

Features

- Compliant to IEEE802.3by 25GBASE-LR
- Up to 25.78Gb/s data links
- 25G 1310nm DFB transmitter
- 25G PIN photo-detector
- 2-wire interface for management specifications compliant with SFF-8472 digital diagnostic monitoring interface for optical transceivers
- Operating case temperature:
 - Commercial: 0 to 70°C
 - Industrial: -40 to 85°C
- All-metal housing for superior EMI performance
- 25G electrical interface (OIF CEI-28G-VSR)
- Maximum power consumption 1.5W
- Advanced firmware allow customer system encryption information to be stored in transceiver
- RoHS compliant



Applications

- High-speed storage area networks
- Computer cluster cross-connect
- Custom high-speed data pipes
- Inter Rack Connection
- 25GBASE-LR
- eCPRI and CPRI

1. Absolute Maximum Ratings

These values represent the damage threshold of the module. Stress in excess of any of the individual Absolute Maximum Ratings can cause immediate catastrophic damage to the module even if all other parameters are within Recommended Operating Conditions.

Parameter	Symbol	Min	Max	Unit
Storage Temperature	Ts	0	70	°C
Operating Case Temperature	Tc	0	70	°C
Power Supply Voltage	Vcc	0	3.6	V
Relative Humidity	RH	5	85	%
Damage Threshold	THd	3.5		dBm

2. Recommended Operating Environment

Recommended Operating Environment specifies parameters for which the electrical and optical characteristics hold unless otherwise noted.

Parameter	Symbol	Min	Typ	Max	Unit	
Operating Case temperature	Commercial	Tc	0	-	70	°C
	Industrial	Tc	-40	-	85	°C
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Data Rate, each lane			25.78125		Gb/s	
Data Rate Accuracy		-100		100	ppm	
Control Input Voltage High		2		Vcc	V	
Control Input Voltage Low		0		0.8	V	
Link Distance with G.625	D	0.002		10	km	

3. Electrical Characteristics

The following electrical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Test Point	Min	Typ	Max	Units	Notes
Power Consumption				1.5	W	
Supply Current	Icc			450	mA	
Transmitter						
Overload Differential Voltage pk-pk	TP1a	900			mV	
Common Mode Voltage (Vcm)	TP1	-350		2850	mV	1
Differential Termination Resistance Mismatch	TP1			10	%	At 1MHz
Differential Return Loss (SDD11)	TP1	See CEI-28G-VSR Equation 13-19			dB	
Common Mode to Differential conversion and Differential to Common Mode conversion (SDC11, SCD11)	TP1	See CEI-28G-VSR Equation 13-20			dB	
Stressed Input Test	TP1a	See CEI-28G-VSR Section 13.3.11.2.1				
Receiver						
Differential Voltage, pk-pk	TP4			900	mV	
Common Mode Voltage (Vcm)	TP4	-350		2850	mV	1
Common Mode Noise, RMS	TP4			17.5	mV	

Differential Termination Resistance Mismatch	TP4			10	%	At 1MHz
Differential Return Loss (SDD22)	TP4	See CEI-28G-VSR Equation 13-19			dB	
Common Mode to Differential conversion and Differential to Common Mode conversion (SDC22, SCD22)	TP4	See CEI-28G-VSR Equation 13-21			dB	
Common Mode Return Loss (SCC22)	TP4			-2	dB	2
Transition Time, 20 to 80%	TP4	9.5			ps	
Vertical Eye Closure (VEC)	TP4			5.5	dB	
Eye Width at 10 ⁻¹⁵ probability (EW15)	TP4	0.57			UI	
Eye Height at 10 ⁻¹⁵ probability (EH15)	TP4	228			mV	

Notes:

1. Vcm is generated by the host. Specification includes effects of ground offset voltage.
2. From 250MHz to 30GHz.

4. Optical Characteristics

The following optical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

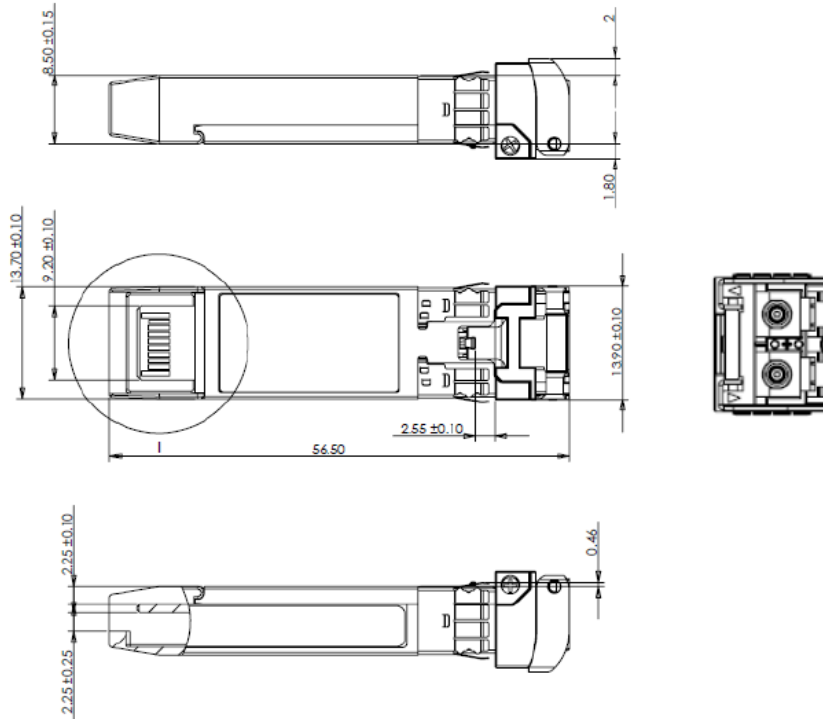
Parameter	Symbol	Min	Typ	Max	Units	Notes
Transmitter						
Center Wavelength	λ_t	1295		1325	nm	
Side Mode Supression Ratio	SMSR	30			dB	
Average Optical Power	Pavg	-7		2	dBm	
Optical Power OMA	POMA	-4		2.2	dBm	1
Launch power in OMA minus Transmitter and Dispersion Penalty (TDP)		-5			dBm	
Transmitter Dispersion Penalty	TDP			2.7	dB	
Extinction Ratio	ER	3.5			dB	
Relative Intensity Noise	RIN20OMA			-130	dB/Hz	
Optical Return Loss Tolerance	OTL			20	dB	
Transmitter Reflectance	TR			-12	dB	

Average Launch Power OFF Transmitter	Poff			-30	dBm	
Eye Mask {X1, X2, X3, Y1, Y2, Y3}		{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}				2
Receiver						
Center Wavelength	λ_r	1260		1350	nm	
Damage Threshold	THD	3.5			dBm	3
Average Receive Power		-13.3		2	dBm	
Receive Power (OMA)				2.2	dBm	
Receiver Sensitivity (OMA)	SEN			-11.3	dBm	for BER = 5×10^{-5}
Stressed Receiver Sensitivity (OMA)				-8.8	dBm	4
Receiver Reflectance	RR			-26	dB	
LOS Assert	LOSA	-30			dBm	
LOS Deassert	LOSD			-14	dBm	
LOS Hysteresis	LOSH	0.5			dB	
Receiver Electrical 3 dB upper Cutoff Frequency	Fc			31	GHz	
Stressed Receiver Sensitivity Test Condition (Note 9)						
Verical Eye Closure Penalty, each lane			1.9		dB	
Stressed Eye J2 Jitter	J2		0.27		UI	
Stressed Eye J4 Jitter	J4		0.39		UI	
SRS Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3} Hit ratio 5×10^{-5} per sample		{0.24, 0.5, 0.5, 0.24, 0.24, 0.4}				

Notes:

1. Even if the TDP < 1 dB, the OMA min must exceed the minimum value specified here.
2. Hit ratio 5×10^{-5} per sample.
3. The receiver shall be able to tolerate, without damage, continuous exposure to a modulated optical input signal having this power level on one lane. The receiver does not have to operate correctly at this input power.
4. Measured with conformance test signal at receiver input for BER = 5×10^{-5} .
5. Vertical eye closure penalty, stressed eye J2 jitter, stressed eye J4 jitter, and SRS eye mask definition are test conditions for measuring stressed receiver sensitivity. They are not the required characteristics of the receiver.

5. Mechanical Diagram



Note: External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.

6. Ordering Information

OEM	Part Number	OEM	Part Number
Alcatel	SFP-25G-LR-AL-A	Fujitsu	HCD25D10I0000-0-A
Arista	SFP-25G-LR-A	Nokia	474902A-A
Cisco	25GES-LR-CSC	Nokia	474901A.101-A
Edgecore	ET7302-LR-A	Mellanox	MMA2L20-AR-A
Juniper	QFX-SFP-25G-LR-A	MSA	AN-SFP25G-LR
Juniper	JNP-SFP-25G-LR-A	MSA Champion ONE	25GSFP28E-LR
Intel	E25GSFP28LR-A	OnePort	OP-SFP25G-LR
Intel	25GES-LR-INT	Samsung	SFG-AFE000DBVZ-A

7. Contact Information

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