

PRODUCT SPECIFICATION

Part No.:	AC-SP-Q2G25-10	
Description:	25G SFP28 Transceiver, DWDM 10km	
Release Date	Rev.	Revision Change Description
2017/06/07	A0	New Release
2020/12/28	A1	Template Update

Features

- ✧ Supports 25.78Gbps data rate
- ✧ High sensitivity Pin photodiode and TIA
- ✧ Duplex LC receptacle optical interface compliant
- ✧ All metal housing for superior EMI performance
- ✧ Single +3.3V power supply
- ✧ Power dissipation < 1.5W
- ✧ Hot-pluggable SFP28 form factor
- ✧ Maximum link length of 10km
- ✧ Operating temperature range:
- ✧ Commercial: 0°C~+70°C
- ✧ RoHS Compliant
- ✧ Digital diagnostics functions are available via the I2C interface

Application

- ✧ 25GBASE-LR Ethernet
- ✧ CPRI Option 10

Standard

- ✧ Compliant with MSA SFP+ specification(SFF-8431)
- ✧ Compliant with SFF-8472
- ✧ CPRI Line Rate Option: 24.33Gb/s
25.78Gb/s
- ✧ Compliant to IEEE 802.3ae

Wavelength Selection

Channel	Wavelength (nm)	Frequency(THZ)	Channel	Wavelength (nm)	Frequency(THZ)
1	1563.86	191.70	44	1546.52	193.85
2	1563.45	191.75	45	1546.12	193.90
3	1563.05	191.80	46	1545.72	193.95
4	1562.64	191.85	47	1545.32	194.00
5	1562.23	191.90	48	1544.92	194.05
6	1561.83	191.95	49	1544.53	194.10
7	1561.42	192.00	50	1544.13	194.15
8	1561.01	192.05	51	1543.73	194.20
9	1560.61	192.10	52	1543.33	194.25
10	1560.20	192.15	53	1542.94	194.30
11	1559.79	192.20	54	1542.54	194.35
12	1559.39	192.25	55	1542.14	194.40
13	1558.98	192.30	56	1541.75	194.45
14	1558.58	192.35	57	1541.35	194.50
15	1558.17	192.40	58	1540.95	194.55
16	1557.77	192.45	59	1540.56	194.60
17	1557.36	192.50	60	1540.16	194.65
18	1556.96	192.55	61	1539.77	194.70
19	1556.55	192.60	62	1539.37	194.75
20	1556.15	192.65	63	1538.98	194.80
21	1555.75	192.70	64	1538.58	194.85
22	1555.34	192.75	65	1538.19	194.90
23	1554.94	192.80	66	1537.79	194.95
24	1554.54	192.85	67	1537.40	195.00
25	1554.13	192.90	68	1537.00	195.05
26	1553.73	192.95	69	1536.61	195.10
27	1553.33	193.00	70	1536.22	195.15
28	1552.93	193.05	71	1535.82	195.20
29	1552.52	193.10	72	1535.43	195.25
30	1552.12	193.15	73	1535.04	195.30
31	1551.72	193.20	74	1534.64	195.35
32	1551.32	193.25	75	1534.25	195.40
33	1550.92	193.30	76	1533.85	195.45
34	1550.52	193.35	77	1533.46	195.50
35	1550.12	193.40	78	1533.06	195.55
36	1549.72	193.45	79	1532.67	195.60

37	1549.32	193.50	80	1529.16	196.05
38	1548.91	193.55	81	1528.77	196.1
39	1548.51	193.60			
40	1548.11	193.65			
41	1547.72	193.70			
42	1547.32	193.75			
43	1546.92	193.80			

Specification

Absolute Maximum Ratings				
Parameter	Symbol	Min	Max	Unit
Storage temperature	TS	-40	85	°C
Power Supply Voltage	Vcc	0	3.6	V
Relative Humidity	RH	5	95	%

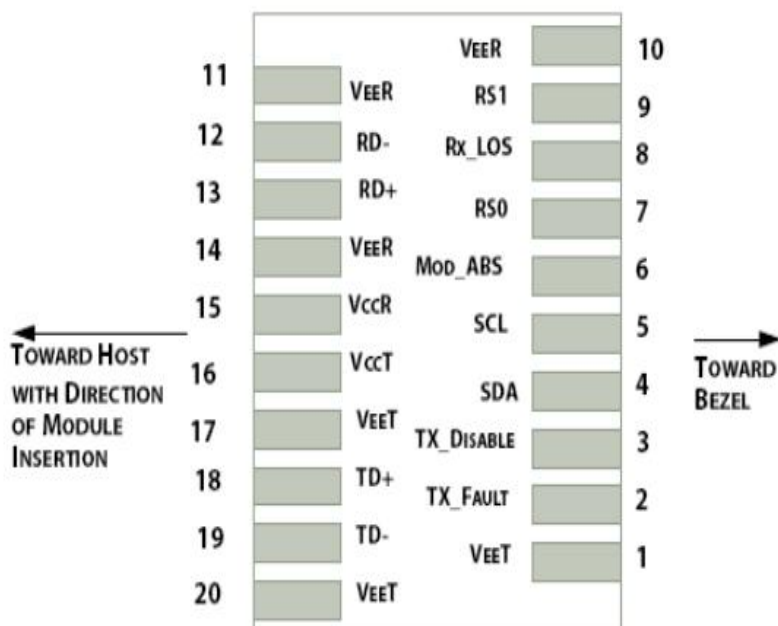
Recommended Operating Conditions					
Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature (Commercial)	Tc	0		70	°C
Power Supply Voltage	Vcc	3.13	3.3	3.47	V
Supply Current	Icc			450	mA
Data Rate		-	25.78	-	Gbps

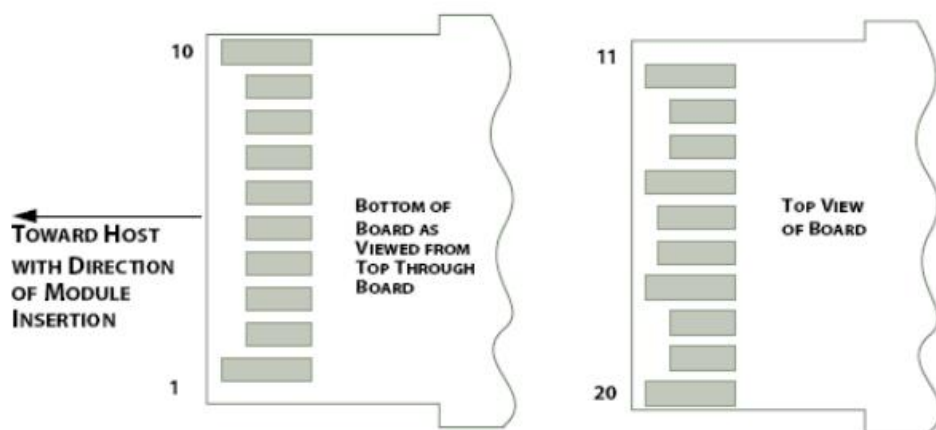
Optical transmitter Characteristics						
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Launched Power (avg.)	Pout	0		5	dBm	
Operating Wavelength Range	λ_c	1528		1565	nm	
Center wavelength Spacing	GHz	-	100	-	nm	
Extinction Ratio	ER	6			dB	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Launch Power of OFF Transmitter	Poff			-35	dBm	
Relative Intensity Noise	RIN			-128	dB/Hz	
Differential data input swing	VIN,PP	150		1200	mV	
Input Differential Impedance	ZIN	80	100	120	Ω	
TX Disable	Disable		2.0	Vcc	V	
	Enable		0	0.8	V	
TX Fault	Fault		2.0	Vcc	V	

	Normal		0		0.4	V	
Output Eye Diagram		Complies with IEEE802.3z eye masks when filtered					
Optical receiver Characteristics							
Parameter		Symbol	Min	Typical	Max	Unit	Notes
Stressed Sensitivity (OMA)		S			-10.6	dBm	1
Receiver Overload		Pmax	2.2			dBm	
Optical Return Loss					-26	dB	
Wavelength Range		λ_c	1260		1620	nm	
Output Rise Time		Tr	25			pS	
Output Fall Time		Tf	25			pS	
LOS	Optical De-assert	Pd			-17	dBm	
	Optical Assert	Pa	-30				
LOS		High	2.0		Vcc	V	
		Low			0.4	V	
LOS hysteresis			0.5			dB	
Differential data output swing		Vout,PP	350		700	mV	

Note1: Measured at ER>3.5dBm, PRBS 2³¹-1 and BER better than or equal to 5E-5;

Pin Descriptions





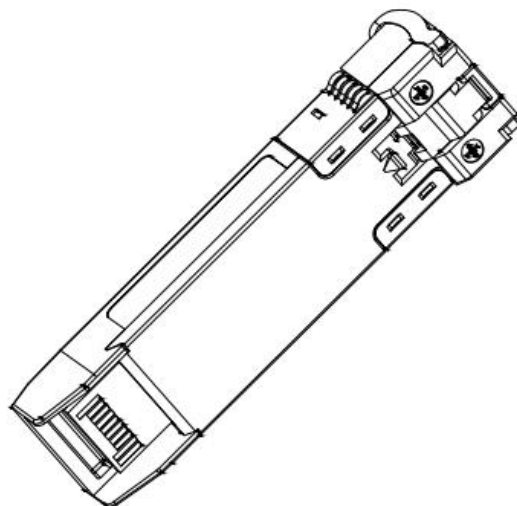
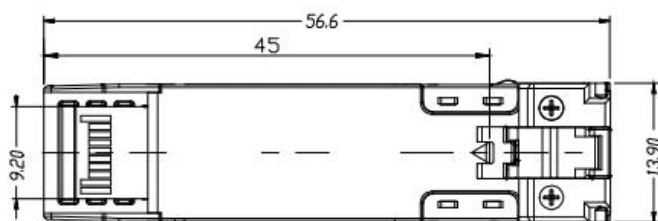
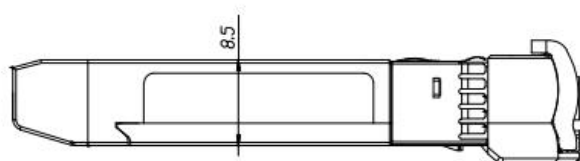
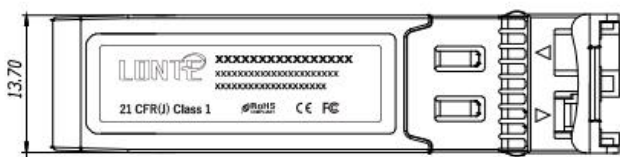
Pin	Name	Function/Description	Logic	Note
1	VeeT	Transmitter Ground		1
2	TX_Fault	Transmitter Fault	LVTTTL-O	2
3	TX_Disable	Transmitter Disable. High: Transmitter off; Low: Transmitter on	LVTTTL-I	
4	SDA	2-Wire Serial Interface Data Line	LVTTTL-O/I	2
5	SCL	2-Wire Serial Interface Clock	LVTTTL-I	2
6	Mod_ABS	Module Absent, Connect to VeeT or VeeR in Module		
7	RS0	Rate Select 0, optionally controls SFP module receiver	LVTTTL-I	
8	RX_LOS	Receiver Loss of Signal indication. High: loss of signal; Low: signal detected	LVTTTL-O	
9	RS1	Rate Select 1, optionally controls SFP module transmitter	LVTTTL-I	
10	VeeR	Receiver Ground		1
11	VeeR	Receiver Ground		1
12	RD-	Receiver Inverted Data Output	CML-O	
13	RD+	Receiver Data Output	CML-O	
14	VeeR	Module Receiver Ground		1
15	VccR	Receiver Power 3.3V Supply		
16	VccT	Transmitter Power 3.3V Supply		
17	VeeT	Module Transmitter Ground		1
18	TD+	Transmitter Non-Inverted Data Input	CML-I	
19	TD-	Transmitter Inverted Data Input	CML-I	
20	VeeT	Module Transmitter Ground		1

Notes:

- 1) Module ground pins GND are isolated from the module case.
- 2) Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.45V on the host board.

Package Outline

Dimensions are in millimeters. All dimensions are $\pm 0.2\text{mm}$ unless otherwise specified. (Unit: mm)



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Unit: mm

Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1 (>1.5kV) – Human Body Model
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B FCC Class B CENELEC EN55022 VCCI Class 1	Comply with standard
Immunity	IEC61000-4-3	Comply with standard
Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1,2	Compatible with Class I laser Product

Order information

Part. No	Specifications								
	Pack	Rate (Gbps)	Tx	Po (dBm)	RX	Sen (dBm)	Temp (°C)	Reach (km)	DDM
AC-SP-Q2G25-10	SFP28	25.78	DFB DWDM	0-5	PIN	<-10.6	0~70	10	Y