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10G HD CWDM

Key Features

- 10Gbps
- Hot Pluggable
- Customized Bidirectional CWDM wavelength Tx(DFB-LD) / Rx(PIN/PD)
- Compliant with SFP MSA
- Operating case temperature: -40℃ to 85℃
- TEC wavelength stabilization

Applications

- 10G Ethernet
- CPRI
- Fibre Channel
- Digital Repeater and Base Station

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General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Absolute Maximum Ratings						
Storage Temperature	T_{STO}	- 40		100	℃	Ambient temperature
Ambient Humidity	H_{op}	5		95	%	w/o condensation
Power Supply Voltage	V_{CC}			3.8	V	For electrical power interface
Recommended Operating Conditions						
Power Supply Voltage	V_{CC}	+3.125	+3.3	+3.465	V	
Power Supply Current	I_{CC}	-	-	545	mA	Cooled Type
Power Supply Nose Tolerance (10Hz ~10MHz)	-	-	-	66	mVp-p	
Operating Temperature	T_C	-40	-	+85	C	Case with Airflow

Fibre Link Distances

Centre Wavelength	Max Fibre Distance1	Fibre Loss dB/KM2	Fibre Type
1271 ~ 1331	Up to 40KM2	0.5	9/125um OS2 SMF

1 Estimate, does not include overhead for passive mux, connector or splice loss
2 Fibre loss assumptions do not account for local fibre conditions.

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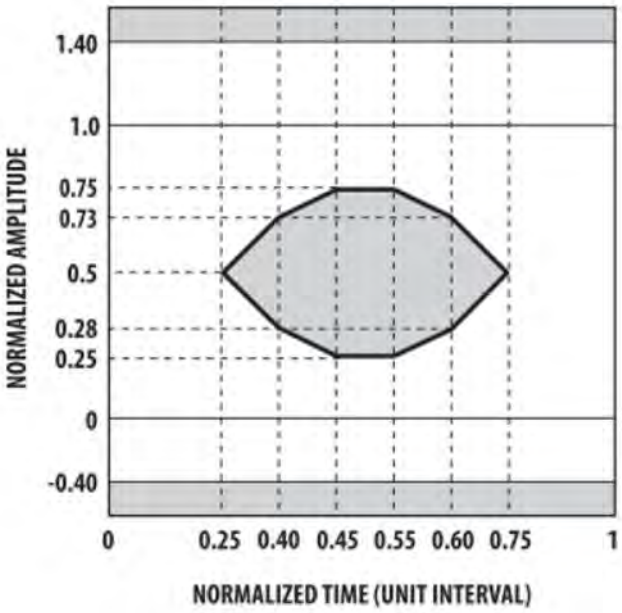
Optical Characteristics

Transmitter							
Parameter		**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Remarks**
Output Optical Power		P_{opt}	-2.0	-	+2.0	dBm	
Transmitter Disable(off) Power		P_{off}	-		-35	dBm	@Tx_Disable is High
Optical Centre Wavelength	Downstream	λ_p	λc-6.5		λc+1.5	nm	CWDM, DFB-LC, Note1
	Upstream		λc+2.0		λc+6.5		
Optical Modulation Amplitude		P_{OMA}	-2.6	-	-	dBm	-
Spectral Width (RMS)		Δλ			1	nm	@-20dB
Side Mode Suppression Ratio		SMSR	30		-	dB	
RIN_{12} OMA		RIN			-128	dB/Hz	Note 2
Dispersion Penalty		DP	-	-	3.2	dB	Note 2
Extinction Ratio		ER	4.0		-	dB	Note 2 @PRBS27-1 figure 1
Eye Pattern Mask		IEEE -02.3/2008 Section 3 Figure 1					
Receiver							
Parameter		**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Remarks**
Optical Sensitivity		S	-		-19.0	dBm	$PRBS2^7$-1, $BER1x10^{-12}$ Source ER=8.2[dB]
Optical Overload		OL	-5.0		-	dBm	
Optical Centre Wavelength	Downstream	λo	λc+2.0		λc+6.5	nm	Note 1
	Upstream		λc-6.5		λc-1.5		
Loss of Signal-Asserted		P_A	-35		-	dBm	Note 4
Loss of Signal-Deasserted		P_D	-	-	- 19	dBm	Note 4
Loss of Signal-Hysteresis		P_A - P_D	0.5	2.0	5.0	dB	
Receiver Reflectance		-	-	-	-27	dB	@λo
Sensitivity (OMA) at 10.3125Gb/s		S_{OMA}			-19.6	dB	-

Note 1) λc = 1271,1291,1311,1331nm



Electrical Characteristics

Low Speed Electrical Characteristics

Parameters	Symbol	Min.	Typical	Max.	Unit	Notes
Tx Fault, Rx Los	VOL	-0.3	-	0.4	V	At 0.7mA
	IOH	-50	-	37.5	µA	Note 1
Tx Disable	VIL	-0.3	-	0.8	V	Note 2
	VIH	2.0	-	VccT + 0.3	V	Note 2

1. Measured with a 4.7kΩ load pull up to Vcc_Host.
2. Tx Disable has an internal 4.7kΩ to 10kΩ pull up to VccT

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High Speed Electrical Characteristics

Parameters	Symbol	Min.	Typical	Max.	Unit	Notes
Tx Input Differential Swing Voltage	VI	190	-	700	mVp-p	-
AC Common Mode Voltage Tolerance	-	15	-	-	mV	Note 1
Differential Input S-parameter (Note 1)	SDD11	-	-	Note 2	dB	0.01 to 4.1 GHz
		-	-	Note 3	dB	4.1 to 11.1 GHz
Reflected Differential to Common Mode Conversion	SCD11	-	-	-10	dB	0.01 to 11.1GHz
Rx Output Differential Swing Voltage	Vo	300	-	850	mVp-p	-
Termination Mismatch at 1 MHz	ΔZM	-	-	5	%	-
Output AC Common Mode Voltage	-	-	-	7.5	mV	Note 4
Differential Output S-parameter	SDD22	-	-	Note 5	dB	0.01 to 4.1 GHz
		-	-	Note 6	dB	4.1 to 11.1 GHz
Common Mode Output Reflection Coefficient	SCC22	-	-	Note 7	dB	0.01 to 2.5 GHz
		-	-	-3	dB	2.5 to 11.1 GHz
Rx Output Rise and Fall Time (20% to 80%)	Tr, Tf	28	-	-	ps	-
Rx Output Total Jitter	TJ	-	-	0.70	Ulp-p	-
Rx Output Deterministic Jitter	DJ	-	-	0.42	Ulp-p	-
Receiver Output Eye Mask	-	-	-	-	-	Figure 6

Notes

1. Rising edge of Tx_Disable to fall of output signal below 10% of nominal.
2. Falling edge of Tx_Disable to rise of output signal above 90% of nominal. This only applies in normal operation, not during start up or fault recovery.
3. Time from power on or falling edge of TX_DISABLE to when the modulated optical output rises above 90% of nominal and the Two-wire interface is available.
4. From occurrence of loss of signal to assertion of Rx_LOS
5. From occurrence of presence of signal to negation of Rx_LOS
6. From occurrence of fault to assertion of Tx_Fault
7. Time Tx_Disable must be held high to reset Tx_Fault

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Industry Compliance

MSA	INF-8074i, SFF-8472
Compliance	IEC 6100-4-2 CE: Directive 89/336/EEC FCC: Part 15 Class B Class 1 Laser Safety Compliant RoHS: 2011/65/EU

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