spectrum Terrabit SFP Series

GLC-S80-15-CM

Single-Mode 1550nm 1.25Gbps FC/GBE
Duplex SFP Transceiver RoHS6 Compliant

Features

- Operating Data Rate up to 1.25Gbps
- 1550nm DFB Laser Transmitter
- 40km with 9/125 µm SMF
  60km with 9/125 µm SMF
  80km with 9/125 µm SMF
  100km with 9/125 µm SMF
  120km with 9/125 µm SMF
  160km with 9/125 µm SMF
- Single 3.3V Power Supply and LVTTL Control Logic Interface
- Hot-Pluggable SFP Footprint Duplex LC Connector Interface
- Class 1 FDA and IEC60825-1 Laser Safety Compliant
- Operating Temperature
  Standard: 0˚C ~+70˚C
  Industrial: -40˚C ~+85˚C
- Compliant with MSA SFP Specification
- Compliant with SFF-8472

Applications

- Gigabit Ethernet Switches and Routers
- Fiber Channel Switch Infrastructure
- Other Optical Links

Specification

Table 1: Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Storage Temperature	Ts	-40	+85	℃
Supply Voltage	Vcc	-0.5	3.6	V
Operating Relative Humidity		-	95	%

*Exceeding any one of these values may destroy the device immediately.

Table 2: Recommended Operating Conditions

Parameter		Symbol		Min	Typical	Max	Unit
Operating Temperature		TA	TBN-1512-XX	0	-	+70	℃
			TBN-1512-X-I	-40	-	+85	
Power Supply Voltage		Vcc		3.15	3.3	3.45	V
Power Supply Current		Icc		-	-	300	mA
Date Rate	GBE			-	1.25	-	Gbps
	FC				1.063		

Table 3: Performance Specifications - Electrical

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter						
LVPECL Inputs(Differential)	Vin	500		2400	mVpp	AC coupled inputs*(note4)
Input Impedance	Zin	85	100	115	ohm	Rin > 100

(Differential)							kohm @ DC
Tx_Disable	Disable		2		V_{CC}	V	
	Enable		0		0.8		
Tx_FAULT	Fault		2		V_{CC}+0.3	V	
	Normal		0		0.5		
Receiver							
LVPECL Outputs (Differential)		V_{out}	370		2000	mVpp	AC coupled outputs*(note5)
Output Impedance (Differential)		Z_{out}	85	100	115	ohms	
RX_LOS	LOS		2		Vcc+0.3	V	
	Normal		0		0.8	V	
MOD_DEF (2:0)		VoH	2.5			V	With Serial ID
		VoL	0		0.5	V	

Table 4: Optical and Electrical Characteristics

(1310nm DFB and PIN, 40km)

Parameter	Symbol	Min	Typ	Max	Unit
9µm Core Diameter SMF	L		40		km
Data Rate			1.063/1.25		Gbps
Transmitter					
Center Wavelength	λc	1500	1550	1580	nm
Spectral Width (RMS)	Δλ			1	nm
Average Output Power*(note5)	P_{out}	-5		0	dBm
Side Mode Suppression Ratio	SMSR	30			dB
Extinction Ratio*(note8)	ER	9			dB
Rise/Fall Time(20%~ 80%)	tr/tf			0.26	ns
Total Jitter	TJ			0.43	UI
Output Optical Eye*(note8)	Compliant with IEEE 802.3ah-2004*(note10)				
TX_Disable Assert Time	t_off			10	us
Pout@TX Disable Asserted	Pout			-45	dBm
Receiver					
Center Wavelength	λc	1260		1600	nm
Receiver Sensitivity*(note7)	Pmin			-24	dBm
Receiver Overload	Pmax	-3			dBm
Return Loss		12			dB
Optical Path Penalty*(note8)				1	dB
LOS De-Assert	LOSD			-25	dBm
LOS Assert	LOSA	-42			dBm
LOS Hysteresis*(note8)		0.5			dB

(1310nm DFB and PIN, 60km)

Parameter	Symbol	Min	Typ	Max	Unit
9µm Core Diameter SMF	L		60		km
Data Rate			1.063/1.25		Gbps
Transmitter					
Center Wavelength	λc	1500	1550	1580	nm
Spectral Width (RMS)	Δλ			1	nm
Average Output Power*(note5)	P_{out}	-2		+3	dBm
Side Mode Suppression Ratio	SMSR	30			dB
Extinction Ratio*(note8)	ER	9			dB
Rise/Fall Time(20%~ 80%)	tr/tf			0.26	ns
Total Jitter	TJ			0.43	UI
Output Optical Eye*(note8)	Compliant with IEEE 802.3ah-2004*(note10)				
TX_Disable Assert Time	t_off			10	us
Pout@TX Disable Asserted	Pout			-45	dBm

Receiver					
Center Wavelength	λc	1260		1600	nm
Receiver Sensitivity*(note7)	Pmin			-24	dBm
Receiver Overload	Pmax	-3			dBm
Return Loss		12			dB
Optical Path Penalty*(note8)				1	dB
LOS De-Assert	LOSD			-25	dBm
LOS Assert	LOSA	-42			dBm
LOS Hysteresis*(note9)		0.5			dB

(1310nm DFB and PIN, 80km)

Parameter	Symbol	Min	Typ	Max	Unit
9μm Core Diameter SMF	L		40		km
Data Rate			1.063/1.25		Gbps
Transmitter					
Center Wavelength	λc	1500	1550	1580	nm
Spectral Width (RMS)	Δλ			1	nm
Average Output Power*(note5)	P_{out}	0		5	dBm
Side Mode Suppression Ratio	SMSR	30			dB
Extinction Ratio*(note8)	ER	9			dB
Rise/Fall Time(20%~ 80%)	tr/tf			0.26	ns
Total Jitter	TJ			0.43	UI
Output Optical Eye*(note8)	Compliant with IEEE 802.3ah-2004*(note10)				
TX_Disable Assert Time	t_off			10	us
Pout@TX Disable Asserted	Pout			-45	dBm
Receiver					
Center Wavelength	λc	1260		1600	nm
Receiver Sensitivity*(note7)	Pmin			-24	dBm
Receiver Overload	Pmax	-3			dBm
Return Loss		12			dB
Optical Path Penalty*(note8)				1	dB
LOS De-Assert	LOSD			-25	dBm
LOS Assert	LOSA	-42			dBm
LOS Hysteresis*(note9)		0.5			dB

(1310nm DFB and PIN, 100km)

Parameter	Symbol	Min	Typ	Max	Unit
9μm Core Diameter SMF	L		40		km
Data Rate			1.063/1.25		Gbps
Transmitter					
Center Wavelength	λc	1500	1550	1580	nm
Spectral Width (RMS)	Δλ			1	nm
Average Output Power*(note5)	P_{out}	-5		0	dBm
Side Mode Suppression Ratio	SMSR	30			dB
Extinction Ratio*(note8)	ER	9			dB
Rise/Fall Time(20%~ 80%)	tr/tf			0.26	ns
Total Jitter	TJ			0.43	UI
Output Optical Eye*(note8)	Compliant with IEEE 802.3ah-2004*(note10)				
TX_Disable Assert Time	t_off			10	us
Pout@TX Disable Asserted	Pout			-45	dBm
Receiver					
Center Wavelength	λc	1260		1600	nm
Receiver Sensitivity*(note7)	Pmin			-28	dBm
Receiver Overload	Pmax	-3			dBm
Return Loss		12			dB
Optical Path Penalty*(note8)				1	dB

LOS De-Assert	LOSD			-29	dBm
LOS Assert	LOSA	-42			dBm
LOS Hysteresis*(note9)		0.5			dB

(1310nm DFB and APD, 120km)

Parameter	Symbol	Min	Typ	Max	Unit
9μm Core Diameter SMF	L		120		km
Data Rate			1.063/1.25		Gbps
Transmitter					
Center Wavelength	λc	1500	1550	1580	nm
Spectral Width (RMS)	Δλ			1	nm
Average Output Power*(note5)	P_{out}	0		5	dBm
Side Mode Suppression Ratio	SMSR	30			dB
Extinction Ratio*(note8)	ER	9			dB
Rise/Fall Time(20%~ 80%)	tr/tf			0.26	ns
Total Jitter	TJ			0.43	UI
Output Optical Eye*(note8)	Compliant with IEEE 802.3ah-2004*(note10)				
TX_Disable Assert Time	t_off			10	us
Pout@TX Disable Asserted	Pout			-45	dBm
Receiver					
Center Wavelength	λc	1260		1600	nm
Receiver Sensitivity*(note7)	Pmin			-32	dBm
Receiver Overload	Pmax	-10			dBm
Return Loss		12			dB
Optical Path Penalty*(note8)				1	dB
LOS De-Assert	LOSD			-33	dBm
LOS Assert	LOSA	-42			dBm
LOS Hysteresis*(note8)		0.5			dB

(1310nm DFB and APD, 160km)

Parameter	Symbol	Min	Typ	Max	Unit
9μm Core Diameter SMF	L		160		km
Data Rate			1.063/1.25		Gbps
Transmitter					
Center Wavelength	λc	1500	1550	1580	nm
Spectral Width (RMS)	Δλ			1	nm
Average Output Power*(note5)	P_{out}	0		5	dBm
Side Mode Suppression Ratio	SMSR	30			dB
Extinction Ratio*(note8)	ER	9			dB
Rise/Fall Time(20%~ 80%)	tr/tf			0.26	ns
Total Jitter	TJ			0.43	UI
Output Optical Eye*(note8)	Compliant with IEEE 802.3ah-2004*(note10)				
TX_Disable Assert Time	t_off			10	us
Pout@TX Disable Asserted	Pout			-45	dBm
Receiver					
Center Wavelength	λc	1260		1600	nm
Receiver Sensitivity*(note7)	Pmin			-37	dBm
Receiver Overload	Pmax	-10			dBm
Return Loss		12			dB
Optical Path Penalty*(note8)				1	dB
LOS De-Assert	LOSD			-38	dBm
LOS Assert	LOSA	-42			dBm
LOS Hysteresis*(note9)		0.5			dB

Note4: LVPECL logic, internally AC coupled.

Note5: Output is coupled into a 9/125μm single-mode fiber.

Note6: Filtered, measured with a PRBS 27-1 test pattern @1.25Gbps

Note7: Minimum average optical power measured at BER less than 1E-12, with a 27-1 NRZ PRBS and ER=9dB.

Note8: Measured with a PRBS 27-1 test pattern @1.25Gbps, G.652 SMF, BER _1×10-10.

Note9: LOS Hysteresis Note10: Eye Pattern Mask

Ordering Information

Part No.	Description
GLC-S80-15-CM	Spectrum Terrabit CISCO Coded SFP module, 1000BaseFX 1550nm SM (LC), distance up to 80km