



Features

- Maximum Data Rate up to 48Gbps
- Link distance up to 100m over OM3 MMF
- 4 channel 850nm VCSEL and PIN type detector
- Connector compliant to SFF-8644
- Management interface compliant to SFF-8636
- Hot Pluggable
- Single 3.3V and high speed AC-Coupled
- Operating Temperature range: 0°C to 70°C
- ROHS Compliant

Applications

- ■48G Mini SAS HD
- Server / Storage, Work Stations
- HBAs (Host Bus Adapters) Servers
- Storage Racks, RAIDs

Recommended Operating Conditions

Parameter	Symbol	Min	Typ.	Max	Units	Notes
Storage Temperature	Tstg	-20		85	°C	
Supply Voltage	Vcc			6.00	V	Vcc-ground
Data DC Voltage	Voffset	-10		10	Vpk	V (Tx+, Tx-, Rx+, Rx-) to ground

Module Specifications - Recommended Operating Conditions

Parameter	Symbol	Min	Typ.	Max	Units	Notes
Ambient Operating Temperature	Ta	-10		70	°C	
Supply Voltage	Vcc	3.15	3.3	3.45	Vdc	
Baud Rate	BRate	3		12	Gpbs	

Electrical Characteristics

Parameter	Symbol	Min	Typ.	Max	Units	Notes
Bit Error Rate	BER			1E-12		
Supply Current – Serial ID write	IccW		15	30	mA	For Serial IDoption only
Supply Current – Serial ID read	IccR		0.8	20	mA	
Surge Current	I _{surge}			30	mA	Surge above steadystate value

Memory Location Descriptions

2-Wire Serial Address: 1010000x

0	ID and status	(3 Bytes)	128	Base ID Fields	(64 Bytes)
2	Interrupt Flags	(19 Bytes)	191	Extended ID	(32 Bytes)
21	Module Monitors	(12 Bytes)	223	Vender Specific ID	(32 Bytes)
33	Channel Monitors	(48 Bytes)	255		
81	Reserved	(4 Bytes)			
85	Control	(12 Bytes)			
97	Reserved	(2 Bytes)			
99	Free Side Device and Channel Mask	(7 Bytes)			
106	Reserved	(1 Bytes)			
107	Free Side Device Properties	(4 Bytes)			
111	Reserved	(7 Bytes)			
118	Password Change Entry Area (Optional)	(4 Bytes)			
122	Password Entry Area (Optional)	(4 Bytes)			
126	Page Select Byte	(1 Bytes)			

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case temperature	Top	-10		70	°C
Supply Voltage (Active Cable Power)	Vact	3.15	3.3	3.45	V
Current Consumption (per cable end)	Iact		200	300	mA
Data Rate per Channel			12		Gbps
Receiver Differential Impedance			100		Ohm
Receiver Common-mode Impedance			25		Ohm
Control Input Voltage High	Vih	2		Vact	V
Control Input Voltage Low	Vil	0		0.8	V
Two Wire Serial Interface Clock Rate	f _{scck}			400	kHz

Electrical Characteristics for 12Gbs (1-Channel)

Parameter	Cable Input	Cable Output	Unit
Maximum peak to peak voltage (2 x Z2)	1200	1200	mV(P-P)
Minimum eye opening (2 x Z1)	200	190	mV(P-P)
Maximum half of TJ (X1)	0.175	0.3	UI
Maximum RJ	0.15	0.33	UI
Center of bit time (X2)	0.5	0.5	UI

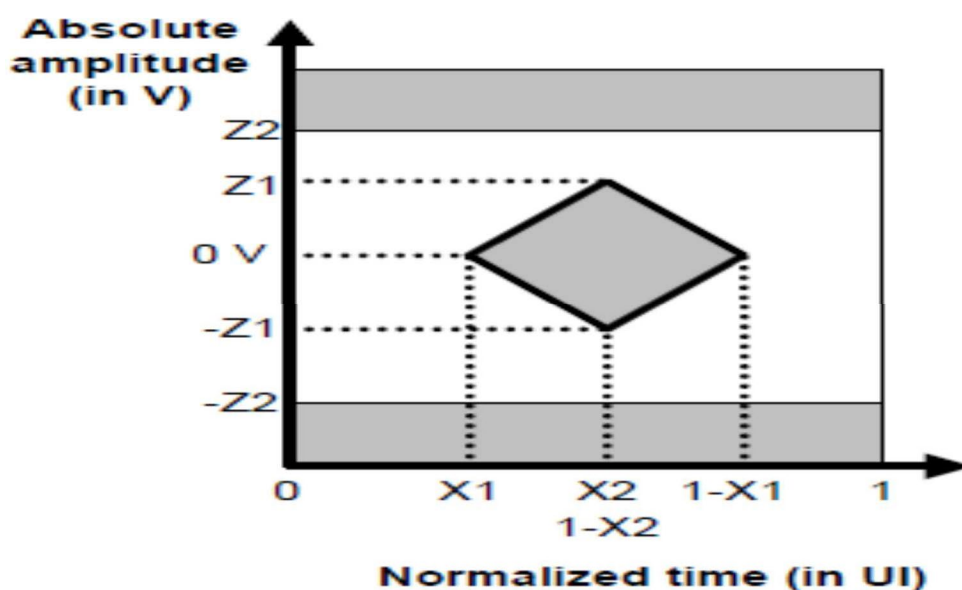
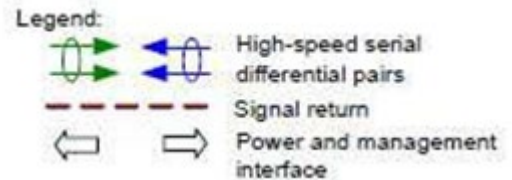
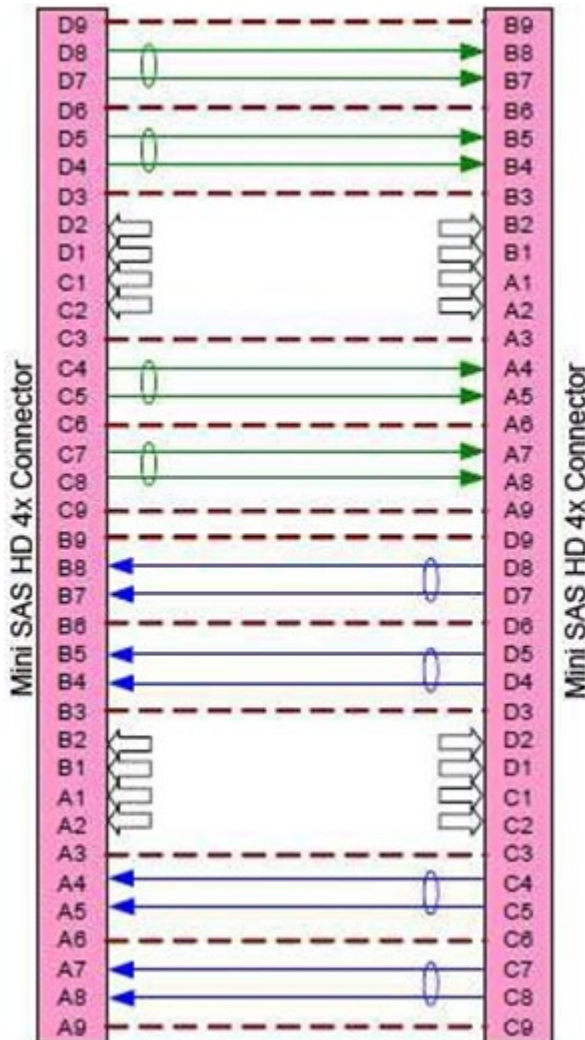
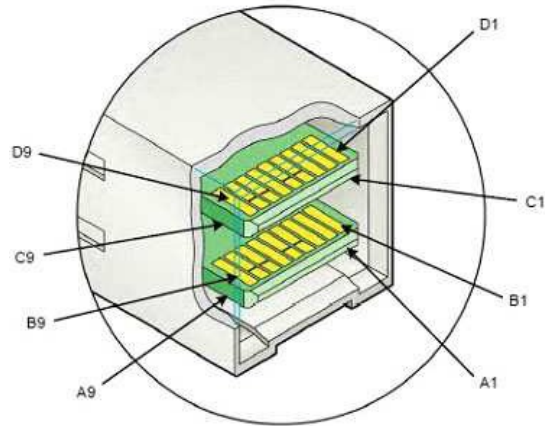
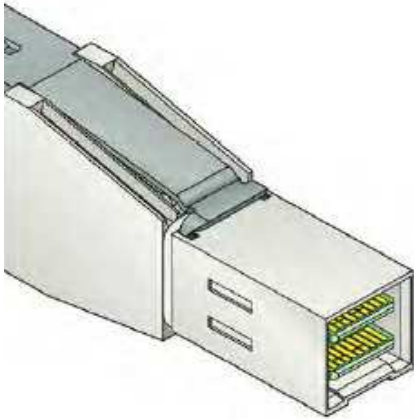


Figure - Active cable eye mask for 12 Gbps

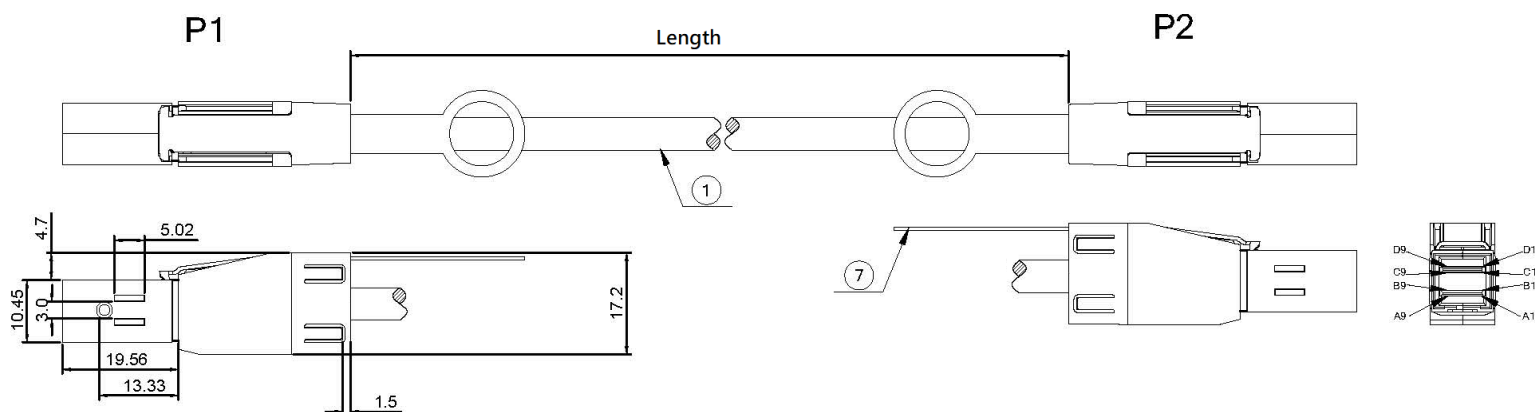
Pin Define



Pin	Pin usage based on number of physical links supported by the cable assembly ^a				Mating level ^b
	One	Two	Three	Four	
Rx 0-	B5	B5	B5	B5	Third
Rx 0+	B4	B4	B4	B4	
Rx 1-	N/C	A5	A5	A5	
Rx 1+	N/C	A4	A4	A4	
IntL	A2	A2	A2	A2	Second
Reserved	A1	A1	A1	A1	
ModPrsL	B2	B2	B2	B2	
Vact	B1	B1	B1	B1	
Rx 2-	N/C	N/C	B8	B8	Third
Rx 2+	N/C	N/C	B7	B7	
Rx 3-	N/C	N/C	N/C	A8	
Rx 3+	N/C	N/C	N/C	A7	
Tx 0-	D5	D5	D5	D5	Third
Tx 0+	D4	D4	D4	D4	
Tx 1-	N/C	C5	C5	C5	
Tx 1+	N/C	C4	C4	C4	
SDA	C2	C2	C2	C2	Second
SDL	C1	C1	C1	C1	
Vman	D2	D2	D2	D2	
Vact	D1	D1	D1	D1	
Tx 2-	N/C	N/C	D8	D8	Third
Tx 2+	N/C	N/C	D7	D7	
Tx 3-	N/C	N/C	N/C	C8	
Tx 3+	N/C	N/C	N/C	C7	
SIGNAL GROUND	A3, A6, A9, B3, B6, B9, C3, C6, C9 D3, D6, D9				First

a. N/C = not connected

b. The mating level indicates the physical dimension of the contact (see SFF-8644).

Dimensions

PIN ASSIGNMENT

P1		P2	P1		P2
A3	←	C3	C3	→	A3
A4	←	C4	C4	→	A4
A5	←	C5	C5	→	A5
A6	←	C6	C6	→	A6
A7	←	C7	C7	→	A7
A8	←	C8	C8	→	A8
A9	←	C9	C9	→	A9
B3	←	D3	D3	→	B3
B4	←	D4	D4	→	B4
B5	←	D5	D5	→	B5
B6	←	D6	D6	→	B6
B7	←	D7	D7	→	B7
B8	←	D8	D8	→	B8
B9	←	D9	D9	→	B9

ESD

Normal ESD precautions are required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

Ordering Information

MD-6708806-01000	L (meters)
MD-6708806-01000	1 ± 0.02
MD-6708806-03000	3 ± 0.05
MD-6708806-05000	5 ± 0.05
MD-6708806-07000	7 ± 0.05
MD-6708806-10000	10 ± 0.10
MD-6708806-15000	15 ± 0.10
MD-6708806-20000	20 ± 0.20
MD-6708806-30000	30 ± 0.02
MD-6708806-40000	40 ± 0.05
MD-6708806-50000	50 ± 0.05
MD-6708806-60000	60 ± 0.05
MD-6708806-70000	70 ± 0.10
MD-6708806-80000	80 ± 0.10
MD-6708806-10000	100 ± 0.20