

## Features

- ◆ Compliant with the 300 pin SFF MSA
- ◆ Support multi-rate from 9.953Gb/s to 11.3Gbps
- ◆ Full C-band integrated tunable laser and MZ modulator
- ◆ High sensitivity APD receiver
- ◆ 50GHz channel spacing
- ◆ 1600ps/nm chromatic dispersion
- ◆ 16-bit parallel 622.08Mbps LVDS data interface
- ◆ Compliant I2C MSA (Edition 4.0) interface for monitoring/control
- ◆ Built-in SBS dither
- ◆ Optional Optical Tx Trace ID (Tx\_trace)
- ◆ Supply voltage: +5.0V, +3.3V, and -5.2V
- ◆ Compact size (2"x3"x0.53") or (2"x3"x0.45")
- ◆ Operating case temperature: -5°C to +70°C
- ◆ Power Consumption: 6W (typ), 9W (max)

## Applications

- ◆ Metro/Regional/Long haul DWDM system
- ◆ SONET/SDH, Ethernet and Fiber Channel system at standard and FEC rates
- ◆ Sparing and inventory reduction
- ◆ Optical Transport Network (OTN) system



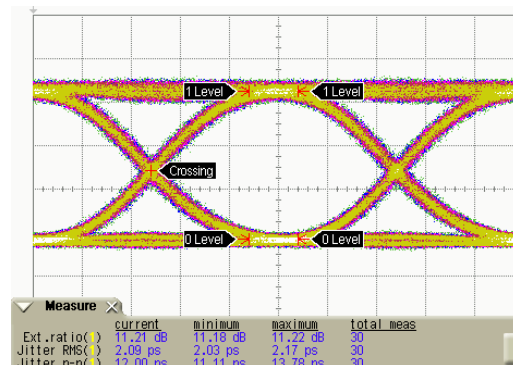
## Description

TPT-MR-08-CCDL5A C-band tunable 300 pin SFF transponder is designed for DWDM system applications with dispersion window from 0 to 1600ps/nm. It provides multi-rate capability from 9.95Gbps to 11.3Gbps.

The integrated C band tunable laser and MZ modulator transmitter converts the electrical data into a 10Gbit/s optical signal. The low noise APD receiver converts the incoming optical signal back to electrical data.

The MUX section multiplexes 16 parallel 622Mb/s electrical channels into a 10Gb/s serial data stream and sends it to the transmitter. The DEMUX section demultiplexes the 10Gb/s electrical data stream into 16 parallel 622Mb/s electrical channels. The parallel data is sent out to and receive from the 300-pin MSA (Multi Source Agreement) compliant connector.

The transmitter and receiver reference clock rates are selectable: divide by either 16 or 64.



## Optical Interface Characteristics

**Table 1 - Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
<b>Transmitter</b>						
Wavelength Range	$\lambda_C$ ( $f_C$ )	1528.77 (196.1)	-	1563.86 (191.7)	nm THz	1
Output Power	$P_{OUT}$	3	-	6	dBm	
Output Power Stability	$\Delta P$	-0.5	-	0.5	dB	
Output Power at laser disable	$P_{OUT-OFF}$			-45	dBm	
Channel Spacing	CS	50	-	-	GHz	
Wavelength Tuning Accuracy	$\Delta\lambda$	-20		20	pm	
Wavelength Stability	$\lambda_{drift}$	-20		20	pm	
Tuning Time	$T_{tuning}$			30	s	
Side Mode Suppression Ratio	SMSR	45			dB	
Chirp ( $\alpha$ )	$\alpha$	-0.6	-0.7	-0.8		
Extinction Ratio	ER	10.5			dB	
Output Optical Eye	Compliant with Telcordia GR-253-CORE and ITU-T G.691					
Jitter Generation	20kHz~80MHz			0.3	UIpp	2
	4MHz~80MHz			0.1	UIpp	2
<b>Receiver</b>						
Center Wavelength	$\lambda_C$	1528		1565	nm	3
Receiver Sensitivity	$P_{in\_L}$		-26	-24	dBm	4
Receiver Overload	$P_{in\_H}$	-5			dBm	4
Optical Path Penalty	OPP			2	dB	
Chromatic Dispersion Tolerance	CDT	0		1600	ps/nm	
Reflection of Receiver				-27	dB	
Jitter Tolerance	Compliant with Telcordia GR-253 and ITU-T G.825					
Jitter Transfer	Compliant with Telcordia GR-253 and ITU-T G.825					
<b>Mechanical Housing</b>						
Fiber Pigtail Length	Fiber <sub>L</sub>	1000		1200	mm	
Module Dimension	LxWxH	76.07x55.75x13.46			mm	5
		2.995x2.195x0.53			inch	5

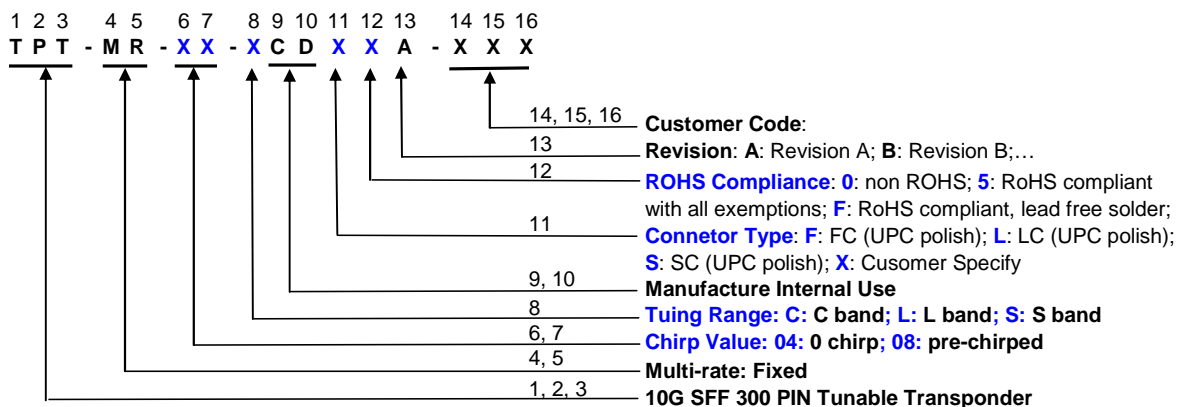
**Notes:**

- 89 channel tuning range is the standard spec. Wider tuning range is available upon special request
- Measured with a NRZ PRBS  $2^{31}-1$  test pattern @ 9.95328Gbps.
- The Rx can accept a wider input wavelength range from 1290 to 1605nm with some performance degradation.
- Measured with a NRZ PRBS  $2^{31}-1$  test pattern @ 9.95328Gbps, BER  $\leq 1 \times 10^{-12}$ , Back to back.
- Thinner thickness of 0.449" or 11.40mm housing is also available.

## Ordering Information

Example:

Part No.	Product Description
TPT-MR-08-CCDL5A-XXX	General C-band Tunable, 9.95~11.3Gbps, pre-chirped optical transmitter, 10G SFF 300pin, LC connector, -5°C~+70°C



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