

FPSP2825GLR-10DI

25Gbps 10KM SFP28 1310nm Optical Transceivers INT.

Features

- ✧ Supports 25GBASE-LR (25.78G)
- ✧ 1310nm DFB Transmitter, PIN Photodiode and TIA
- ✧ SM 9/125um up to 10Km
- ✧ SFP28 MSA Duplex LC connector
- ✧ Power dissipation < 1.2 W, Single 3.3V power supply
- ✧ Operating Case Temperature Standard: -40°C~+85°C
- ✧ Digital Diagnostic Monitor Function Compatible with SFF-8472
- ✧ Compliant with IEEE 802.3cc/SFF-8402/SFF-8431/SFF-8432/CEI-28G-VSR
- ✧ ROHS6 Compliant

Applications

- ✧ 25GBase-LR
- ✧ CPRI Option 10/eCPRI

Ordering information

Part No.	Data Rate	Laser	Receiver	Dis.	Optical Interface	DDM	Temp.
FPSP2825GLR-10DI	25.78G	DFB	PIN	10KM	LC	YES	-40~85

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	Ts	-40		+85	°C
Operating Case Temperature	Tc	-40		+85	°C
Supply Voltage	VCC	-0.5		4.0	V

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Ambient Operating Temperature	T _A	-40		+85	°C
Supply Voltage	VCC	3.15	3.3	3.45	V
Data Rate	DR	24.3	25.78	26.5	Gb/s
Total Supply Current	I _{CC}			350	mA
Maximum Power Dissipation	P ₀			1.2	W

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Input differential impedance	Ri		100		Ω	
Differential data input swing	Vin,pp	180		900	mV	
Transmit disable voltage	VD	2		VCChost	V	
Transmit enable voltage	VEN	Vee		Vee+0.8	V	
Receiver						
Differential data output swing	Vout,pp	450		750	mV	
Data output rise time,fall time	tr	12			Ps	
Los Fault	VLOSF	2		VCChost	V	
Los Normal	VLOS NR	Vee		Vee+0.8	V	

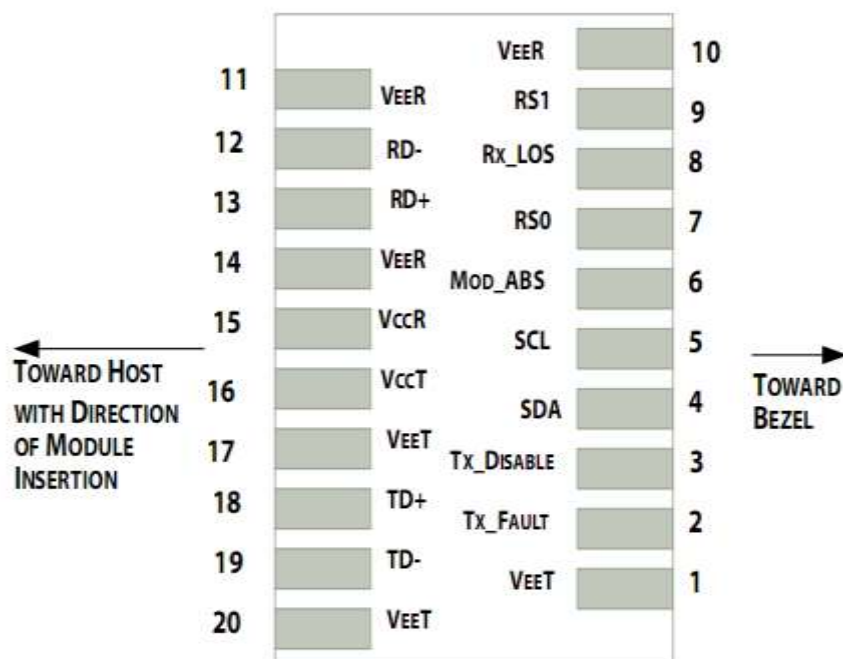
Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Center Wavelength	λ_t	1295	1310	1325	nm	
Average Optical Power	P_{av}	-6.5		+2	dBm	1
Optical Modulation Amplitude	P_{OMA}	-4		2.2	dBm	1
Extinction Ratio	ER	3.5			dB	
Side Mode Suppression Ratio	SMSR	30			dB	
Transmitter and Dispersion Penalty	TDP			3	dB	1
Optical Eye Mask	{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}					1
Receiver						
Center Wavelength	λ_R	1260		1620	nm	
Receiver Sensitivity	RP_{sen}			-11.3	dBm	
Stressed receiver sensitivity(OMA)	SRS			-8.8		2
Average Rx Power	P_{rx_lane}	-13.3		2	dB	2
LOS De-Assert	LOS_D			-16	dBm	
LOS Assert	LOS_A	-30			dBm	
LOS Hysteresis	LOS_H	0.5			dB	

Notes:

1. Measured with a PRBS 2³¹-1 test pattern NRZ @25.78125Gbps, Hit ratio≤5⁻⁵
2. Receiver Overload specified in OMA and under the worst comprehensive stressed conditions

Pin function definitions



Pin	Symbol	Name/Description	Ref.
1	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
2	T_{FAULT}	Transmitter Fault.	2
3	T_{DIS}	Transmitter Disable. Laser output disabled on high or open.	3
4	SDA	2-wire Serial Interface Data Line	4
5	SCL	2-wire Serial Interface Clock Line	4
6	MOD_ABS	Module Absent. Grounded within the module	4
7	RS0	Rate Select 0 (Rx) "L" :Bypass, "H" : CDR	1
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	5
9	RS1	Rate Select 0 (Tx) "L" :Bypass, "H" : CDR	1
10	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
11	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
15	V_{CCR}	Receiver Power Supply	
16	V_{CCT}	Transmitter Power Supply	
17	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. Circuit ground is internally isolated from chassis ground.
2. T_{FAULT} is an open collector/drain output, which should be pulled up with a 4.7k–10k Ohms resistor on the host board if intended for use. Pull up voltage should be between 2.0V to $V_{cc}+0.3V$. A high output

indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.

3. Laser output disabled on $T_{DIS} > 2.0V$ or open, enabled on $T_{DIS} < 0.8V$.
4. Should be pulled up with 4.7k Ω –10k Ω host board to a voltage between 2.0V and 3.6V. MOD_ABS pulls line low to indicate module is plugged in.
5. LOS is open collector output. It should be pulled up with 4.7k Ω –10k Ω on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

Software Control

CDR Control (Volatile Parameter. Reset to default value on boot)

	Hard: PIN #7	Soft:A2h, Byte110 Bit3	Operation Mode	Rate	Note
RS0	0	0	RxCDR Bypass	Rx: 9.83/10.13/10.3Gb/s	
	0	1	RxCDR Engaged	Rx: 24.3/25.78Gb/s Module Auto detect data rate and CDR Lock accordingly.	Dafult
	1	0	RxCDR Engaged		
	1	1	RxCDR Engaged		
	Hard: PIN #9	Soft:A2h, Byte118 Bit3	Operation Mode	Rate	Note
RS1	0	0	TxCDR Bypass	Tx: 9.83/10.13/10.3Gb/s	
	0	1	TxCDR Engaged	Tx: 24.3/25.78Gb/s Module Auto detect data rate and CDR Lock accordingly.	Dafult
	1	0	TxCDR Engaged		
	1	1	TxCDR Engaged		

Digital Diagnostic Functions

Fiberpon's FPSP2825GLR-10DI transceivers support the 2-wire serial communication protocol as defined in the SFP MSA.

The SFP MSA defines a 256-byte memory map in EEPROM that is accessible over a 2-wire serial interface at the 8 bit address 1010000X (A0h).The digital diagnostic monitoring interface makes use of the 8 bit address 1010001X (A2h).

2 wire address 1010000X (A0h)

0	Serial ID Defined by SFP MSA (96 bytes)
95	Vendor Specific (32 bytes)
127	Reserved (128 bytes)
255	

2 wire address 1010001X (A2h)

0	Alarm and Warning Thresholds (56 bytes)
55	Cal Constants (40 bytes)
95	Real Time Diagnostic Interface (24 bytes)
119	Vendor Specific (8 bytes)
127	User Writable EEPROM (120 bytes)
247	Vendor Specific (8 bytes)
255	

Mechanical Specifications

