

Rev	Date	Modified by	Description
A0	2023		

Product Specifications

25/56G SFP28 Electrical Passive Loopback

PN: ES22X-LB

Features

- Customizable power consumption
- Custom memory maps available
- Supports 28Gbps total data rate
- Hot-pluggable MSA footprint
- Full SFF-8432 MSA compliant
- No reference clock required

Applications

- SFP port/system testing
- Ethernet IEEE 802.3 (Gigabit, 10 Gigabit and 25 Gigabit Ethernet)
- SONET, SDH, GBE, Fiber Channel Support
- Board level system testing
- Power on validation
- Excellent signal integrity
- Economical and flexible 28Gbps SFP28 port testing

Description

The SFP28 passive electrical loopback is used for testing SFP28 transceiver ports in board level test. The electrical loopback provides a cost-effective low loss method for SFP28 port testing.

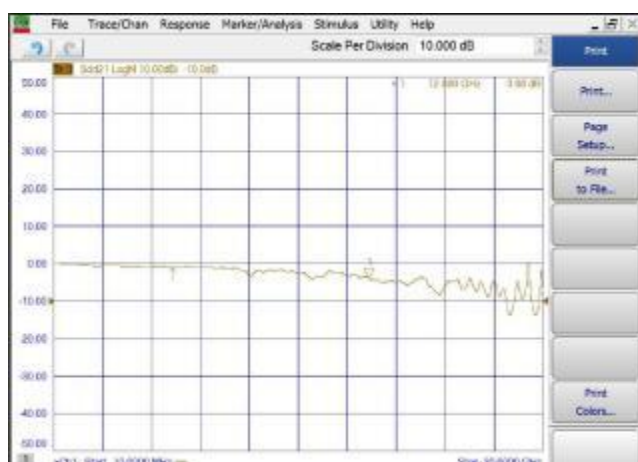
The ES22X-LB is packaged in a standard MSA housing compatible with all SFP28 ports. Transmit data from the host is electrically routed (internal to the loopback module) to the receive data outputs and back to the host. Since the loopback module does not contain laser diodes, photodiodes, laser driver or trans impedance amplifier chips, etc., it provides an economical way to exercise SFP28 ports during R&D validation, production testing and field testing.

Modules specifications -Recommend operating conditions

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Storage Temperature	Tstg	-40		85	°C	
Ambient Operating Temperature	Ta	-20		85	°C	
Data DC Voltage	Voffset	-10		10	Vpk	V (Tx+, Tx-, Rx+, Rx-) to ground
Supply Voltage	Vcc	3.13	3.3	3.47	Vdc	
Baud Rate	BRate	1.25	25	28	Gpbs	

Data path

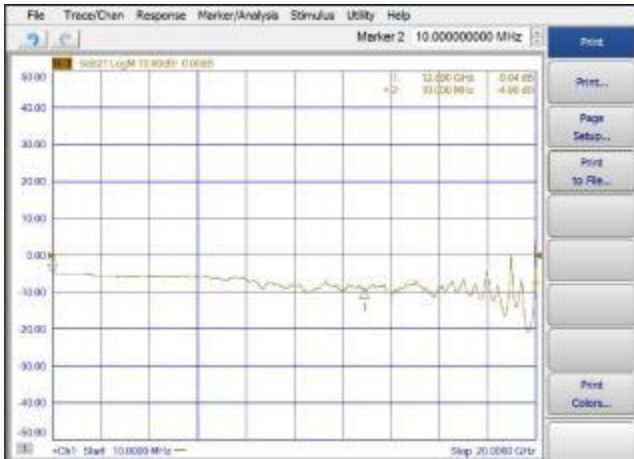
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Impedance		90	100	110	ohms	Differential Impedance
Durability Cycles			50		Times	



SDD21-0dB (Transmit Insertion Loss)



SDD21-3.5dB (Transmit Insertion Loss)



SDD21-5dB (Transmit Insertion Loss)

Host board Connector Pinout

Figure 1: MSA compliant Connector

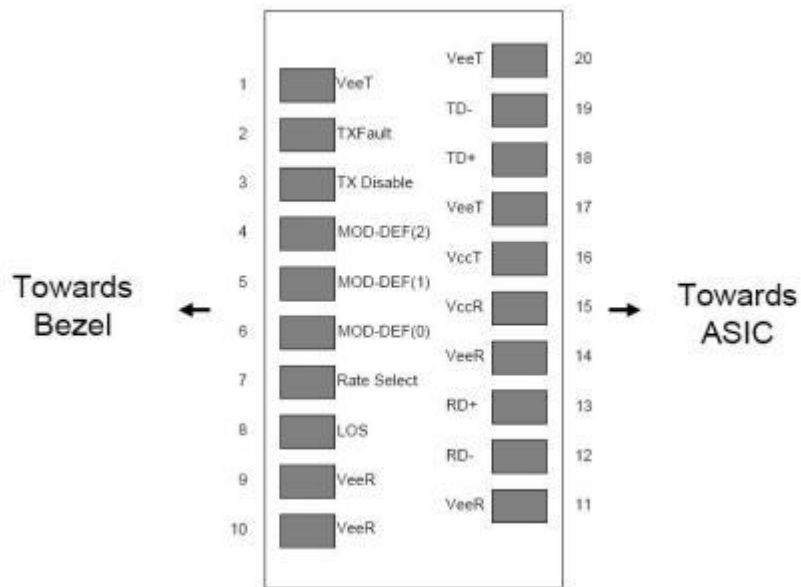


Figure 2: SFP Transceiver Connector, Pin Descriptions

Pin	Logic	Description
1	TGND	Transmit ground
2	TX_FAULT	Internally tied to Transmit ground. TX_FAULT is not implemented.
3	TX_DISABLE	Internally pulled up to Vcc through a 5.11k ohm resistor. TX_DISABLE is not implemented.
4	MOD_DEF(2)	Signal SDA (Data) of the 2-wire serial ID interface
5	MOD_DEF(1)	Signal SCL (Clock) of the 2-wire serial ID interface
6	MOD_DEF(0)	This pin is internally tied to Transmit ground

7	RATE SELECT	Pin is internally pulled low through a 33.2k resistor. Rate Select is not implemented.
8	LOS	Internally tied to Receiver Ground. LOS is not implemented.
9	RGND	Receiver ground
10	RGND	Receiver ground
11	RGND	Receiver ground
12	RD-	Differential receiver outputs. User to terminate to 100 ohms differential
13	RD+	Differential receiver outputs. User to terminate to 100 ohms differentia
14	RGND	Receiver ground
15	VCCR	Not used.
16	VCCT	EEPROM power
17	TGND	Transmit ground
18	TD+	Differential transmitter inputs. Internally terminated to 100 ohms differential.
19	TD-	Differential transmitter inputs. Internally terminated to 100 ohms differential.
20	TGND	Transmit ground

Memory Map

The EEPROM on the SFP28 passive cable assembly is designed for 256 addresses. The information for addresses 0 to 127 is listed below. This information can be tailored to any customer request. Any address can be altered to display customer specific information and more memory can be added if more addresses are needed.

Table 1. Memory Map (Specific Data Field Descriptions)

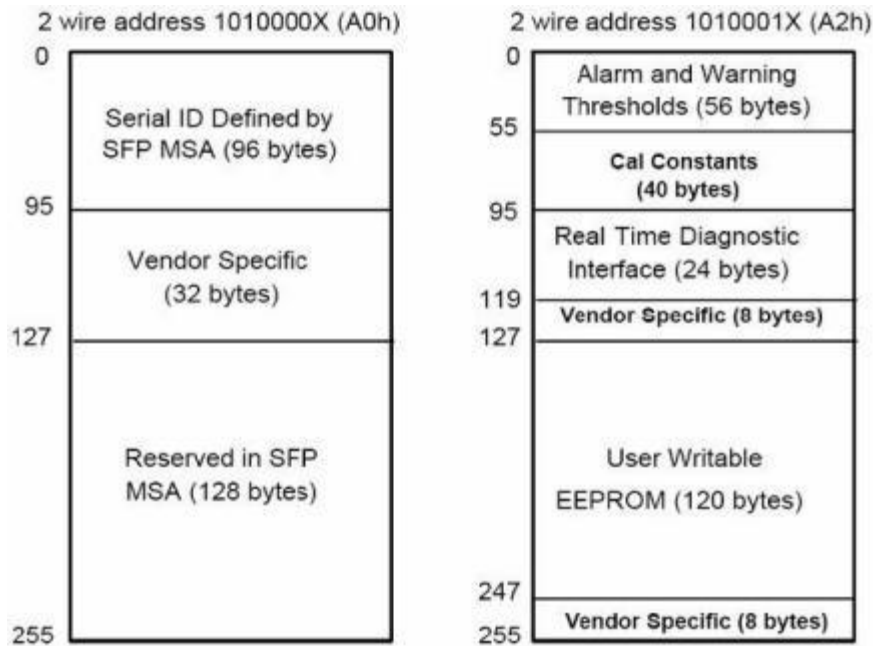


Table 2 - EEPROM Serial ID Memory Contents (A0h)

Part Number			ES22X-LB		
Device 0xA0					
DATA Address (DEC)	DATA Address (HEX)	Value (HEX)	Name of Field	Description	
0	0	0x03	Identifier	SFP+	
1	1	0x04	Ext. Identifier	Serial ID	
2	2	0x80	Connector	Vendor Specific	
3	3	0x01	Transceiver	1X Copper Passive	
4	4	0x00			
5	5	0x00			
6	6	0x00			
7	7	0x00			
8	8	0x04		SFP+ Passive copper	
9	9	0x80		Twin Axial Pair (TW)	
10	A	0x00			
11	B	0x06		Encoding	64B/66B
12	C	0xFF		BR, Nominal	25500MBs
13	D	0x00	Rate Identifier	Unspecified	

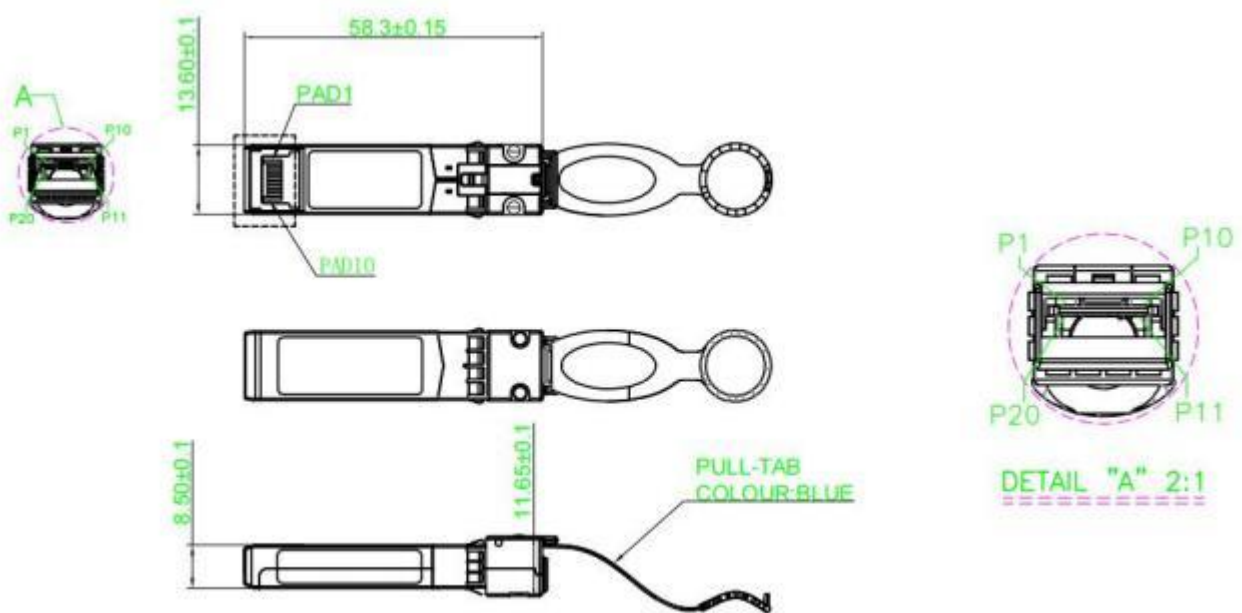
14	E	0x00	Length (SMF,km)	Unsupported
15	F	0x00	Length (SMF)	Unsupported
16	10	0x00	Length (50um)	Unsupported
17	11	0x00	Length (62.5um)	Unsupported
18	12	0x00	Length (cable)	Unspecified
19	13	0x00	Length (OM3)	Unsupported
20	14	0x31	Vendor Name	ETU
21	15	0x30		
22	16	0x47		
23	17	0x74		
24	18	0x65		
25	19	0x6B		
26	1A	0x20		
27	1B	0x20		
28	1C	0x20		
29	1D	0x20		
30	1E	0x20		
31	1F	0x20		
32	20	0x20		
33	21	0x20		
34	22	0x20		
35	23	0x20		
36	24	0x0C		
37	25	0x00	Vendor OUI	Unspecified
38	26	0x00		
39	27	0x00		
40	28	0x43	Vendor PN	ETU ***
41	29	0x41		
42	2A	0x42		
43	2B	0x2D		
44	2C	0x5A		
45	2D	0x53		

46	2E	0x50		
47	2F	0x2D		
48	30	0x4C		
49	31	0x42		
50	32	0x30		
51	33	0x20		
52	34	0x20		
53	35	0x20		
54	36	0x20		
55	37	0x20		
56	38	0x30		
57	39	0x31		
58	3A	0x20	Vendor Rev	01
59	3B	0x20		
60	3C	0x00	Laser wavelength (Passive/Active Cable Specification Compliance)	Unspecified
61	3D	0x00		Unspecified
62	3E	0x00	Unallocated	
63	3F	0x00	CC_BASE	
64	40	0x00		
65	41	0x00	Options	Unspecified
66	42	0x00	BR, max	Unspecified
67	43	0x00	BR, min	Unspecified
68	44	0x53		
69	45	0x31		
70	46	0x38		
71	47	0x30		
72	48	0x38		
73	49	0x30		
74	4A	0x31		
75	4B	0x30	Vendor SN	S1808010001
76	4C	0x30		
77	4D	0x30		

78	4E	0x31				
79	4F	0x20				
80	50	0x20				
81	51	0x20				
82	52	0x20				
83	53	0x20				
84	54	0x31	Date Code	180801		
85	55	0x38				
86	56	0x30				
87	57	0x38				
88	58	0x30				
89	59	0x31				
90	5A	0x20				
91	5B	0x20				
92	5C	0x00			Diagnostic Monitoring Type	Unsupported
93	5D	0x00			Enhanced Options	Unspecified
94	5E	0x00	SFF-8472 Compliance	Unspecified		
95	5F	0x00	CC_EXT			
96	60	0x00	Vendor Specific	Vendor Specific EEPROM		
97	61	0x00				
98	62	0x00				
99	63	0x00				
100	64	0x00				
101	65	0x00				
102	66	0x00				
103	67	0x00				
104	68	0x00				
105	69	0x00				
106	6A	0x00				
107	6B	0x00				
108	6C	0x00				
109	6D	0x00				

110	6E	0x00		
111	6F	0x00		
112	70	0x00		
113	71	0x00		
114	72	0x00		
115	73	0x00		
116	74	0x00		
117	75	0x00		
118	76	0x00		
119	77	0x00		
120	78	0x00		
121	79	0x00		
122	7A	0x00		
123	7B	0x00		
124	7C	0x00		
125	7D	0x00		
126	7E	0x00		
127	7F	0x00		
128-255	80-FF	0XFF	Reserved	Reserved for SFF-8079

Mechanical Specifications



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