TITLE 25G LR SFP28 Transceiver	DOC No. DTRX-000016	
	REVISION： 01	AUTHORIZED BY： Mike Sun
	DATE： 2022.06.15	CLASSIFICATION： Optical Transceiver

1. SCOPE

The SFP28 Transceiver is designed for use in Ethernet/eCPRI/ CPRI links up to 25.78 Gb/s data rate and up to 40 km link length. They are compliant with SFF8472,SFF-8431,SFF-8432. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

2. PRODUCT FEATURES

- Class 1 laser safety certified
- Operating data rate up to 25.78Gbps
- Up to 40km transmission distance
- High sensitivity APD photodiode and TIA
- LC duplex connector
- Hot pluggable 20pin connector
- Low power consumption <2.0 W
- -40℃ to 85℃ operating wide temperature range
- Single +3.3V±5% power supply
- Compliant with SFF-8472
- Fully ROHS Compliant

3. PRODUCT DESCRIPTION

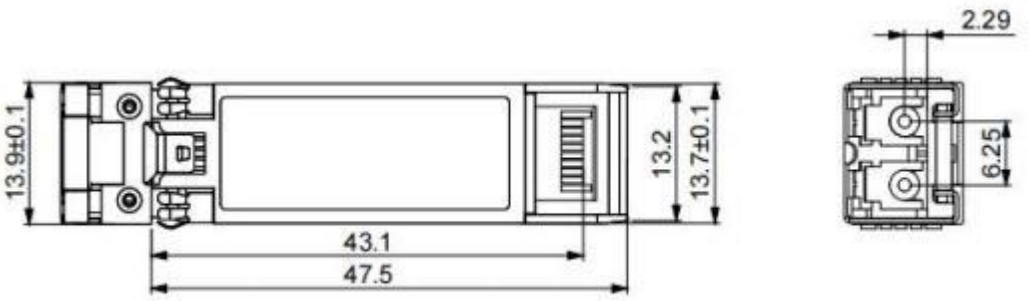
3.1 PRODUCT NAME AND SERIES NUMBER(S)

25G LR SFP28 Transceiver

Part Number	Data Rate	Wavelength (nm)	Distance	Media	Power (dBm)	Sen. (dBm)	Connector	Tem.
P58000CGCB40-1	25G	1310	40km	SMF	-1 ~ 7	-19	LC	C

TITLE 25G LR SFP28 Transceiver	DOC No. DTRX-000016	
	REVISION：01	AUTHORIZED BY：Mike Sun
	DATE：2022.06.15	CLASSIFICATION：Optical Transceiver

3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING



Unit is millimeter. All dimensions are ±0.1mm unless otherwise specified.

4. APPLICABLE DOCUMENTS AND SPECIFICATIONS

- 25GE LR/ER
- CPRRI Option 10/e CPRI

5. Absolute Maximum Ratings & Recommended Operating Conditions

Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	Ts	^{o}C	-40	85
Relative Humidity	RH	%	0	95
Maximum Supply Voltage	Vcc3	V	-0.5	4.0

TITLE **25G LR SFP28 Transceiver**	**DOC No.**	**DTRX-000016**
	REVISION：01	**AUTHORIZED BY：Mike Sun**
	DATE：2022.06.15	**CLASSIFICATION：Optical Transceiver**

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature Range	Tc	-40		85	^{o}C
Power Supply Voltage	Vcc	3.14	3.3	3.46	V
Bit Rate	BR		25.78		Gb/s
Bit Error Ratio	BER			$5*10^{-5}$	
Max Supported Link Length	L			40	Km

Transmitter Operating Characteristic-Optical, Electrical

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Nominal Wavelength	λ	1295	1310	1325	nm	-
Average Output Power	Pav	-1	-	7	dBm	-
Spectral Width (-20dB)	σ	-	-	1	nm	-
Extinction Ratio	ER	3.5	-	-	dB	-
Side Mode Suppression Ratio	SMSR	30	-	-	dB	-
Average Launch Power of OFF Transmitter	POFF	-	-	-30	dBm	-
Relative Intensity Noise	RIN	-	-	-128	Db/HZ	-
Input Differential Impedance	RIN	-	100	-	Ω	-
Single-ended Data Input Swing	VIN	90	-	450	mVp-p	-
Transmit Disable Voltage	VDIS	2	-	VCCHOST	V	-
Transmit Enable Voltage	VEN	VEE	-	VEE+0.8	V	-
Transmit Fault Assert Voltage	VFA	2	-	VCCHOST	V	-
Transmit Fault De-Assert Voltage	VFDA	VEE	-	VEE+0.4	V	-

TITLE **25G LR SFP28 Transceiver**	**DOC No.**	**DTRX-000016**
	REVISION：01	**AUTHORIZED BY：Mike Sun**
	DATE：2022.06.15	**CLASSIFICATION：Optical Transceiver**

Receiver Operating Characteristic-Optical, Electrical

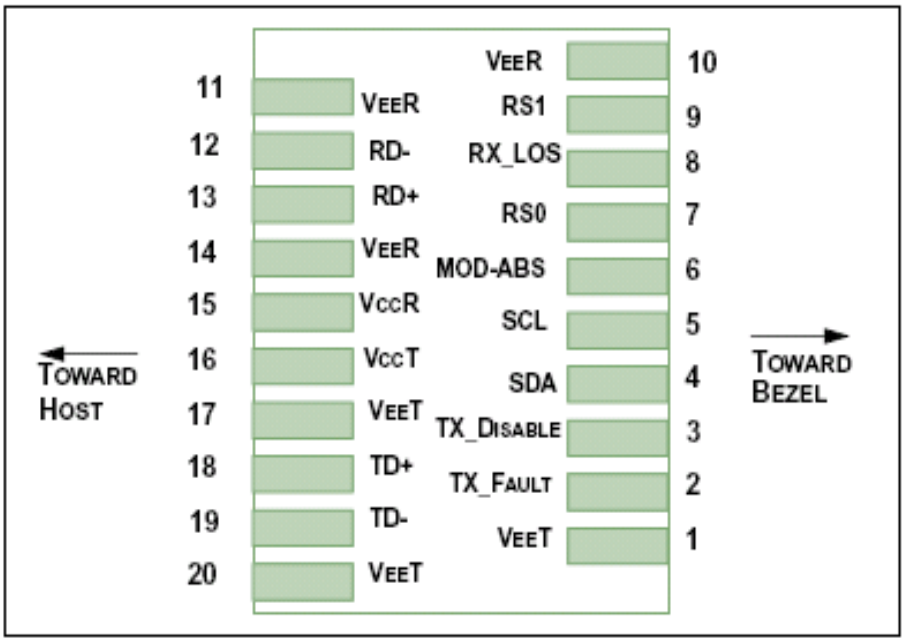
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Center Wavelength	λC	1260	-	1360	nm	-
Receiver Sensitivity	RSENSE	-	-	-19	dBm	1
Receiver Overload	Pmax	-5	-	-	dBm	-
Optical Return Loss	-	-	-	-26	dB	-
LOS Assert	LOSA	-35	-	-	dBm	-
LOS De-Assert LOS	LOSD	-	-	-24	dBm	-
LOS Hysteresis	-	0.5	-	5	dB	-
Single-ended Data Output Swing	VOD	200	-	450	mVp-p	-
LOS Fault	VLOSFT	2	-	VCCHOST	V	-
LOS Normal	VLOSNR	VEE	-	VEE+0.4	V	-

Notes:

1. Measured at 25.78125Gb/s, ER>3.5dBm , PRBS 2^{31-1} and BER better than or equal to 5E-5

TITLE **25G LR SFP28 Transceiver**	**DOC No.**	**DTRX-000016**
	REVISION： **01**	**AUTHORIZED BY：** **Mike Sun**
	DATE： **2022.06.15**	**CLASSIFICATION：** **Optical Transceiver**

6. Applications Note :



Pin Definitions

Pin Assignment

Pin	Symbol	Name	Description
1	VeeT	Transmitter Signal Ground	These pins should be connected to signal ground on the host board.
2	TX Fault	Transmitter Fault Out (OC)	Logic “1” Output = Laser Fault (Laser off before t_fault) Logic “0” Output = Normal Operation This pin is open collector compatible and should be pulled up to Host Vcc with a 10kΩ resistor.
3	TX Disable	Transmitter Disable In (LVTTL)	Logic “1” Output = Laser Fault (Laser off before t_fault) Logic “0” Output = Normal Operation This pin is open collector compatible and should be pulled up to Host Vcc with a 10kΩ resistor.
4	SDA	Module Identifiers	Definition

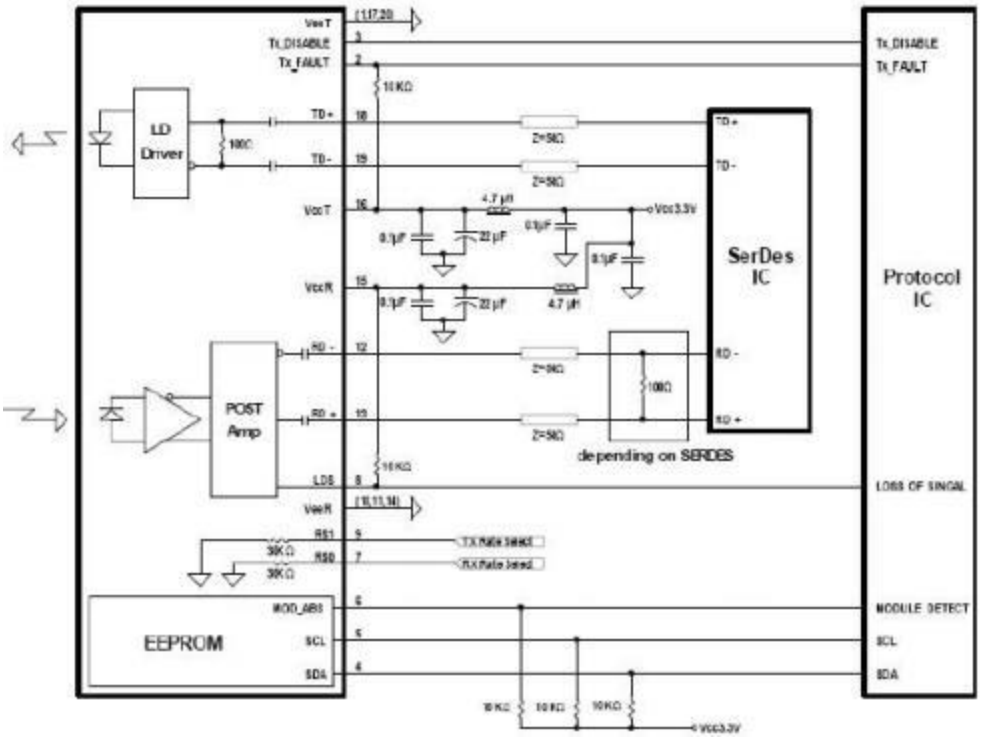
TITLE **25G LR SFP28 Transceiver**	**DOC No. DTRX-000016**	
	REVISION：01	**AUTHORIZED BY：Mike Sun**
	DATE：2022.06.15	**CLASSIFICATION：Optical Transceiver**

5	SCL	Module Identifiers	Definition
6	MOD_ABS	Module Identifiers	Definition
7	RS0	Receiver Rate Select (LVTTL) Transmitter Rate Select (LVTTL)	These pins have an internal 30kΩ pull-down to ground. A signal on either of these pins will not affect module performance.
8	LOS	Loss of Signal Out (OC)	Sufficient optical signal for potential BER $< 1x10^{-12}$ = Logic "0" Insufficient optical signal for potential
9	RS1	Receiver Rate Select (LVTTL) Transmitter Rate Select (LVTTL)	These pins have an internal 30kΩ pull-down to ground. A signal on either of these pins will not affect module performance.
10	VeeR	Receiver Signal Ground	These pins should be connected to signal ground on the host board.
11	VeeR	Receiver Signal Ground	These pins should be connected to signal ground on the host board.
12	RD-	Receiver Negative DATA Out (CML)	Light on = Logic "0" Output Receiver DATA output is internally AC coupled and series terminated with a 50Ω resistor.
13	RD+	Receiver Positive DATA Out (CML)	Light on = Logic "1" Output Receiver DATA output is internally AC coupled and series terminated with a 50Ω resistor.
14	VeeR	Receiver Signal Ground	These pins should be connected to signal ground on the host board.
15	VccR	Receiver Power Supply	This pin should be connected to a filtered +3.3V power supply on the host board. See Figure 3 Recommended power supply filter
16	VccT	Transmitter Power Supply	This pin should be connected to a filtered +3.3V power supply on the host board. See Figure 3 Recommended power supply filter
17	VeeT	Transmitter Signal Ground	These pins should be connected to signal ground on the host board.

TITLE **25G LR SFP28 Transceiver**	**DOC No.**	**DTRX-000016**
	REVISION：01	**AUTHORIZED BY：Mike Sun**
	DATE：2022.06.15	**CLASSIFICATION：Optical Transceiver**

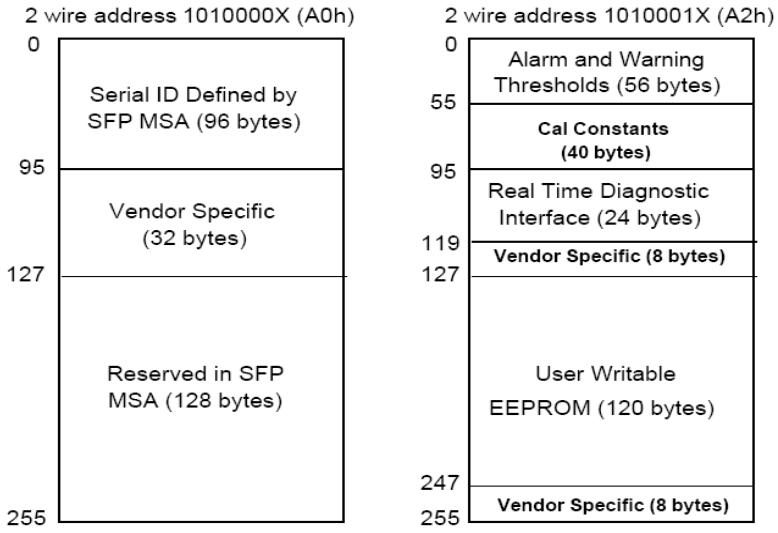
18	TD+	Transmitter Positive DATA In (CML)	Logic “1” Input = Light on Transmitter DATA inputs are internally AC coupled and terminated with a differential 100Ω resistor.
19	TD-	Transmitter Negativen DATA In (CML)	Logic “0” Input = Light on Transmitter DATA inputs are internally AC coupled and terminated with a differential 100Ω resistor.
20	VeeT	Transmitter Signal Ground	These pins should be connected to signal ground on the host board.

Recommended Interface Circuit



TITLE **25G ER SFP28 Transceiver**	**DOC No.**	**DTRX-000007**
	REVISION： **01**	**AUTHORIZED BY：** **Mike Sun**
	DATE： **2022.06.15**	**CLASSIFICATION：** **Optical Transceiver**

Digital Diagnostic Memory Map



8. Modification History

Rev.	Comments	Date	Originator	Approval
01	Preliminary Draft	2022.06.15	Albert Lin	Mike Sun