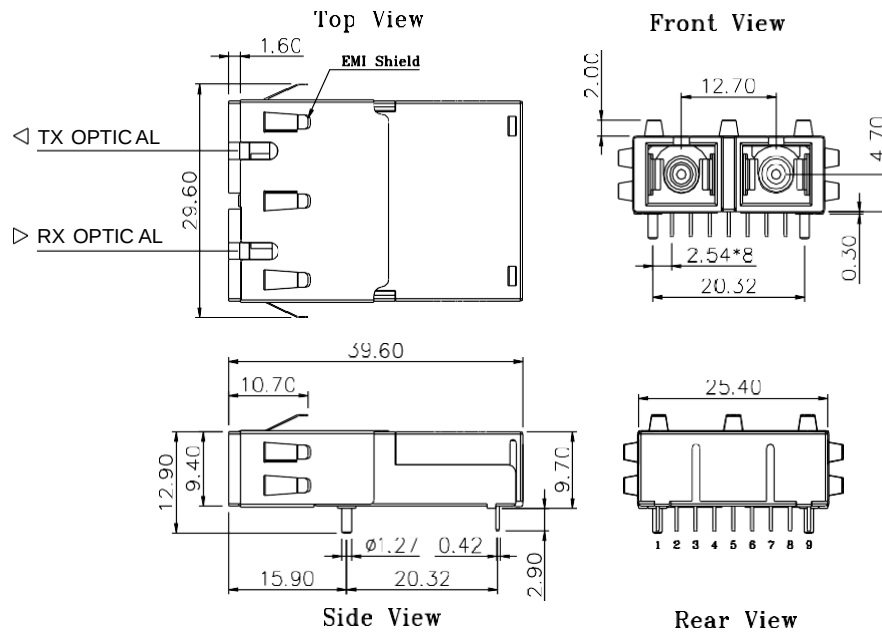


Units in mm

Optowan Technology Co., Ltd www.optowan.ru OPN-S8F15T-120ST2

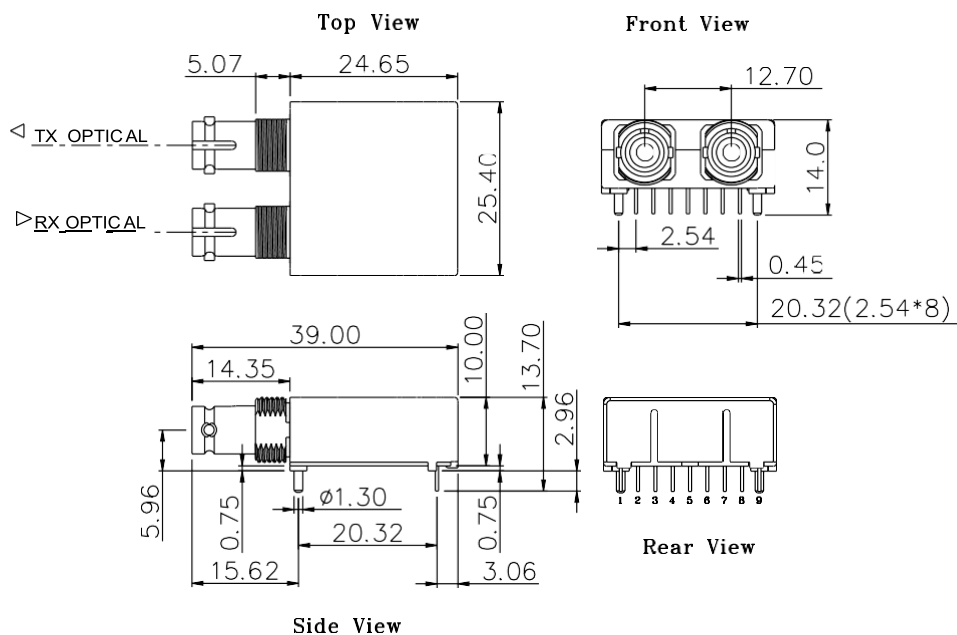
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2) SC Type With Extended Shielding



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OPN-S8F15-120SC2I-EMG / OPN-S8F15T-120SC2I-EMG

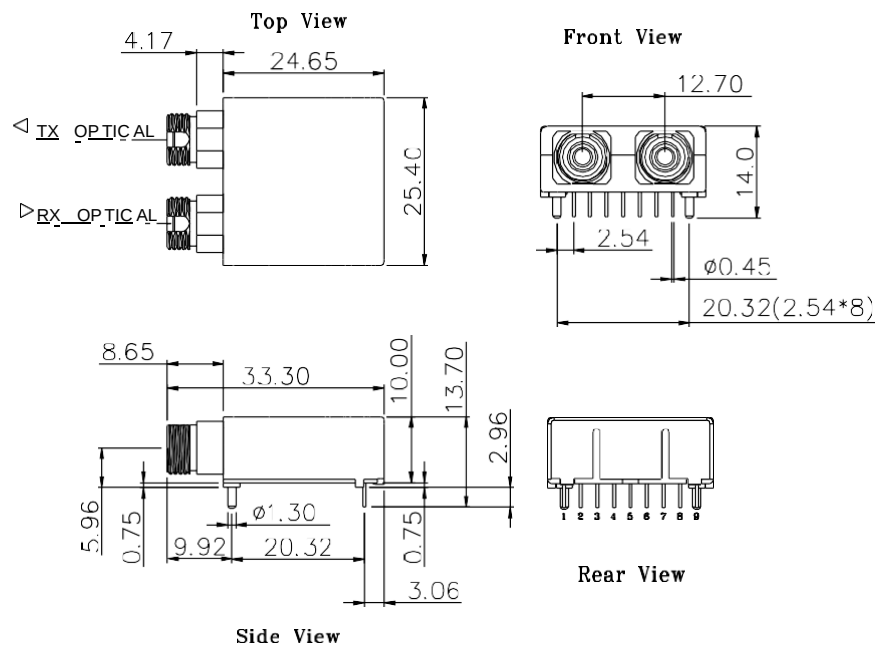
3) ST Type



OPN-S8F15-120ST2 / OPN-S8F15T-120ST2 /
OPN-S8F15-120ST2I / OPN-S8F15T-120ST2I

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4) FC Type



OPN-S8F15-120FC2 / OPN-S8F15T-120FC2 /
OPN-S8F15-120FC2I / OPN-S8F15T-120FC2I

Note: Specifications subject to change without notice.