

OPTOELECTRONIC COMPONENTS

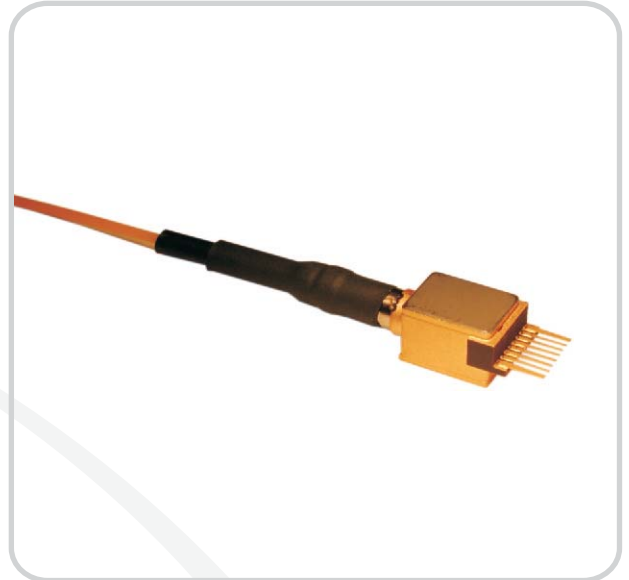
Pigtailed XM D-compatible 10Gbps
TOSA with temperature controlled EML



Opterna's NORTHLIGHT SERIES optoelectronic sub-components are renowned for its quality and have been proven through decades of optical module and semiconductor device design and manufacturing.

The TOSA meets the requirements of the XMD MSA. It consists of a high speed electro absorption modulator monolithically integrated with a DFB laser in a hermetic package, which also includes an isolator, a monitor photo diode and a micro thermoelectric cooler. The TOSA, which comes with a connectorized single-mode fiber pigtail and is equipped with a flexible printed circuit (FPC) for electrical interconnections, is available in wavelengths covering the full C-band on ITU-T 100GHz channel spacing.

The products are designed and manufactured to meet the requirements stated in applicable Telcordia standards.



Features & Advantage

- ❑ XMD TOSA Type 2
- ❑ EA modulated DFB laser
- ❑ High efficiency integrated TEC
- ❑ > 0dBm output power
- ❑ 40 & 80km reach
- ❑ Up to 12.5Gbps data rate
- ❑ Very low power dissipation
- ❑ Full C-band ITU-T on 100GHz grid
- ❑ Singlemode fiber pigtail
- ❑ FPC electrical interconnect

Applications

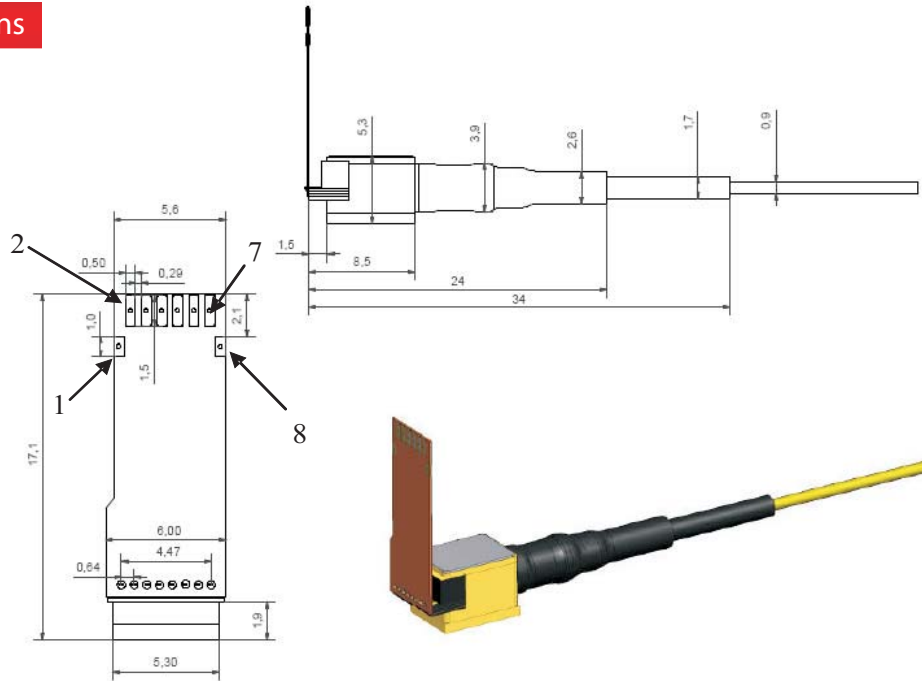
- ❑ Transceivers and Transponders for high speed data and telecom applications
- ❑ Long haul SDH STM-64
- ❑ Intermediate and long reach SONET OC-192
- ❑ 10GbE
- ❑ TDM/ DWDM

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Size & Dimensions



Pigtail length, case to ferrule tip: 1000 +/- 50mm.

Mounting clip available upon request.

[All dimensions in mm]

Specifications

MAXIMUM RATINGS

Parameter	Unit	Min	Max
Laser diode	reverse voltage	V	2
	forward current	mA	150
EA modulator voltage	V	-4	1
Monitor diode	reverse voltage	V	10
	current	mA	2
TEC	voltage	V	-2.1
	current	A	-2.0
Storage temperature	C	-40	85

OPERATING CONDITIONS

Parameter	Unit	Min	Typ.	Max
Laser current	mA	50		120
EA modulation	Vpp			2.5
On-state EA voltage	V	-1		0
Chip temperature	C	20		35
Case temperature	C	-5		75

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OPTICAL CHARACTERISTICS

At operating conditions:

Parameter	Conditions	Unit	Min	Typ.	Max
Wavelength	ITU-T 100GHz grid	nm	1529.55		1563.05
Output power	Modulated	dBm	0		
Tracking error		dB	-0.5		0.5
Extinction ratio		dB	10		
Dispersion penalty *	40km: 800ps/nm	dB			2
	80km: 1600ps/nm	dB			2
Optical return loss		dB	30		

* 9.95328 Gbps NRZ, PRBS 2²³-1, BER 10⁻¹⁰

ELECTRICAL CHARACTERISTICS

At operating conditions:

Parameter	Conditions	Unit	Min	Typ	Max
Input impedance		?		50	
Laser voltage		V			2
Small signal bandwidth, S ₂₁	Modulator = -1V	GHz	9		
Electrical reflection, S ₁₁	To 9GHz	dB		-10	
SMSR		dB	35		
Monitor current		mA	0.2		2
TEC power dissipation		W			1.4
Thermistor	25°C	Differential < 8 Ghz	K?	9.8	10.2
			K	3900	4000

ELECTRICAL CONNECTIONS

Pad	Description
1	Thermistor
2	Laser Bias
3	Monitor Anode
4	RF Ground
5	RF Signal
6	RF Ground
7	Thermoelectric Cooler +
8	Thermoelectric Cooler -

HANDLING INFORMATION

- ⊗ The product contains electrostatic sensitive components. Appropriate precaution must be taken when handling to avoid ESD damage.
- ⊗ Product contains hazardous GaAs compounds and must be disposed of with care.

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Ordering Information

Pigtailed XMD EML TOSA for board mount, with flexible printed circuit electrical interconnect.

Part number	Description
PGT20414/0aSR1	10G 80km TDM TOSA wavelength between 1530 and 1565nm.
PGT20414/0axxxR1	10G 80km DWDM TOSA
PGT20415/0aSR1	10G 40km TDM TOSA wavelength between 1530 and 1565nm.
PGT20415/0axxxR1	10G 40km DWDM TOSA
Code	Option
a = 3	SC-connector
a = 4	LC-connector
xxx e.g. 430	Product number suffix which denotes the wavelength

Product number suffix versus Wavelength and Frequency

ITU-T wavelength (nm)	Product number suffix "xx x"	Frequency (THz)	ITU-T wavelength (nm)	Product number suffix "xxx"	Frequency (THz)
1529.55	600	196.0	1546.92	380	193.8
1530.33	590	195.9	1547.72	370	193.7
1531.12	580	195.8	1548.51	360	193.6
1531.90	570	195.7	1549.32	350	193.5
1532.68	560	195.6	1550.12	340	193.4
1533.47	550	195.5	1550.92	330	193.3
1534.25	540	195.4	1551.72	320	193.2
1535.04	530	195.3	1552.52	310	193.1
1535.82	520	195.2	1553.33	300	193.0
1536.61	510	195.1	1554.13	290	192.9
1537.40	500	195.0	1554.94	280	192.8
1538.19	490	194.9	1555.75	270	192.7
1538.98	480	194.8	1556.55	260	192.6
1539.77	470	194.7	1557.36	250	192.5
1540.56	460	194.6	1558.17	240	192.4
1541.35	450	194.5	1558.98	230	192.3
1542.14	440	194.4	1559.79	220	192.2
1542.94	430	194.3	1560.61	210	192.1
1543.73	420	194.2	1561.42	200	192.0
1544.53	410	194.1	1562.23	190	191.9
1545.32	400	194.0	1563.05	180	191.8
1546.12	390	193.9			

The wavelength grid is according to ITU-T. Any change in the ITU-T document may result in the corresponding changes in this specification.