Product Specification

1.25 Gb/s RoHs Compliant Pluggable SFP Transceiver

ASFP1G10S31C

Features:

- Up to 1.25Gb/s Data Links
- 1310nm FP-LD laser transmitter
- Transmission distance up to 10Km
- Single +3.3V Power Supply
- Metal Enclosure, Excellent EMI & ESD Protection
- Commercial operating temperature range: 0℃~+70℃
- Hot-Pluggable SFP footprint
- RoHS Compliant and Lead-Free
- Compatible with Gigabit Ethernet as specified in IEEE Std
- Compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA)1
- Multi-Source Package with Duplex LC Connector
- Compliant with Bellcore TA-NWT-000983
- Eye Safety Designed to Meet Laser Class1, Compliant with IEC60825-1

Applications:

- 1.25 Gb/s 1000Base-ZX Ethernet
- 1x Fiber Channel
- Compatible with CISICO switch
- Data link

Specification:

- **Electrical and Optical Characteristics: (Ta=0~+70℃;Vcc=3.0~3.6V)**

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter Differential Input Volt	+/-TX_DAT	200		2400	mV p-p
Supply Current	I_{CC}		130	180	mA
Tx_Disable Input Voltage – Low	V_{IL}	0		0.8	V
Tx_Disable Input Voltage – High	V_{IH}	2.0		Vcc	V
Tx_Fault Output Voltage – Low	V_{OL}	0		0.8	V
Tx_Fault Output Voltage – High	V_{OH}	2.0		Vcc	V
Receiver Differential Output Volt	+/-RX_DAT	600		1400	mV p-p
Rx_LOS Output Voltage- Low	V_{OL}	0		0.8	V
Rx_LOS Output Voltage- High	V_{OH}	2.0		Vcc	V

Transmitter

Parameter	Symbol	Min.	Typical	Max.	Unit
Data Rate	B	125	1250	-	Mb/s
Output Center Wavelength	λ_C	1296	1310	1330	nm
Output Spectral Width	△λ		-	4	nm
Average Output Power	Po	-9	-	-3	dBm
Extinction Ratio	E.R.	9	-	-	dB
Data Input Voltage-High	V_{IHS}	V_{cc}-1.16	-	V_{cc}-0.89	V
Data Input Voltage -Low	V_{ILS}	V_{cc}-1.82	-	V_{cc}-1.48	V
Supply Current	I_{CC}	-	90	130	mA
Output Optical Eye	Compliant with IEEE802.3Z				
Receiver					
Parameter	**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**
Receive Sensitivity	P_{min}	-	-	-22	dBm
Maximum Input Power	P_{MAX}	-3			dBm
Signal Detect Threshold-De-Assert:	S_D	-	-	-23	dBm
Signal Detect Threshold-Assert	S_A	-33	-	-	dBm
Hysteresis	-	-	2.0	-	dBm
Output High Voltage	V_{OH}	V_{cc}-1.03	-	V_{cc}-0.89	V
Output Low Voltage	V_{OL}	V_{cc}-1.82	-	V_{cc}-1.63	V
Operating Wavelength	λc	1100	-	1600	nm
Supply Current	I_{CC}	-	80	110	mA

Absolute Maximum Ratings:

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T_{ST}	-40	+85	℃
Input Voltage	T_{CC}	0	+5	V

Recommended Operating Environment:

Parameter	Symbol	Min.	Typical	Max.	Unit
Supply Voltage	V_{CC}	+3.0	+3.3	+3.6	V
Operating Temperature	T_{OP}	0	-	+70	℃

Timing Characteristics:

Parameter	Symbol	Min.	Typical	Max.	Unit
TX_DISABLE Assert Time	t_off		3	10	usec
TX_DISABLE Negate Time	t_on		0.5	1	msec
Time to initialize include reset of TX_FAULT	t_int		30	300	msec
TX_FAULT from fault to assertion	t_fault		20	100	usec
TX_DISBEL time to start reset	t_reset	10			usec
Receiver Loss of Signal Assert Time (off to On)	T_A,RX_LOS			100	usec
Receiver Loss of Signal Assert Time (on to off)	T_d,RX_LOS			100	usec

Block Diagram of Transceiver:

Pin Assignme

Pin out of Connector Block on Host Board

Pin Description:

Pin	Symbol	Name/Description	Ref.
1	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
2	T_{FAULT}	Transmitter Fault. **Low normal operation,High Fault indication**	
3	T_{DIS}	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
10	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
11	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
15	V_{CCR}	Receiver Power Supply	
16	V_{CCT}	Transmitter Power Supply	
17	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 3.6V. MOD_DEF(0) pulls line low to indicate module is plugged in.
4. LOS is open collector output. Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

Serial ID Memory Contents:

Alton ASFP1G10S31C SFP transceivers support the 2-wire serial communication protocol as defined in the SFP MSA1. It is very closely related to the E2PROM defined in the GBIC standard, with the same eletrical specifications.

The standard SFP serial ID provides access to identification information that describes the transceiver's capabilities, standard interfaces, manufacturer, and other information.

The SFP MSA defines a 256-byte memory map in E2PROM that is accessible over a 2-wire serial interface at the 8 bit address 1010000X (A0h)

Data Address	Length (Byte)	Name of Length	Description and Contents
Base ID Fields			
0	1	Identifier	Type of Serial transceiver (03h=SFP)
1	1	Reserved	Extended identifier of type serial transceiver (04h)
2	1	Connector	Code of optical connector type (07=LC)
3-10	8	Transceiver	Gigabit Ethernet 1000Base-SX & Fiber Channel
11	1	Encoding	8B10B (01h)
12	1	BR,Nominal	Nominal baud rate, unit of 100Mbps
13-14	2	Reserved	(0000h)
15	1	Length(9um)	Link length supported for 9/125um fiber, units of 100m
16	1	Length(50um)	Link length supported for 50/125um fiber, units of 10m
17	1	Length(62.5um)	Link length supported for 62.5/125um fiber, units of 10m
18	1	Length(Copper)	Link length supported for copper, units of meters
19	1	Reserved	
20-35	16	Vendor Name	
36	1	Reserved	
37-39	3	Vendor OUI	SFP transceiver vendor OUI ID
40-55	16	Vendor PN	
56-59	4	Vendor rev	Revision level for part number
60-62	3	Reserved	
63	1	CCID	Least significant byte of sum of data in address 0-62
Extended ID Fields			
64-65	2	Option	Indicates which optical SFP signals are implemented

			(001Ah = LOS, TX_FAULT, TX_DISABLE all supported)
66	1	BR, max	Upper bit rate margin, units of %
67	1	BR, min	Lower bit rate margin, units of %
68-83	16	Vendor SN	Serial number (ASCII)
84-91	8	Date code	Manufacturing date code
92-94	3	Reserved	
95	1	CCEX	Check code for the extended ID Fields (addresses 64 to 94)
Vendor Specific ID Fields			
96-127	32	Readable	specific date, read only

Mechanical Dimensions:

Recommended Circuit:

Note A: Circuit assumes open emitter output

Note B: Circuit assumes high impedance internal bias @Vcc-1.3V

Part Number Definition and Ordering Information:

Company	A
Package	SFP:SFP BFP: BIDI SFP B19: BIDI 1x9
Data Rate	1G: 1.25G FE: 125M 01: 155M 04: 622M 16: 2488M~2667M 64: 9.958G~11.1G
Distance	xx: xxKM
Fiber Mode	S: Single Mode M: Multi Mode X: Not defined
Wavelength	31: 1310nm 55: 1550nm 85: 850nm 47: 1470nm 49: 1490nm 51: 1510nm 53: 1530nm 55: 1550nm 57: 1570nm 59: 1590nm 61: 1610nm XX: Not defined
Temperature	C: 0 – 70℃ I: -45~+85℃
DDM	D: with DDM Blank: without DDM
Connector	Blank: LC S: SC P: Pigtail/SC

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