



Technical Specification for Multimode 850nm Small Form Factor Pluggable (SFP)

SCP6F86-GL-CWH (Diagnostic Monitoring with Internal Calibration)

- | | | |
|--|---|--|
| <input type="checkbox"/> 155.52Mbps | <input type="checkbox"/> 622.08Mbps | <input checked="" type="checkbox"/> other 1062.5 / 1250 / 2125Mbps |
| <input type="checkbox"/> Short Haul | <input type="checkbox"/> Long Haul | <input checked="" type="checkbox"/> other up to 550m |
| <input type="checkbox"/> Intermediate Reach | <input type="checkbox"/> Long Reach | <input type="checkbox"/> other _____ |
| <input type="checkbox"/> Single 5.0 V | <input checked="" type="checkbox"/> Single 3.3 V | <input checked="" type="checkbox"/> other 850nm |
| <input type="checkbox"/> 1.3 μm | <input type="checkbox"/> 1.55 μm | |
| <input checked="" type="checkbox"/> W / Diagnostic Monitor | <input type="checkbox"/> W / O Diagnostic Monitor | |



Sumitomo Electric reserves the right to make changes in this specification without prior notice.

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#Safety Precaution Symbols This specification uses various picture symbols to prevent possible injury to operator or other persons or damage to properties for appropriate use of the product. The symbols and definitions are as shown below. Be sure to be familiar with these symbols before reading this specification.

	Warning	Wrong operation without following this instruction may lead to human death or serious injury.
	Caution	Wrong operation without following this instruction may lead to human injury or property damage.

Example of picture symbols indicates prohibition of actions. Action details are explained thereafter.

indicates compulsory actions or instructions. Action details are explained thereafter.

1. General

Features and applications of SCP6F86-GL are listed below.

Features

- * Compliant with RoHS
- * 2.125GBd Fibre Channel 200-MS-SN-I and 200-M6-SN-I Rev.13 Standard Compliant
- * 1.0625GBd Fibre Channel 100-M5-SN-I and 100-M6-SN-I Rev.13 Standard Compliant
- * IEEE802.3 1000Base-SX Ethernet Compliant
- * Compliant with SFP MSA
- * SFF-8472 rev.9 compliant diagnostic monitoring implemented
- * Power Supply Voltage Single +3.3V \pm 10%
- * Electrical Interface AC coupled for DATA, LVTTTL for Tx Disable, open collector output for LOS and Tx Fault.
- * Fiber Coupled Power -9.5 to -2.5dBm (MMF 50 / 125 μ m,62.5 / 125 μ m)
- * Connector Interface LC Duplex Connector
- * Serial ID Functionality

Applications

- *Switch to switch interface and switched backplane applications
- *High speed interface for file servers

2. Block Diagram

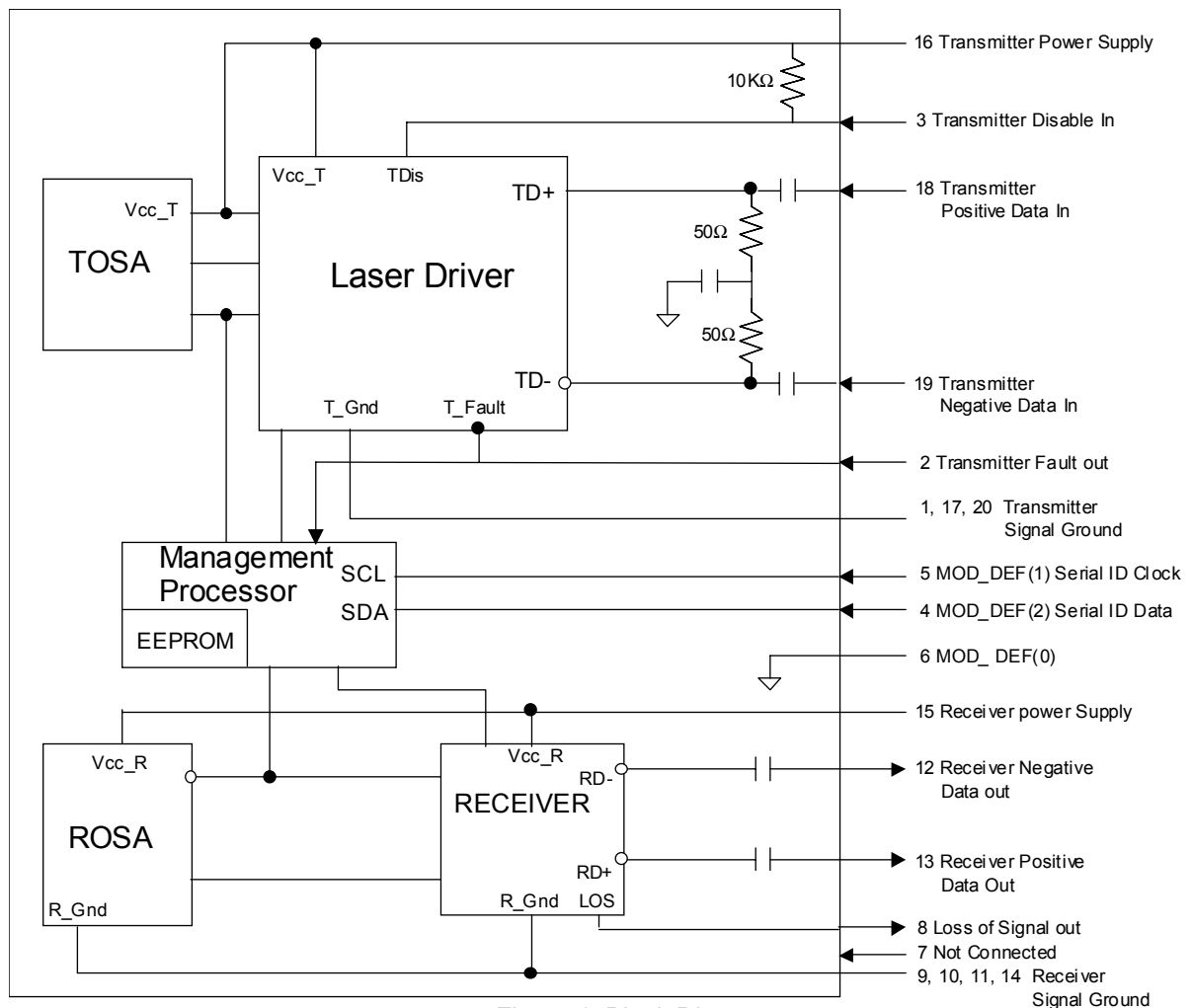
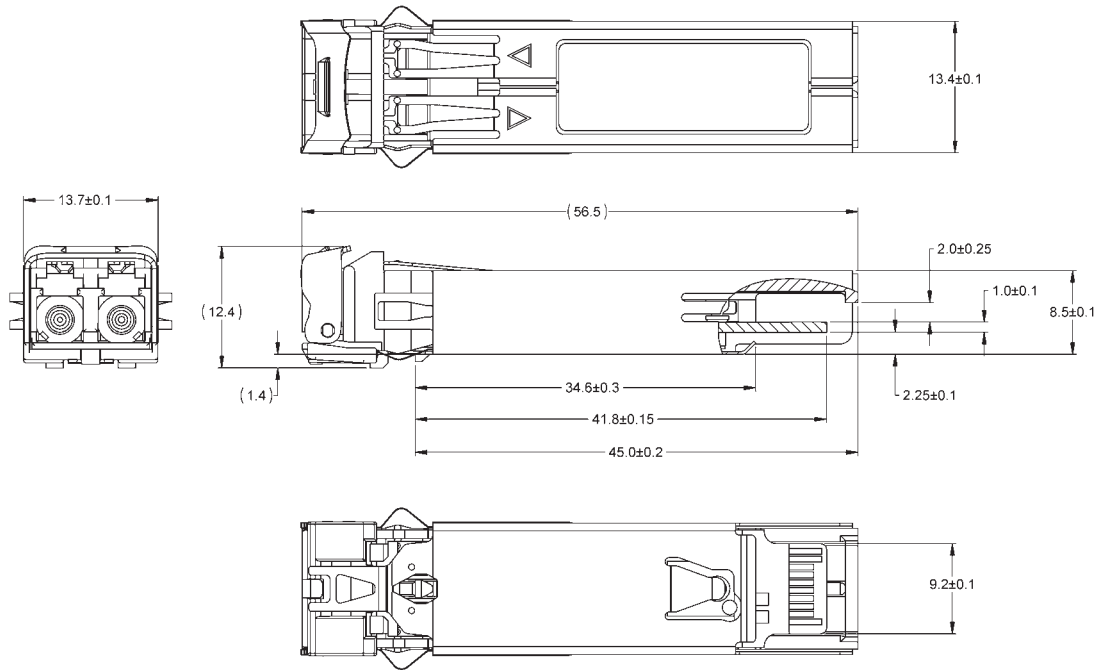


Figure 1. Block Diagram

⚠ Caution

Do not disassemble this product. Otherwise, failure, electrical shock, overheating or fire may occur.

3.Package Dimensions



Bail color is beige

Unit:inch[mm]

* Recommended Cage and Connector

- Top EMI Cage 1367035-1(Tyco/Electronics:1308292--AMP-04/00)
- Bottom EMI Cage 1367034-1(Tyco/Electronics:1308292--AMP-04/00)
- Host Connector 1367073-1(Tyco/Electronics:1308292--AMP-04/00)

Please refer to their latest specifications.

Figure2. Outline Dimensions

4. Pin Assignment

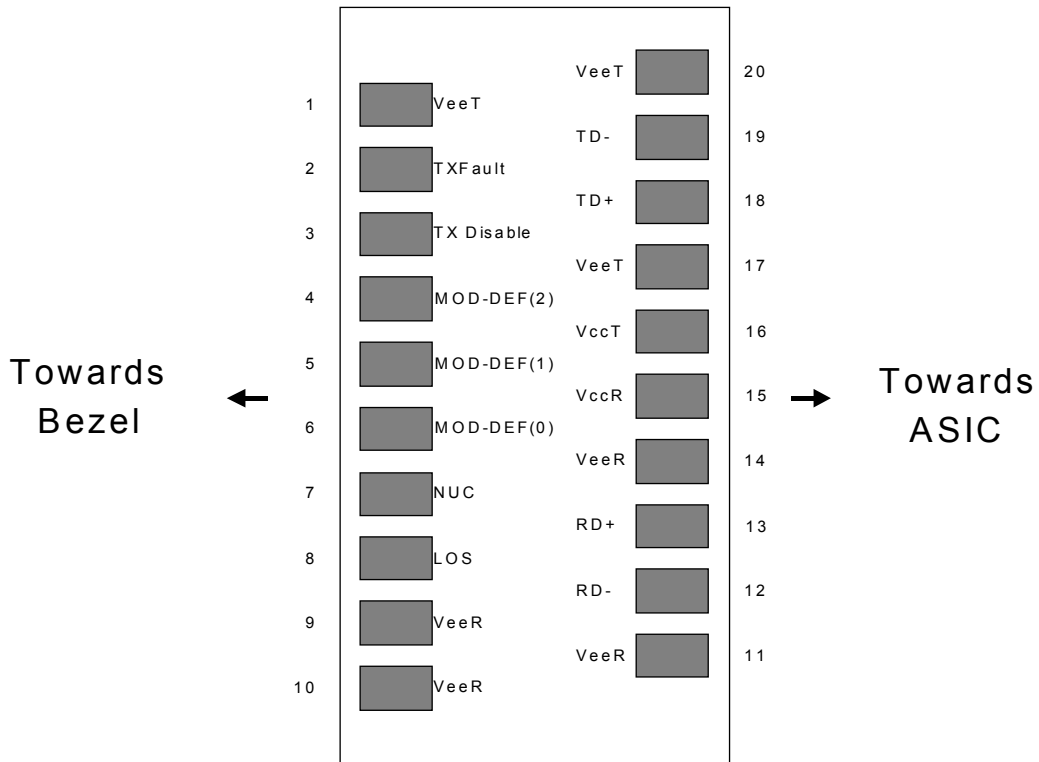


Figure 3. Diagram of Host Board Connector Block Pin Numbers and Names

Pin Num.	Name	Function	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	
2	TX Fault	Transmitter Fault Indication	3	Note 1
3	TX Disable	Transmitter Disable	3	Note 2 Module disables on high or open
4	MOD-DEF2	Module Definition 2	3	Note 3, 2 wire serial ID and Interface
5	MOD-DEF1	Module Definition 1	3	Note 3, 2 wire serial ID and Interface
6	MOD-DEF0	Module Definition 0	3	Note 3
7	NUC	NUC	3	No User Connection, reserved for future function.
8	LOS	Loss of Signal	3	Note 4
9	VeeR	Receiver Ground	1	
10	VeeR	Receiver Ground	1	
11	VeeR	Receiver Ground	1	
12	RD-	Inv. Receiver Data Out	3	Note 5
13	RD+	Receiver Data Out	3	Note 5
14	VeeR	Receiver Ground	1	
15	VccR	Receiver Power	2	3.3V± 10%
16	VccT	Transmitter Power	2	3.3V± 10%
17	VeeT	Transmitter Ground	1	
18	TD+	Transmitter Data In	3	Note 6
19	TD-	Inv. Transmitter Data In	3	Note 6
20	VeeT	Transmitter Ground	1	

Plug Seq.: Pin engagement sequence during hot plugging.

Note

- 1) Tx Fault is an open collector output that shall be pulled up with a 10kΩ resistor on the host board. Pull up voltage between VccT-0.5 and VccT. When high, output indicates a laser fault of some kind. Low indicates normal operation.
- 2) Tx Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 10kΩ resistor.
- 3) Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 10kΩ resistor on the host board. The pull-up voltage shall be VccT.

Mod-Def 0 indicates that the module is present

Mod-Def 1 is the clock line of two wire serial interface for serial ID

Mod-Def 2 is the data line of two wire serial interface for serial ID

- 4) LOS (Loss of Signal) is an open collector output that shall be pulled up with a 10kΩ resistor. Pull up voltage between VccR-0.5 and VccR. Low indicates normal operation.
- 5) RD-/+ : These are the differential receiver outputs. They are AC coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board.
- 6) TD-/+ : These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on the host board.

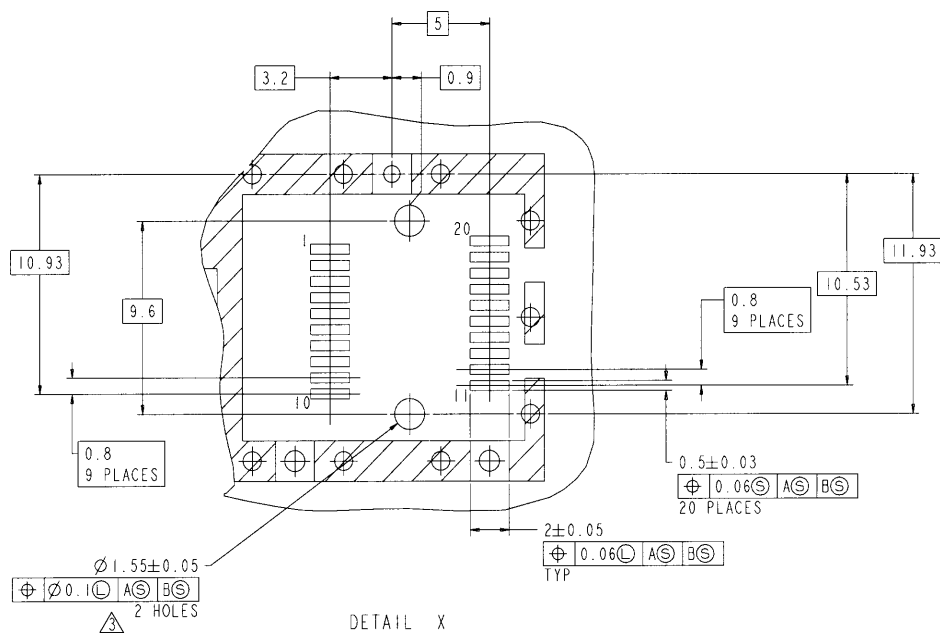


Figure 4. SFP Host Board Mechanical Layout

Notes:

1. Datum and basic dimensions established by customer
2. Pads and vias are chassis ground, 11 places
3. Thru holes, plating optional

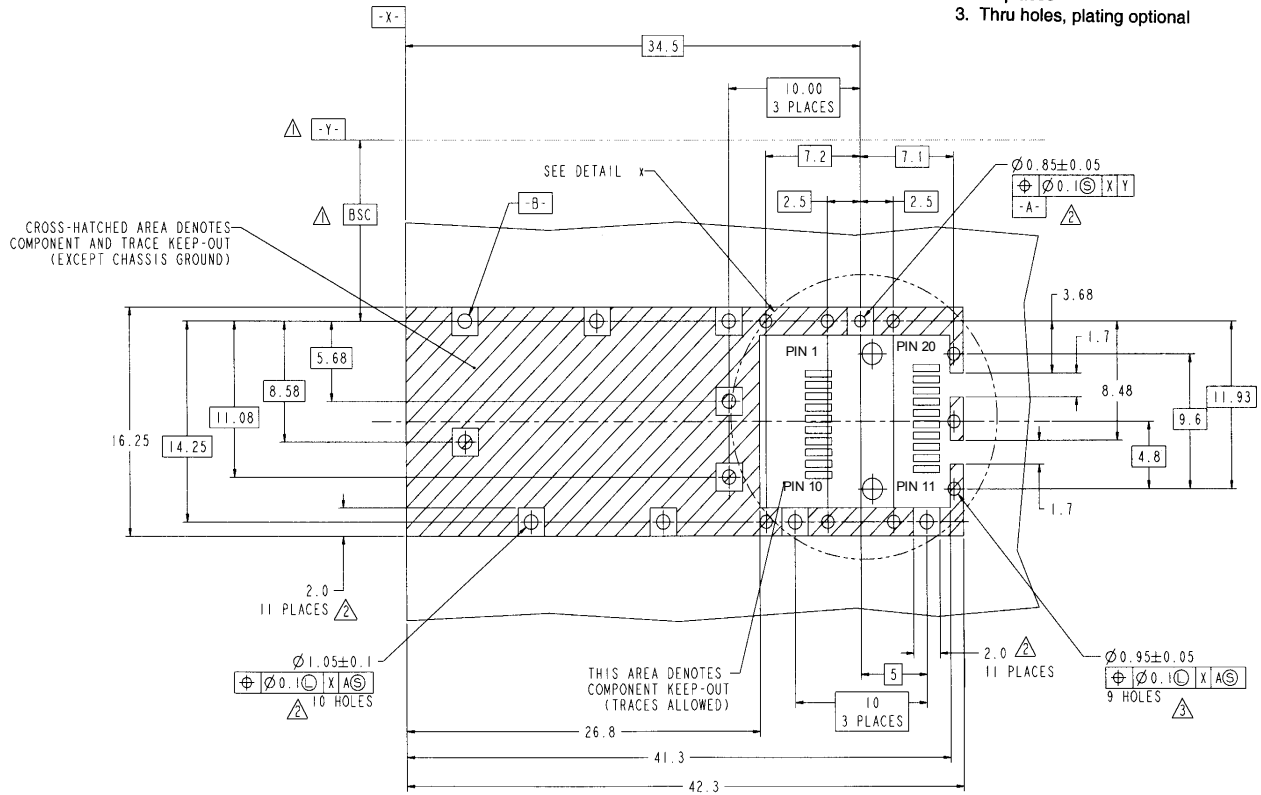
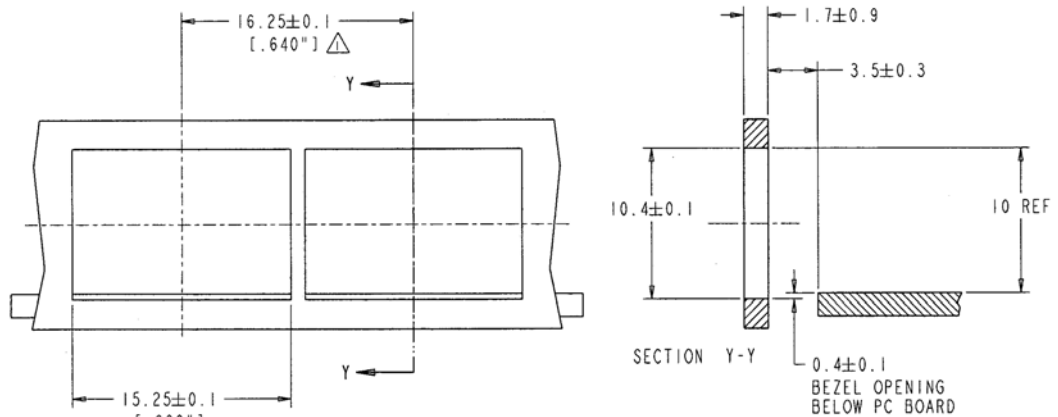


Figure 5. SFP Host Board Mechanical Layout (Cont.)



NOTES:

1. MINIMUM PITCH ILLUSTRATED, ENGLISH DIMENSIONS ARE FOR REFERENCE ONLY
2. NOT RECOMMENDED FOR PCI EXPANSION CARD APPLICATIONS

Figure 6. Recommended Bezel Design

5. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Ambient Temperature	Ts	-40		85	°C	1
Operating Case Temperature	Tc	-40		85		
Supply Voltage	VccT,R	0		4.0	V	
Input Voltage	Vi	0		VccT+0.3	V	2
Transmitter Differential Input Voltage	VD	-		2.5	V	

Notes

1. No condensation allowed.
2. For MOD-DEF (1:2), Tx Disable.

⚠ Warning

❗ Use the product with the rated voltage described in the specification. If the voltage exceeds the maximum rating, overheating or fire may occur.

⚠ Caution

⊘ Do not store the product in the area where temperature exceeds the maximum rating, where there is too much moisture or dampness, where there is acid gas or corrosive gas, or other extreme conditions. Otherwise, failure, overheating or fire may occur.

6. Electrical Interface

Unless otherwise specified, VccT,R = 2.97 to 3.63 V and all operating temperature shall apply, 2Gbps characteristics guaranteed only Tc=-20 to 85degC

6-1. Operating Characteristics

Parameter	Symbol	Min	Typical	Max.	Unit	Note
Supply Voltage	VccT,R	2.97	3.30	3.63	V	

6-2. Transmitter side

Parameter	symbol	min	Typical	max	Unit	Notes
Bit Rate Range		1000	2125	2200	Mbps	
Supply Current	I _{ccT}		40	70	mA	
Input Voltage Swing (TD+TD-)	V _{in}	250	800	2200	mV _{p-p}	1
Data Input Rise/Fall time		60		175	ps	2
		60		350	ps	3
Data Input Skew				35	ps	
Data Input Deterministic Jitter	DJ _{tin1}			0.14	UI	4
Data Input Deterministic Jitter	DJ _{tin2}			0.100	UI	5
Data Input Deterministic Jitter	DJ _{tin3}			0.12	UI	6
Data Input Total Jitter	TJ _{tin1}			0.26	UI	7
Data Input Total Jitter	TJ _{tin2}			0.240	UI	8
Data Input Total Jitter	TJ _{tin3}			0.25	UI	9
Transmit Disable Voltage Level	V _{di}	VccT-1.0		VccT	V	
	V _{ei}	0		0.8	V	
Transmit Fault Output Voltage Level	V _{faultH}	VccT-0.5		VccT	V	
	V _{faultL}	0		0.5	V	

Notes

1. Refer to Figure7
2. 20%-80%, Differential, 2.125Gbps (Tc=-20 to 85degC)
3. 20%-80%,Differential, 1.0625Gbps, 1.25Gbps
4. +K28.5 Pattern, δ_T,2.125Gbps (Tc=-20 to 85degC)
5. +K28.5 Pattern, TP1, 1.25Gbps
6. +K28.5 Pattern, δ_T, 1.0625Gbps
7. PRBS2⁷-1, δ_T,2.125Gbps, BER < 10⁻¹² (Tc=-20 to 85degC)
8. PRBS2⁷-1, TP1,1.25Gbps, BER<10⁻¹²
9. PRBS2⁷-1,δ_T,1.0625Gbps, BER<10⁻¹²

6-3. Receiver side

Parameter	symbol	min	Typ	max	Unit	Note
Supply Current	I_{CCR}		100	115	mA	
Differential Output Voltage Swing		500		1300	mV _{P,P}	1
Data Output Rise/Fall Time				200	ps	2
Data Output Skew				50	ps	3
Data Output Deterministic Jitter With Worst Case Input	DJ_{rout1}			0.39	UI	4
Data Output Deterministic Jitter With Worst Case Input	DJ_{rout2}			0.462	UI	5
Data Output Deterministic Jitter With Worst Case Input	DJ_{rout3}			0.36	UI	6
Data Output Total Jitter With Worst Case Input	TJ_{rout1}			0.64	UI	7
Data Output Total Jitter With Worst Case Input	TJ_{rout2}			0.749	UI	8
Data Output Total Jitter With Worst Case Input	TJ_{rout3}			0.61	UI	9
Loss of Signal Voltage Level	V_{loh}	$V_{\text{ccR}}-0.5$		V_{ccR}	V	
	V_{loi}	0		0.5	V	
Loss of Signal Assert / Deassert Time	T_{LOSA}			100	μs	
	T_{LOSD}			100	μs	

Notes

1. $V_{\text{ccR}} = +3.3\text{V} \pm 10\%$, Output load Resistance $R_{\text{diff}} = 100\Omega$, Refer to Figure7.
2. 20%-80%, Differential
3. $R_{\text{diff}} = 100\Omega$, Differential
4. $\pm K28.5$ pattern, δ_R , 2.125Gbps ($T_c = -20$ to 85degC)
5. $\pm K28.5$ pattern, TP4, 1.25Gbps
6. $\pm K28.5$ pattern, δ_R , 1.0625Gbps
7. PRBS2⁷-1, BER < 10^{-12} , δ_R , 2.125Gbps ($T_c = -20$ to 85degC)
8. PRBS2⁷-1, BER < 10^{-12} , TP4, 1.25Gbps
9. PRBS2⁷-1, BER < 10^{-12} , δ_R , 1.0625Gbps

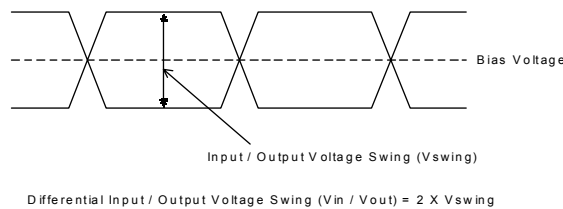


Figure 7. Definition of Differential Input / Output Voltage Swing

6-4. Module Definition

Parameter		Symbol	Min.	Typ.	Max.	Unit	Note
MOD_DEF(1:2) Input Voltage	High	Vih	0.7VccT		VccT+0.3	V	1
	Low	Vil	0		0.3VccT	V	
MOD_DEF(2) Output Voltage	High	Voh	2.0		VccT	V	1
	Low	Vol1	0		0.4	V	

Notes

1. They shall be pulled up to VccT with a 10kΩ resistor on the host board.

7. Optical Interface

Unless otherwise specified, VccT,R = 2.97 to 3.63 V and all operating temperature shall apply,
2Gbps characteristics guaranteed only Tc=-20 to 85degC

7-1. Operating range over each optical fiber type

	fiber type	Modal bandwidth @ 850nm (MHz · km)	Minimum range (m)
1000BASE-SX	62.5μm MMF	200	2 to 275
	50μm MMF	500	2 to 550
100-M5-SN-I	50μm MMF	500	0.5 to 500
100-M6-SN-I	62.5μm MMF	200	0.5 to 300
200-M5-SN-1	50μm MMF	500	0.5 to 300
200-M6-SN-1	62.5μm MMF	200	0.5 to 150

7-2. Transmitter side

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Bit Rate Range		1000		2200	Mbps	
Average Output Power to MMF (Enable)	Po	-9.5	-5	-2.5	dBm	1
Average Output Power (Disable)	Pdis			-35.0	dBm	
Extinction Ratio	Er	9			dB	2
Center Wavelength	λc	830	850	860	nm	1
Spectral Width (RMS)	Δλ			0.85	nm	
Eye Mask for Optical Output	Compliant with Eye Mask Defined in ANSI FC-PI Rev.13 and IEEE 802.3					
RN	RN			-117	dB/Hz	1, 3
Optical Rise / Fall Time	tr / tf			150	ps	1, 4
Deterministic Jitter With Worst Case Input	DJtout1			0.26	UI	5
Deterministic Jitter With Worst Case Input	DJtout2			0.200	UI	6
Deterministic Jitter With Worst Case Input	DJtout3			0.21	UI	7
Total Jitter With Worst Case Input	TJtout1			0.44	UI	8
Total Jitter With Worst Case Input	TJtout2			0.431	UI	9
Total Jitter With Worst Case Input	TJtout3			0.43	UI	10

Notes

1. Measured at 1062.5, 1250, 2125Mbps, PRBS2*7-1, 50% duty cycle, NRZ, Tc=-20 to 85degC only for 2125Mbps.
2. Measured at 1250Mbps, K28.7
3. 2GHz, 12dB reflection
4. These are unfiltered 20-80% values.
5. ±K28.5 Pattern, γT, 2.125Gbps (Tc=-20 to 85degC)
6. ±K28.5 Pattern, TP2, 1.25Gbps
7. ±K28.5 Pattern, γT, 1.0625Gbps
8. PRBS2*7-1 Pattern, γT, 2.125Gbps (Tc=-20 to 85degC)
9. PRBS2*7-1 Pattern, TP2, 1.25Gbps
10. PRBS2*7-1 Pattern, γT, 1.0625Gbps

	X_1	X_2
1000BASE-SX	22	37.5
100-M5-SN-I	21.5	40
100-M6-SN-I		
200-M5-SN-1	22	40
200-M6-SN-1		

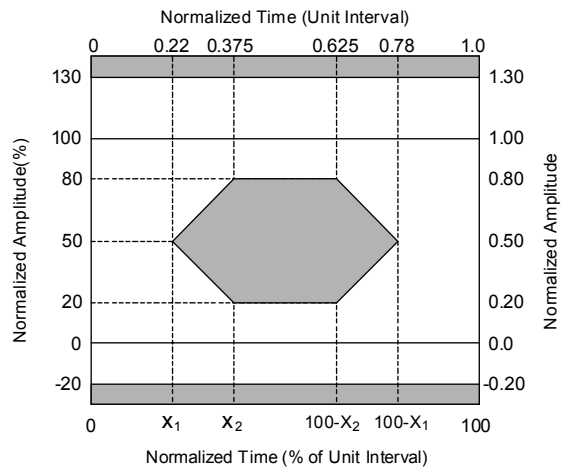


Figure 8. Eye Diagram Mask for Optical Output

Warning

Do not look at the laser beam projection area (e.g. end of optical connector) with naked eyes or through optical equipment while the power is supplied to this product. Otherwise, your eyes may be injured.

7-3. Receiver side

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Bit Rate Range		1000		2200	Mbps	
Center Wavelength	λ	770		860	nm	
Sensitivity(OMA)	S1		25	49	μ W	1
	S2		18	31		2
Minimum Optical Modulation Amplitude	OMA_R			96	μ W	3
				109		4
				69		5
				87		6
				55		7
				67		8
Overload	Pmax	0			dBm	
LOS Activation Level	PLa	-30	-21		dBm	9
LOS Deactivation Level	PLd			-17	dBm	9
Reflectance	REFr			-12	dB	
Optical Input Deterministic Jitter	DJrin1			0.29	UI	10
Optical Input Deterministic Jitter	DJrin2			0.250	UI	11
Optical Input Deterministic Jitter	DJrin3			0.24	UI	12
Optical Input Total Jitter	TJrin1			0.48	UI	13
Optical Input Total Jitter	TJrin2			0.510	UI	14
Optical Input Total Jitter	TJrin3			0.47	UI	15

Notes

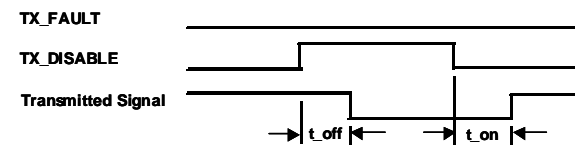
2. 125Gbps Equivalent to -15dBm @ 9dB Er (Tc=-20 to 85degC)
- 1.0625Gbps, 1.25Gbps Equivalent to -17dBm @ 9dBm Er
2. 125Gbps, Stressed receiver vertical eye closure penalty ISI=1.26dB (Tc=-20 to 85degC)
2. 125Gbps, Stressed receiver vertical eye closure penalty ISI=2.03dB (Tc=-20 to 85degC)
- 1.25Gbps, Stressed receiver vertical eye closure penalty ISI 2.2dB
- 1.25Gbps, Stressed receiver vertical eye closure penalty ISI=2.6dB
- 1.0625Gbps, Stressed receiver vertical eye closure penalty ISI=0.96dB
- 1.0625Gbps, Stressed receiver vertical eye closure penalty ISI=2.18dB
- $P_{La} < P_{Ld}$
- \pm K28.5 Pattern, γ_R , 2.125Gbps (Tc=-20 to 85degC)
- \pm K28.5 Pattern, TP3, 1.25Gbps
- \pm K28.5 Pattern, γ_R , 1.0625Gbps
- PRBS2⁷-1 Pattern, γ_R , 2.125Gbps (Tc=-20 to 85degC)
- PRBS2⁷-1 Pattern, TP3, 1.25Gbps
- PRBS2⁷-1 Pattern, γ_R , 1.0625Gbps

7-4. Transceiver Timing Characteristics

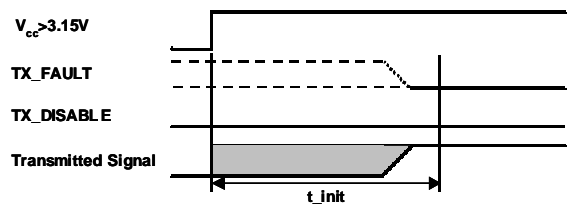
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Tx Disable Assert Time	t_{off}			10	us	1
Tx Disable Negate Time	t_{on}			1	ms	2
Time to Initialize	t_{init}			300	ms	3
Tx Fault Assert Time	t_{fault}			100	us	4
Tx Disable to Reset	t_{reset}	10			us	5
LOS Assert Time	t_{loss_on}			100	us	6
LOS Deassert Time	t_{loss_off}			100	us	7
Serial ID Clock Rate	f_{serial_clock}			100	kHz	

Notes

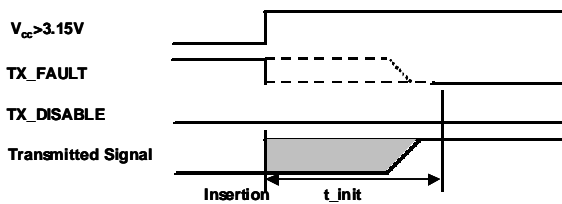
1. Time from rising edge of TX Disable to when the optical output falls below 10% of nominal.
2. Time from falling edge of TX Disable to when the modulated optical output rises above 90% of nominal.
3. From power on or negation of TX Fault using TX Disable.
4. Time from fault to TX fault on.
5. Time TX Disable must be held high to reset TX_fault.
6. Time from LOS state to RX LOS assert.
7. Time from non-LOS state to RX LOS deassert.



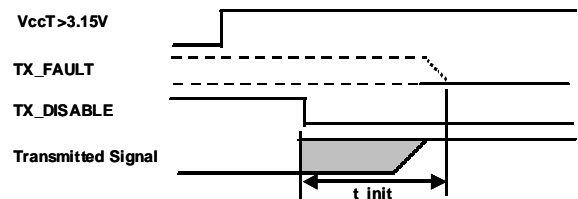
TX_DISABLE timing during normal operation.



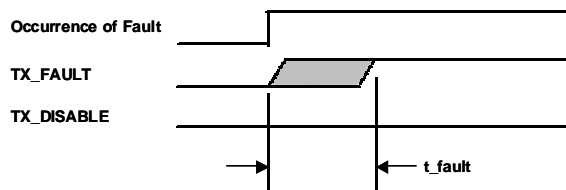
Power on initialization of SFP transceiver, TX_DISABLE negated



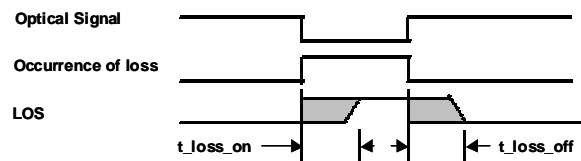
Example of initialization during hot plugging, TX_DISABLE negated



Power on initialization of SFP, TX_DISABLE asserted



Detection of transmitter safety fault condition



Timing of LOS detection

Figure 9. Transceiver Timing Charts

7-5. Tx_Fault / Tx Shutdown Options

SCP6F86-GL- CWH

└ Actuator and Tx_Fault Type

Type	Actuator	Tx Fault	Tx Shutdown on Tx Fault
C	Bail	Latched	Yes

Type:"C"

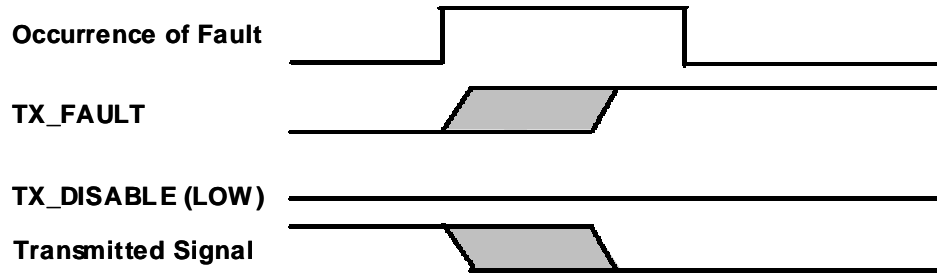


Figure 10. Part Number Identification For Tx_Fault / Tx Shutdown Behavior

8. Digital Diagnostic Memory Map

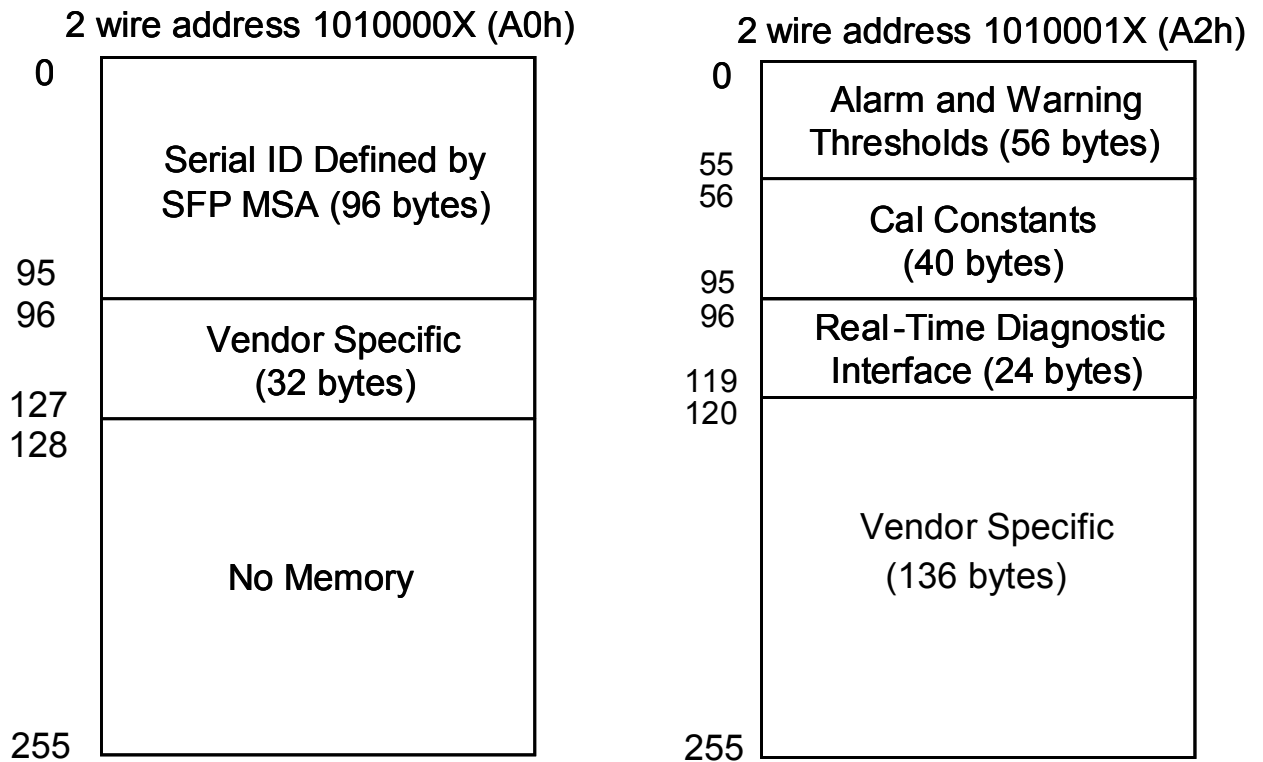


Figure 11. Digital Diagnostic Memory Map (A2h is applicable for SCP6F86-GL-CWH.)

(SCP6F86-GL)

9. EEPROM Serial ID Memory Contents

The data can be read using the 2-wire serial CMOS EEPROM protocol of the Atmel AT24C01A or equivalent.

2 wire address 1010000X (A0h)

Address	Name of field	Hex	ASCII	Description
BASE ID FIELDS				
0	Identifier	03		SFP Transceiver
1	Ext. Identifier	04		
2	Connector	07		LC Connector
3	Transceiver	00		
4		00		
5		00		
6		01		1000BASE-SX
7		20		intermediate distance (L)
8		40		Shortwave laser w/o OFC
9	0C		Multimode 62.5/50µm	
10	05		100.200MBytes/Sec	
11	Encoding	01		8B10B
12	BR_Nominal	15		2.125Gbps
13	Reserved	00		
14	Length(9µm) - km	00		
15	Length(9µm)	00		
16	Length(50µm)	1E		300m
17	Length(62.5µm)	0F		150m
18	Length(Copper)	00		
19	Reserved	00		
20	Vendor name	53	S	
21		75	u	
22		6D	m	
23		69	i	
24		74	t	
25		6F	o	
26		6D	m	
27		6F	o	
28		45	E	
29		6C	l	
30		65	e	
31		63	c	
32		74	t	
33		72	r	
34		69	i	
35		63	c	
36	Reserved	00		
37	Vendor OUI	00		
38		00		
39		5F		
40	Vendor PN	53	S	
41		43	C	
42		50	P	
43		36	6	
44		46	F	
45		38	8	
46		36	6	
47		2D	-	
48		47	G	
49		4C	L	
50		2D	-	
51		43	C	
52		57	W	
53		48	H	
54		20		
55	20			
56	Vendor rev	41 to 5A	A to Z	Variable
57		20		
58		20		
59		20		
60	Wavelength	03		850nm
61	Reserved	52		
62	Reserved	00		
63	CC_BASE	Note1		

Address	Name of field	Hex	ASCII	Description
EXTENDED ID FIELDS				
64	Options	00		
65		1A		
66	BR_max	00		
67	BR_min	00		
68	Vendor SN	Note2		Year
69				Month
70				
71				
72				
73				
74				
75				
76				
77				
78				
79				
80				
81				
82				
83				
84	Date code	Note3		
85				
86				
87				
88				
89				
90				
91				
92	Diagnostic Monitoring Type	68		Diagnostics(Int. Cal)
93	Enhanced Options	F0		Diagnostics
94	SFF-8472 Compliance	02		Diagnostics
95	CC_EXT	Note4		
VENDOR SPECIFIC ID FIELDS				
96	Read-only	20		
97		20		
98		20		
99		20		
100		20		
101		20		
102		20		
103		20		
104		20		
105		20		
106		20		
107		20		
108	20			
109	20			
110	20			
111	20			
112	20			
113	20			
114	20			
115	20			
116	20			
117	20			
118	20			
119	20			
120	20			
121	20			
122	20			
123	20			
124	20			
125	20			
126	20			
127	20			

Note1. Address 63 is check sum of bytes 0-62 Note2. Address 68-83 Vendor Serial Number
 Note3. Address 84-91 Date code
 Note4. Address 95 is check sum of bytes 64-94

10. Enhanced Monitoring Functions

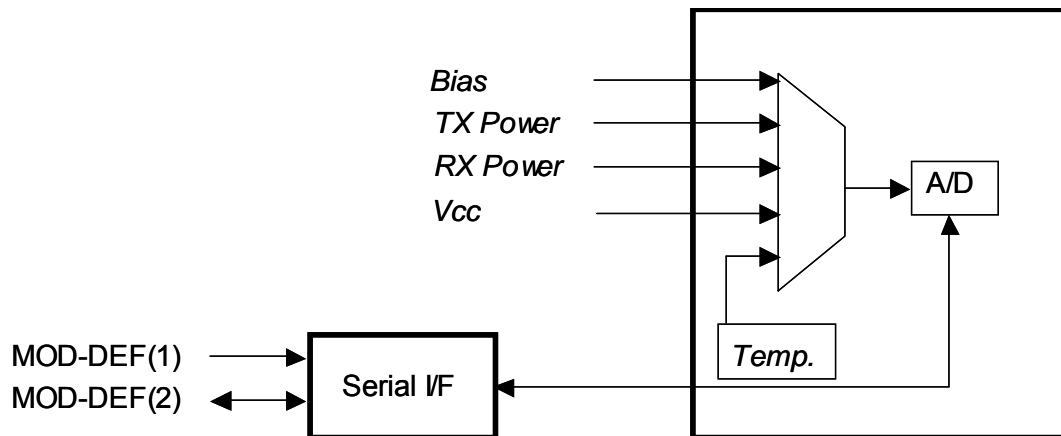


Figure 12. Block Diagram

Diagnostic Monitoring Type, 2 wire address A0h

Data Address	Bits	Description	Status(SEI)
92	7	Reserved for legacy diagnostic implementations. Must be '0' for compliance with SFF-8472.	0
92	6	Digital diagnostic monitoring implemented (described in SFF-8472). Must be '1' for compliance with SFF-8472.	1
92	5	Internally Calibrated	1
92	4	Externally Calibrated	0
92	3	Received power measurement type 0 = OMA, 1 = Average Power	1
92	2	Address change required. (Refer to SFF-8472)	0
92	1-0	Reserved	0

Enhanced Options, 2 wire address A0h

Data Address	Bits	Description	Status(SEI)
93	7	Optional Alarm/warning flags implemented for all monitored quantities	1
93	6	Optional Soft TX_DISABLE control and monitoring implemented	1
93	5	Optional Soft TX_FAULT monitoring implemented	1
93	4	Optional Soft RX_LOS monitoring implemented	1
93	3	Optional Soft RATE_SELECT control and monitoring implemented	0
93	2-0	Reserved	0

11. Calibration Calculation

A/D Accuracy, 2 wire address A2h

Data Address	Parameter	Accuracy	Units Display	Note
96-97	Temperature	+/-3 deg-C	Signed 2's complement integer deg-C	Junction temperature of monitoring IC.
98-99	Vcc	+/-3%	x100 μ Volt	
100-101	TX Bias	+/-10%	x2 μ A	Specified by nominal value
102-103	TX Power	+/-3dB	x0.1 μ W	-9.5 to -2.5dBm
104-105	RX Power	+/-3dB (-17 to 0dBm)	x0.1 μ W	At specified transmitter wavelength (Section 7-2)

12. A/D Values and Status

Converted analog values, 2wire address A2h

Byte	Bit	Name	Description
96	All	Temperature MSB	Signed 2's complement integer temperature(-40 to +125C) Based on internal temperature measurement
97	All	Temperature LSB	Fractional part of temperature(count/256)
98	All	Vcc MSB	Internally measured supply voltage in transeiver.
99	All	Vcc LSB	Actual voltage is full 16 bit value *100 μ Volt.(Yields range of 0-6.55V)
100	All	TX Bias MSB	Measured Laser Bias Current in mA. Bias current is full
101	All	TX Bias LSB	16 bit value *2 μ A.(Full range of 0-131mA)
102	All	TX Power MSB	Measured TX output power in mW. TX power is full 16
103	All	TX Power LSB	bit value*0.1 μ W.(Full range of -40 to+8.2dBm)
104	All	RX Power MSB	Measured RX input power in mW. RX power is full 16
105	All	RX Power LSB	bit value*0.1 μ W.(Full range of -40 to+8.2dBm)
106-109	All	Reserved	

Optional Status Bits, 2wire address A2h

Byte	Bit	Name	Description
110	0	Data_Ready_Bar	Indicates transeiver has achieved power up and data is ready. Bit remains high until data is ready to be read at which time the device sets the bit low.

13. Alarm and Warning Flags

Alarm and Warning Flags, 2wire address A2h

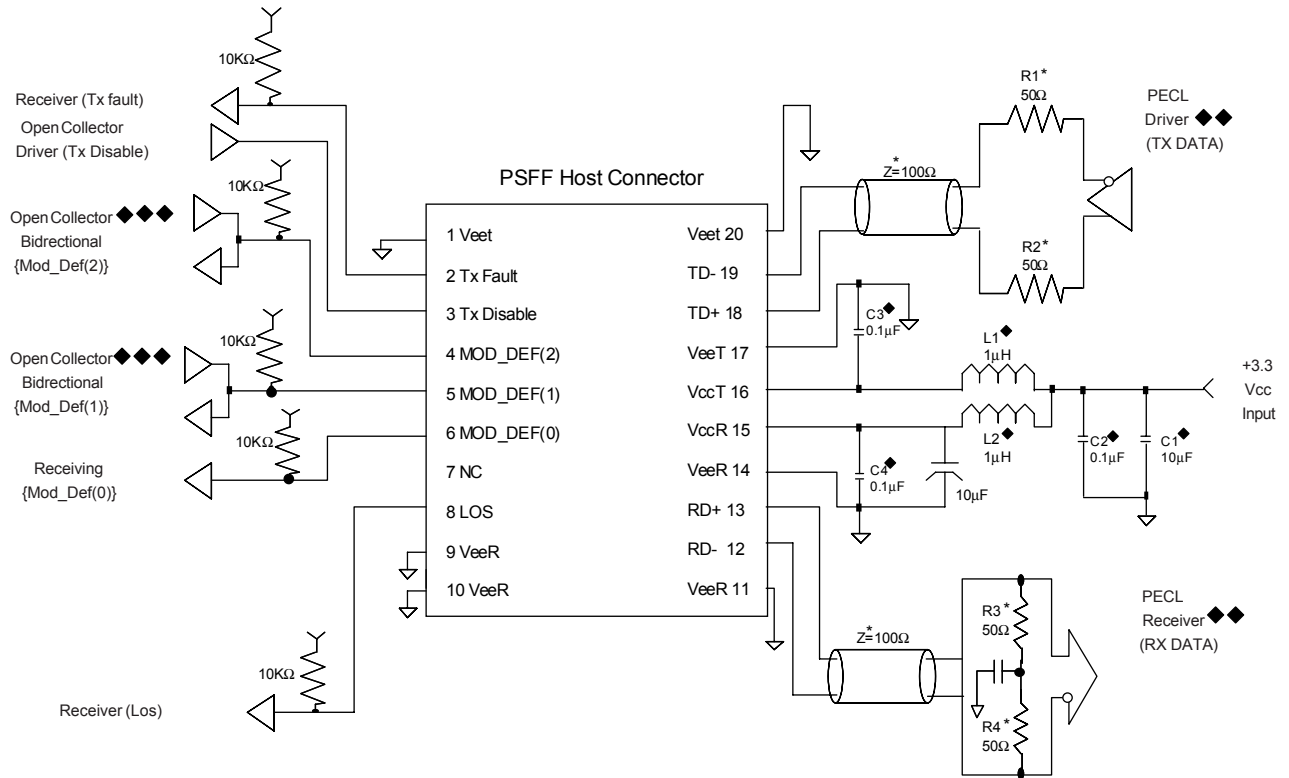
Byte	Bit	Name	Description
112	7	Temp High Alarm	Set when internal temperature exceeds high alarm level.
112	6	Temp Low Alarm	Set when internal temperature is below low alarm level.
112	5	Vcc High Alarm	Set when internal supply voltage exceeds high alarm level.
112	4	Vcc Low Alarm	Set when internal supply voltage is below low alarm level.
112	3	TX Bias High Alarm	Set when TX Bias current exceeds high alarm level.
112	2	TX Bias Low Alarm	Set when TX Bias current is below low alarm level.
112	1	TX Power High Alarm	Set when TX output power exceeds high alarm level.
112	0	TX Power Low Alarm	Set when TX output power is below low alarm level.
113	7	RX Power High Alarm	Set when Received Power exceeds high alarm level.
113	6	RX Power Low Alarm	Set when Received Power is below low alarm level.
113	5-0	Reserved	
114	All	Reserved	
115	All	Reserved	
116	7	Temp High Warning	Set when internal temperature exceeds high warning level.
116	6	Temp Low Warning	Set when internal temperature is below low warning level.
116	5	Vcc High Warning	Set when internal supply voltage exceeds high warning level.
116	4	Vcc Low Warning	Set when internal supply voltage is below low warning level.
116	3	TX Bias High Warning	Set when TX Bias current exceeds high warning level.
116	2	TX Bias Low Warning	Set when TX Bias current is below low warning level.
116	1	TX Power High Warning	Set when TX output power exceeds high warning level.
116	0	TX Power Low Warning	Set when TX output power is below low warning level.
117	7	RX Power High Warning	Set when Received Power exceeds high warning level.
117	6	RX Power Low Warning	Set when Received Power is below low warning level.
117	5-0	Reserved	
118	All	Reserved	
119	All	Reserved	

Note: Alarm and warning frag are latched high(User writes 0 to clear).

Address 117 bit 0 that I2C writes have been waded persistent;

1=writes to EEPROM in progress, 0=writes complete.

14. Recommended Interface Circuit



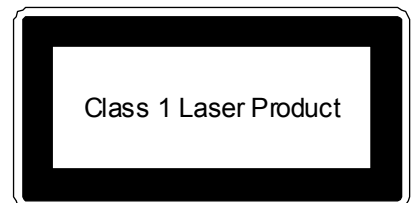
Notes

- ◆ Power supply filtering components should be placed as close to the Vcc pins of the host connector as possible for optimal performance.
 - ◆◆ PECL driver and receiver will require biasing networks. Please consult applications notes from suppliers of these components.
 - ◆◆◆ MOD_DEF(2) and MOD_DEF(1) should be bi-directional open collector connections in order to implement serial ID (MOD_DEF[0, 1, 1])
- * transmission lines should be 100Ω differential traces. it is recommended that the termination resistor for the PECL Receiver (R3+R4) be placed beyond the input pins of the PECL Receiver. Series source Termination Resistors on the PECL Driver (R1+R2) should be placed as close to the driver output pins as possible.

Figure 11. Recommended Interface Circuit

15. Laser Safety

This product uses a semiconductor laser system and is a laser class 1 product acceptable FDA, complies with 21CFR 1040. 10 and 1040.11. Also this product is a laser class 1 product acceptable IEC 60825.



⚠ Caution

⊘ If this product is used under conditions not recommended in the specification or this product is used with unauthorized revision, classification for laser product safety standard is invalid. Classify the product again at your responsibility and take appropriate actions.

16. Other Precaution

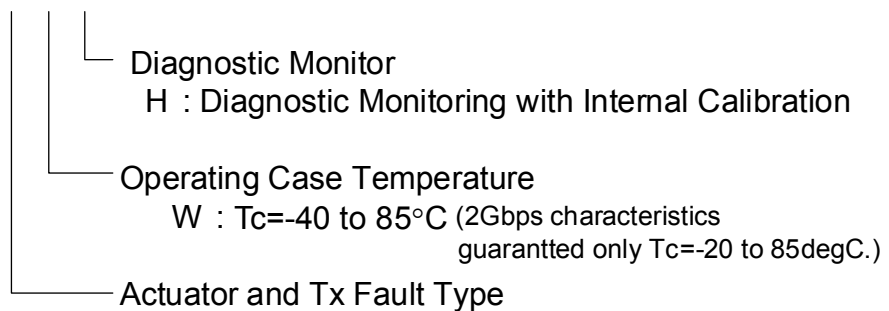
Under such a strong vibration environment as in automobile, the performance and reliability are not guaranteed. The governmental approval is required to export this product to other countries. To dispose of these components, the appropriate procedure should be taken to prevent illegal exportation.

This module must be handled, used and disposed of according to your company's safe working practice.

⚠ Warning	
⊘	Operating transceiver products can have an outer package temperature exceeding 70 degC. To reduce the risk of injury from burns, do not touch the transceiver module under any circumstances while it is operational. When installing or uninstalling products that have been operating, handle with extreme care.
⚠ Warning	
⊘	Do not put this product or components of this product into your mouth. This product contains material harmful to health.
⚠ Caution.	
⊘	Dispose this product or equipment including this product properly as an industrial waste according to the regulations.

17. Ordering Information

SCP6F86 - GL - C W H



Type	Actuator	Tx Fault	Tx Shutdown on Tx Fault
C	Bail	Latched	Yes

18. For More Information

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