Optiset

100Base-FX SGMII WDM SFP модули

Особенности:
- SGMII интерфейс для Gigabit SGMII SFP slot порта
- 1310/1550нм лазер + PIN фотоприемник
- LC разъем
- до 10км на одноволоконном одномодовом кабеле,

Области применения:
- Fast Ethernet 100Base-FX

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature		0		+70	°C
Power Supply Voltage	Vcc	3.15	3.3	3.45	V
Power Supply Current	Icc			360	mA
Baud Rate			125		MBaud

Performance Specifications - Electrical

Parameter		Symbol	Min.	Typ.	Max	Unit	Notes
Transmitter							
LVPECL Inputs(Differential)		Vin	500		2400	mVpp	AC coupled inputs
Input Impedance (Differential)		Zin	85	100	115	ohm	Rin > 100 kohm @ DC
TX_Dis	Disable		2		Vcc	V	
	Enable		0		0.8		
TX_FAULT	Fault		2		Vcc+0.3	V	
	Normal		0		0.5		
Receiver							
LVPECL Outputs (Differential)		Vout	370		2000	mVpp	AC coupled outputs
Output Impedance (Differential)		Zout	85	100	115	ohm	
RX_LOS	LOS		2		Vcc+0.3	V	
	Normal		0		0.8	V	
MOD_DEF (0:2)	VoH	2.5				V	With Serial ID
	VoL	0			0.5	V	

Performance Specifications – Optical
(SFP-FX-B3-SGMII, 1310nm FP and PIN/TIA)

Parameter	Symbol	Min.	Typical	Max.	Unit
9/125µm Core Diameter SMF	L		10		km
Data Rate			125		Mbps
Transmitter					
Center Wavelength	λ_C	1260	1310	1360	nm
Spectral Width (RMS)	$\Delta\lambda$			3	nm
Average Output Power*[note4]	Pout	**-15**		-8	dBm
Extinction Ratio	ER	9			dB

Parameter	Symbol	Min.	Typical	Max.	Unit
Rise/Fall Time(20%～80%)	tr/tf			3	ns
Total Jitter	TJ			1.0	ns
Output Optical Eye*[note5]		Compatible with IEEE 802.3-2002			
TX_Disable Assert Time	t_off			10	us
TX Disable Asserted*[note4]	Pout			-45	dBm
Receiver					
Center Wavelength	λ_C	1480		1600	nm
Receiver Sensitivity*[note6]	Pmin			**-32**	dBm
Return Loss		12			dB
LOS De-Assert	LOSD			-33	dBm
LOS Assert	LOSA	-45			dBm
Overload*[note6]	Pmax	-8			dBm

(SFP-FX-B5-SGMII, 1550nm FP and PIN/TIA)

Parameter	Symbol	Min.	Typical	Max.	Unit
9/125µm Core Diameter SMF	L		10		km
Data Rate			125		Mbps
Transmitter					
Center Wavelength	λ_C	1500	1550	1600	nm
Spectral Width (RMS)	Δλ			3	nm
Average Output Power*[note4]	Pout	**-15**		-8	dBm
Extinction Ratio	ER	9			dB
Rise/Fall Time(20%～80%)	tr/tf			3	ns
Total Jitter	TJ			1.0	ns
Output Optical Eye*[note5]		Compatible with IEEE 802.3-2002			
TX_Disable Assert Time	t_off			10	us
TX Disable Asserted*[note4]	Pout			-45	dBm
Receiver					
Center Wavelength	λ_C	1260		1360	nm
Receiver Sensitivity*[note6]	Pmin			**-32**	dBm
Return Loss		12			dB
LOS De-Assert	LOSD			-33	dBm
LOS Assert	LOSA	-45			dBm
Overload*[note6]	Pmax	-8			dBm

Note4: Output is coupled into a 9/125um single-mode fiber.
Note5: Measured with 4B/5B code for 125Mbps.
Note6: Measured with 4B/5B code for 125Mbps, worst-case extinction ratio, and BER 1E-12.

SFP Transceiver Electrical Pad Layout
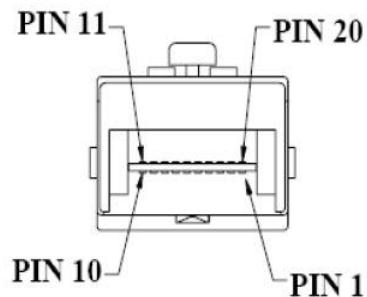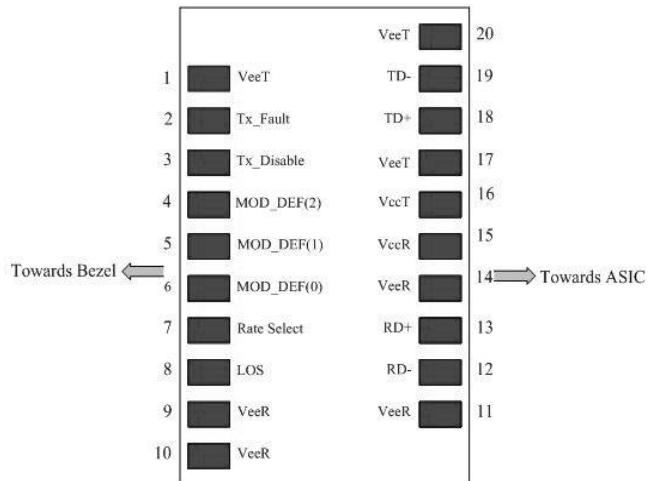
Pin Function Definitions

Pin Num.	Name	Function	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	5)
2	TX Fault	Transmitter Fault Indication	3	1)
3	TX Disable	Transmitter Disable	3	2) Module disables on high or open
4	MOD-DEF2	Module Definition 2	3	3) Data line for Serial ID.
5	MOD-DEF1	Module Definition 1	3	3) Clock line for Serial ID.
6	MOD-DEF0	Module Definition 0	3	3) Grounded within the module.
7	Rate Select	Not Connect	3	Function not available
8	LOS	Loss of Signal	3	4)
9	VeeR	Receiver Ground	1	5)
10	VeeR	Receiver Ground	1	5)
11	VeeR	Receiver Ground	1	5)
12	RD-	Inv. Received Data Out	3	6)
13	RD+	Received Data Out	3	6)
14	VeeR	Receiver Ground	1	5)
15	VccR	Receiver Power	2	7) 3.3 ± 5%

16	VccT	Transmitter Power	2	7) 3.3 ± 5%
17	VeeT	Transmitter Ground	1	5)
18	TD+	Transmit Data In	3	8)
19	TD-	Inv. Transmit Data In	3	8)
20	VeeT	Transmitter Ground	1	5)

Notes:

1) TX Fault is an open collector/drain output, which should be pulled up with a 4.7K – 10KΩ resistor on the host board. Pull up voltage between 2.0V and VccT, R+0.3V. When high, output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to < 0.8V.

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 4.7 – 10 KΩ resistor. Its states are:
Low (0 – 0.8V): Transmitter on
(>0.8, < 2.0V): Undefined

High (2.0 – 3.465V): Transmitter Disabled
Open: Transmitter Disabled

3) Modulation Absent, connected to VEET or VEER in the module.

4) LOS (Loss of Signal) is an open collector/drain output, which should be pulled up with a 4.7K – 10KΩ resistor. Pull up voltage between 2.0V and VccT, R+0.3V. When high, this output indicates the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use). Low indicates normal operation. In the low state, the output will be pulled to < 0.8V.

5) VeeR and VeeT may be internally connected within the SFP module.

6) 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.

7) VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V ±5% at the SFP connector pin. Maximum supply current is 300mA. Recommended host board power supply filtering is shown below. Inductors with DC resistance of less than 1ohm should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When the recommended supply-filtering network is used, hot plugging of the SFP transceiver module will result in an inrush current of no more than 30mA greater than the steady state value. VccR and VccT may be internally connected within the SFP transceiver module.

8) 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.

Recommend Circuit Schematic
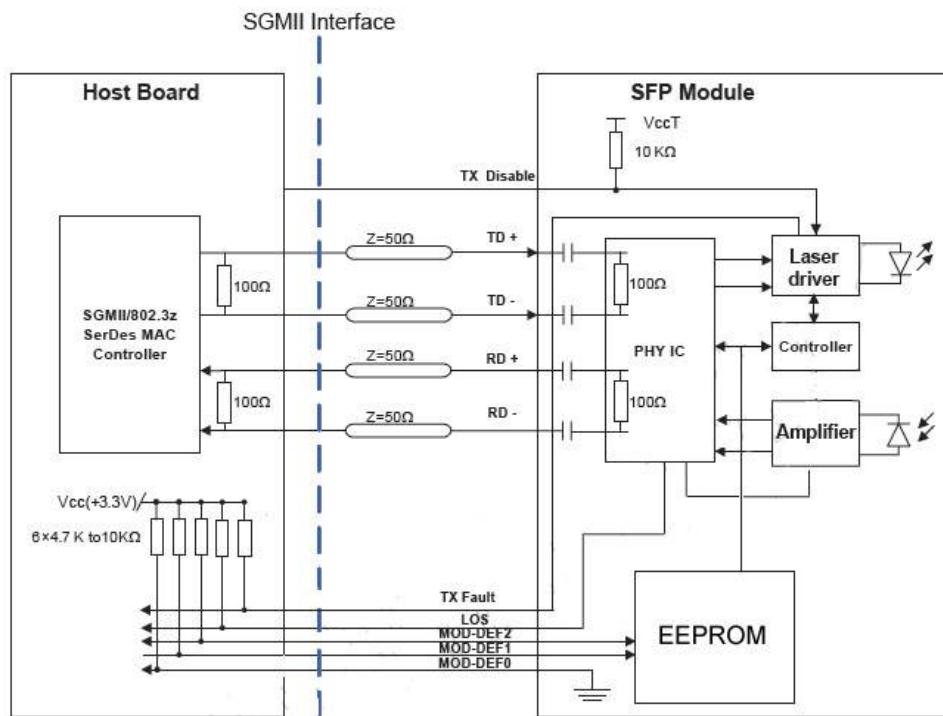
Mechanical Specifications