

<b>TITLE</b>  <b>25G SFP28 Active Optical Cable</b>	<b>DOC No. RFD-20250717205-001</b>	
	<b>REVISION :</b> <b>01</b>	<b>AUTHORIZED BY :</b> <b>Albert Lin</b>
	<b>DATE :</b> <b>2025.07.17</b>	<b>CLASSIFICATION :</b> <b>Active Optical Cable</b>

## 1. SCOPE

The 25G SFP28 AOC is intended for short reach service 25.78Gb/s 850nm Multi-mode high-speed communications equipment where low-cost, extraordinary performance and reliability are essential. It consumes low power, operates based on 3.3V DC power supply and is offered in the industrial temperature range. They are compliant with SFP28 MSA, SFF-8431 and SFF-8432.

The low jitter and low bit error rate optical assembly features a VCSEL laser transmitter and PIN/TIA receiver. It utilizes internal clock and data recovery (CDR) units on transmitter and the receiver chains for low jitter compliance. The differential AC coupled Tx and Rx data interfaces are CML compatible. The device is Class I laser safety compliant.

## 2. Features

- 25Gbps serial optical interface
- 850nm VCSEL transmitter and GaAs PIN PD receiver
- Case operating temperature range: 0°C to 70°C
- Power dissipation < 1.0W per cable end

<b>TITLE</b>  <b>25G SFP28 Active Optical Cable</b>	<b>DOC No. RFD-20250717205-001</b>	
	<b>REVISION : 01</b>	<b>AUTHORIZED BY : Albert Lin</b>
	<b>DATE : 2025.07.17</b>	<b>CLASSIFICATION : Active Optical Cable</b>

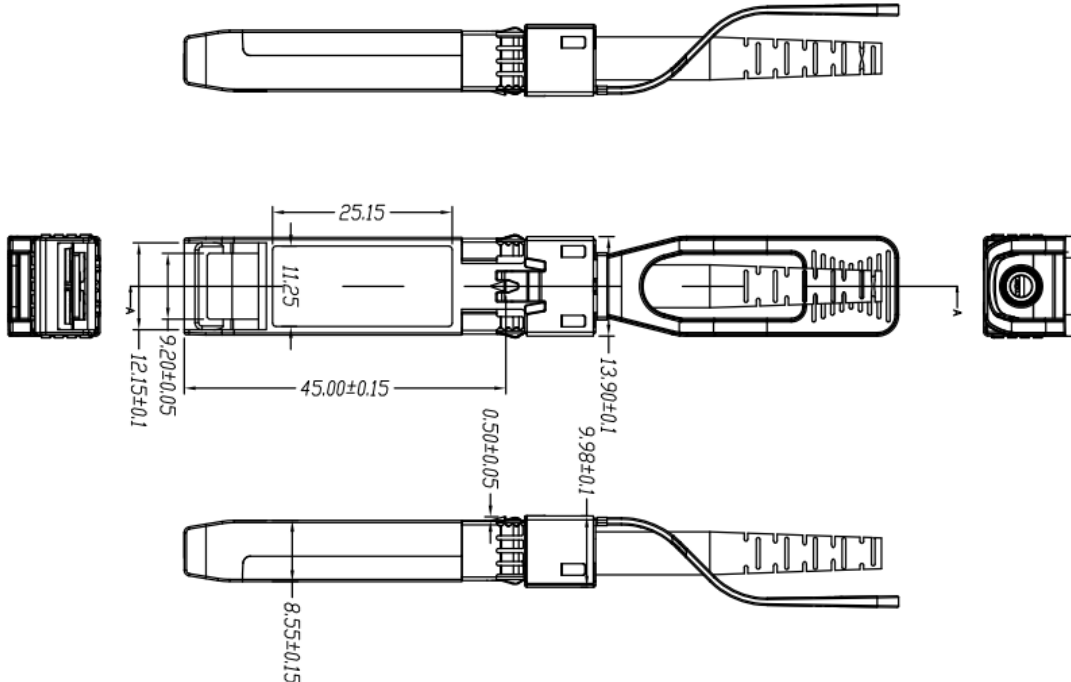
### 3. PRODUCT DESCRIPTION

#### 3.1 PRODUCT NAME

#### 25G SFP28 Active Optical Cable

Data Rate	Wavelength(nm)	Distance	Media	Cable
25G	850nm	~100m	MMF	MPO

#### 3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING



SFP mechanical drawing (Unit: mm)

<b>TITLE</b>  <b>25G SFP28 Active Optical Cable</b>	<b>DOC No. RFD-20250717205-001</b>	
	<b>REVISION : 01</b>	<b>AUTHORIZED BY : Albert Lin</b>
	<b>DATE : 2025.07.17</b>	<b>CLASSIFICATION : Active Optical Cable</b>

#### **4. APPLICABLE DOCUMENTS AND SPECIFICATIONS**

- Inter Rack Connection
- High-speed Servers
- High-performance Computing Clusters
- SAN, Routers, Hubs, Load Balancer

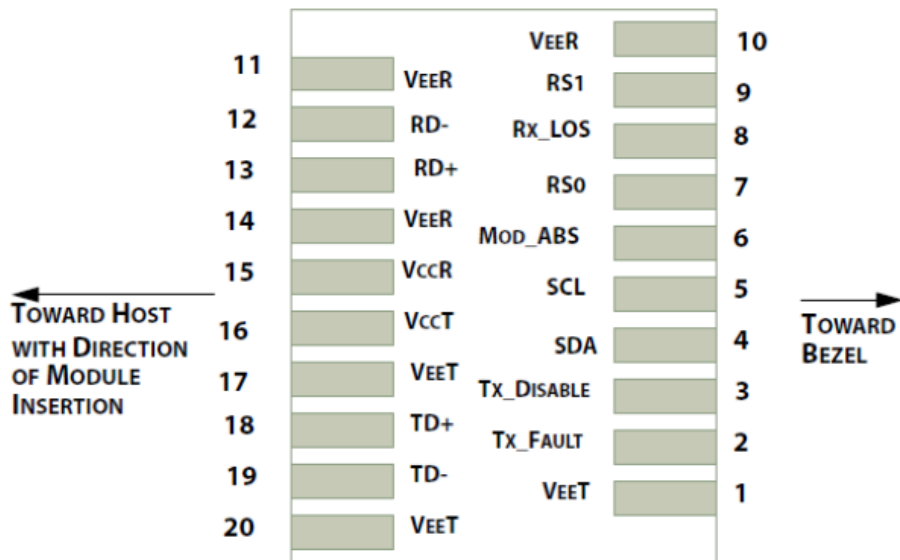
#### **5. Production Specification**

<b>Absolute Maximum Ratings</b>					
<b>Parameter</b>	<b>Symbol</b>	<b>Min.</b>	<b>Max.</b>	<b>Unit</b>	<b>Notes</b>
Storage Temperature	T <sub>Storage</sub>	-40	+85	°C	
Relative Humidity	RH	0	+85	%	

<b>Recommended Operating Conditions</b>					
<b>Parameter</b>	<b>Symbol</b>	<b>Min.</b>	<b>Typical</b>	<b>Max.</b>	<b>Unit</b>
Case Temperature	T <sub>c</sub>	0	-	70	°C
Power Supply Voltage	V <sub>cc</sub>	3.15	3.3	3.45	V
Data Rate	-	-	25.78125	-	Gbps
Data Rate Accuracy	-	-100	-	100	ppm
Pre-FEC Bit Error Ratio	-	-	-	5e-5	
Post-FEC Bit Error Ratio	-	-	-	1e-12	
Power Consumption	-	-	-	1	W
Supply Current	I <sub>cc</sub>	-	180	300	mA

<b>TITLE</b>  <b>25G SFP28 Active Optical Cable</b>	<b>DOC No. RFD-20250717205-001</b>	
	<b>REVISION :</b> <b>01</b>	<b>AUTHORIZED BY :</b> <b>Albert Lin</b>
	<b>DATE :</b> <b>2025.07.17</b>	<b>CLASSIFICATION :</b> <b>Active Optical Cable</b>

**Applications Note :**



JPC Confidential

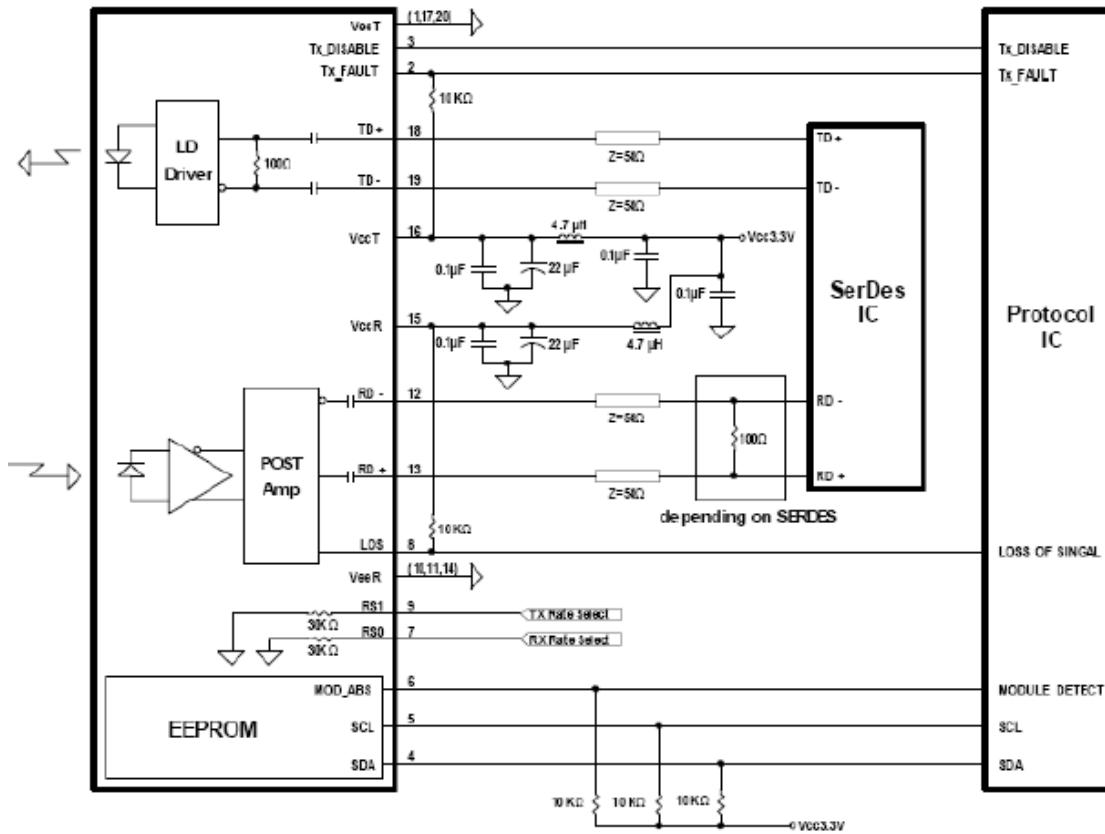
<b>TITLE</b>  <b>25G SFP28 Active Optical Cable</b>	<b>DOC No. RFD-20250717205-001</b>	
	<b>REVISION :</b> <b>01</b>	<b>AUTHORIZED BY :</b> <b>Albert Lin</b>
	<b>DATE :</b> <b>2025.07.17</b>	<b>CLASSIFICATION :</b> <b>Active Optical Cable</b>

**Pin Assignment**

Pin	Logic	Symbol	Name/Description	Note
1		VeeT	Module Transmitter Ground	
2	LVTTL-O	TX_Fault	Module Transmitter Fault	
3	LVTTL-I	TX_Disable	Transmitter Disable; Turns off transmitter laser output	
4	LVTTL-I/O	SDA	2-wire Serial Interface Data Line (Same as MOD-DEF2 as defined in the INF-8074i)	
5	LVTTL-I/O	SCL	2-wire Serial Interface Clock (Same as MOD-DEF1 as defined in the INF-8074i)	
6		MOD_ABS	Module Absent, connected to VeeT or VeeR in the module	
7	LVTTL-I	RS0	Not used	
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication (In FC designated as RX_LOS, in SONET designated as LOS, and in Ethernet designated at Signal Detect)	
9	LVTTL-I	RS1	Not used	
10		VeeR	Module Receiver Ground	
11		VeeR	Module Receiver Ground	
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Non-Inverted Data Output	
14		VeeR	Module Receiver Ground	
15		VccR	Module Receiver 3.3 V Supply	
16		VccT	Module Transmitter 3.3 V Supply	
17		VeeT	Module Transmitter Ground	
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	

<b>TITLE</b>  <b>25G SFP28 Active Optical Cable</b>	<b>DOC No. RFD-20250717205-001</b>	
	<b>REVISION :</b> <b>01</b>	<b>AUTHORIZED BY :</b> <b>Albert Lin</b>
	<b>DATE :</b> <b>2025.07.17</b>	<b>CLASSIFICATION :</b> <b>Active Optical Cable</b>

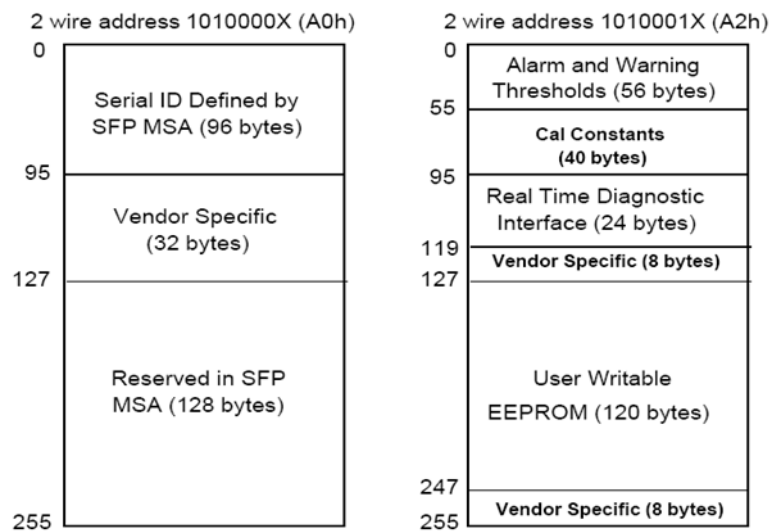
**Recommended Interface Circuit**



JPC Confidential

<b>TITLE</b>  <b>25G SFP28 Active Optical Cable</b>	<b>DOC No. RFD-20250717205-001</b>	
	<b>REVISION :</b> <b>01</b>	<b>AUTHORIZED BY :</b> <b>Albert Lin</b>
	<b>DATE :</b> <b>2025.07.17</b>	<b>CLASSIFICATION :</b> <b>Active Optical Cable</b>

**Digital Diagnostic Memory Map**



**7. Modification History**

<b>Rev.</b>	<b>Comments</b>	<b>Date</b>	<b>Originator</b>	<b>Approval</b>
01	Preliminary Draft	2025.07.17	Albert Lin	Mike Sun

