



## XVDxx3-30LY

CWDM 3 Gbps Medium Power  
SM Video DDM SFP Transceiver

### Applications

- SMPTE 297-2006 Compliant Electrical-to-Optical Interfaces
- High-density Video Routers

### Laser Safety

This single mode transceiver is a Class 1 laser product. It complies with IEC-60825 and FDA 21 CFR 1040.10 and 1040.11. The transceiver must be operated within the specified temperature and voltage limits. The optical ports of the module shall be terminated with an optical connector or with a dust plug.

### Features

- ST2082, ST2081, ST424, ST292, ST259 Compliant
- SMPTE 297-2006 Compatible
- Hot-Pluggable SFP Footprint LC Optical Transceiver
- Small Form-Factor Pluggable (SFP) MSA compatible
- Speed from 50 Mbps to 3 Gbps
- Power Budget > 15 dB
- Support Video Pathological Patterns for SD-SDI, HD-SDI and 3G-SDI
- 18-CH CWDM: 1270 nm to 1610 nm
- SFF-8472 Digital Diagnostic Function
- Single +3.3 V Power Supply
- Hot Pluggable
- Class 1 Laser International Safety Standard IEC-60825 Compliant
- Operating Temperature 0 to 70°C
- RoHS-6 Compliant

### Description

The XVDxx3-30LY is a single mode transceiver module designed to transmit/receive optical serial digital signals as defined in SMPTE 297-2006. It supports from 50 Mbps to 3 Gbps and is specifically designed for transmitted the SMPTE 259M, SMPTE 344M, SMPTE 292M and SMPTE 424M SDI pathological patterns. It has the SFP 20-pin connector to allow hot plug capability. Digital diagnostic functions are available via an I<sup>2</sup>C. This module is designed for single mode fiber and operates at a nominal wavelength of CWDM wavelength. There are eighteen center wavelengths available from 1270 nm to 1610 nm, with each step 20 nm. A guaranteed minimum optical link budget of 15 dB is offered. The transmitter section uses a multiple quantum well CWDM 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.

### Absolute Maximum Ratings

Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	Tstg	-40	85	°C	
Operating Case Temperature	Tc	0	70	°C	
Power Supply Voltage	Vcc	0	4	V	
ESD Tolerance on all pins			1	KV HBM	
Relative Humidity	---	5	95	% RH	non-condensing

### Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units/Notes
Power Supply Voltage	Vcc	3.13	3.3	3.47	V
Operating Case Temperature	Tc	0		70	°C
Baud Rate		50		3000	Mb/s
Power Supply Current	Icc		200	300	mA

### Transmitter Characteristics (0°C < Tc < 70°C, 3.13V < Vcc < 3.47V)

Parameter	Symbol	Min	Typ	Max	Units	Notes
<b>Optical</b>						
Optical Transmit Power	Po	-5	-2	0	dBm	1
Output Center Wavelength	λ	λc -5.5	λc	λc +7.5	nm	2
Output Spectrum Width	Δλ	---		1	nm	-20 dB width
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	5	7.5		dB	
Relative Intensity Noise	RIN			-120	dB/Hz	
Optical Rise Time/Fall Time	tr/tf			135	ps	3, SMPTE 424M
				270	ps	3, SMPTE 292M
				800	ps	3, SMPTE 344M
				1.5	ns	3, SMPTE 259M
<b>Electrical</b>						
Differential Input Voltage	V <sub>IH</sub> - V <sub>IL</sub>	200		1200	mVp-p	AC coupled input
Disable Input Voltage -- Low	V <sub>TDIS,L</sub>	0		0.8	V	TX Output Enabled
Disable Input Voltage -- High	V <sub>TDIS,H</sub>	2.0		Vcc+0.3	V	TX Output Disabled
SCL, SDA	V <sub>OH</sub>	2.5		Vcc+0.3	V	
	V <sub>OL</sub>	0		0.5	V	

## Notes

1. Output power is power coupled into a 9/125 mm single mode fiber.
2. ITU-T G.694.2 CWDM wavelength from 1270 nm to 1610 nm, each step 20 nm.
3. 20% to 80%, unfiltered.

Receiver Characteristics (0°C < T<sub>c</sub> < 70°C, 3.13V < V<sub>cc</sub> < 3.47V)

Parameter	Symbol	Min	Typ	Max	Units	Notes
<b>Optical</b>						
Wavelength of Operation		1260	---	1620	nm	
Sensitivity for SMPTE 424M 2.97 Gb/s	Sen	0	---	-18	dBm	Pathological
		0		-20	dBm	PRBS 2 <sup>23</sup> -1, BER=1E-12
Sensitivity for SMPTE 292M 1.485 Gb/s	Sen	0	---	-20	dBm	Pathological
		0		-21	dBm	PRBS 2 <sup>23</sup> -1, BER=1E-12
Signal Detect -- Asserted	Pa	---	---	-20	dBm	Transition: low to high
Signal Detect -- Deasserted	Pd	-29	---	---	dBm	Transition: high to low
Signal detect -- Hysteresis		1		6	dB	
Optical Return Loss			-27		dB	
<b>Electrical</b>						
CML Output (Differential)		550	660	850	mVp-p	AC coupled output
Optical Rise Time / Fall Time	tr/tf			135	ps	4, SMPTE 424M
				270	ps	4, SMPTE 292M
				800	ps	4, SMPTE 344M
				1.5	ns	4, SMPTE 259M
Output LOS Voltage -- Low	V <sub>OL</sub>	0		0.5	V	IOL=-1.6mA, 1 TTL unit load
Output LOS Voltage -- High	V <sub>OH</sub>	2.5		V <sub>cc</sub> +0.3	V	IOH=40mA, 1 TTL unit load
SCL, SDA	V <sub>OH</sub>	2.5		V <sub>cc</sub> +0.3	V	
	V <sub>OL</sub>	0		0.5	V	

## Notes

4. 20% to 80%, unfiltered.

### Ordering information

Part number	Product Description
XVDxx3-30LY	CWDM 3 Gbps SM Video Transceiver, 30 km, LC, DDMI, 0°C ~ 70°C; xx codes: 27 – 1270 nm, 29 – 1290 nm, 31 – 1310 nm, 33 – 1330 nm, 35 – 1350 nm, 37 – 1370 nm, 39 – 1390 nm, 41 – 1410 nm, 43 – 1430 nm, 45 – 1450 nm, 47 – 1470 nm, 49 – 1490 nm, 51 – 1510 nm, 53 – 1530 nm, 55 – 1550 nm, 57 – 1570 nm, 59 – 1590 nm, 61 – 1610 nm

**Notes**

<sup>1</sup> For accurate order specification please contact XenOpt reseller before placing an order. The content of this document is subject to change without notice.

These modules are available in multiple customized compatible versions. **Please specify any compatibility requirements at time of ordering.** Standard MSA compatible pluggable components may not work or some function of these components may not be available in devices that require customized compatible devices. Pluggable components compatible with one type of communications equipment may not work in other type of communications equipment.

**Important Notice**

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