

SNR-SFP-SGMII-LX-10

SNR-SFP-SGMII series

100BASE-FX/1000BASE-X SGMII SFP Transceiver (With MCU Version)

- 1310nm Laser and PIN Photo-Detector
- 10km with SMF at least
- Build-in PHY supporting SGMII Interface
- Support More Link Status Monitor, Such as CRC, Package Counter and Far End Fault Indication(FEFI)
- Single 3.3V Power Supply and TTL Logic Interface
- Compliant with SFP MSA package with duplex LC Connector
- Standard Serial ID information Compliant with SFP MSA
- Operating Case Temperature:
Standard: 0°C~+70°C
Industrial: -40°C~+85°C



Applications

- ◆ 100BASE-FX 1000BASE-X
- ◆ Switched Backplane Applications
- ◆ Switch to Switch Interface
- ◆ Other Optical Transmission Systems

Ordering Information

Part No.	Data Rate	Fiber	Distance	Temperature	MCU
SNR-SFP-SGMII-LX-10	125Mbps/1250Mbps	SMF	10km	Standard	YES
SNR-SFP-SGMII-LX-10-I	125Mbps/1250Mbps	SMF	10km	Industrial	YES

Regulatory Compliance

Feature	Standard	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883G Method 3015.7	Class 1C (>1000V)
Electrostatic Discharge to the Enclosure	EN 55024:1998+A1+A2 IEC-61000-4-2 GR-1089-CORE	Compliant with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN55022:2006 CISPR 22B :2006 VCCI Class B	Compliant with standards Noise frequency range: 30MHz to 6GHz. Good system EMI design practice required to achieve Class B margins. System margins are dependent on customer host board and chassis design.
Immunity	EN 55024:1998+A1+A2 IEC 61000-4-3	Compliant with standards. 1KHz sine-wave, 80% AM, from 80MHz to 1GHz. No effect on transmitter/receiver performance is detectable between these limits.
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1:2007 EN (IEC) 60825-2:2004+A1	CDRH compliant and Class I laser product. TüV Certificate No. 50135086
Component Recognition	UL and CUL EN60950-1:2006	UL file E317337 TüV Certificate No. 50135086 (CB scheme)
RoHS6	2002/95/EC 4.1&4.2 2005/747/EC 5&7&13	Compliant with standards* ^{Note3}

Note3: For update of the equipments and strict control of raw materials, NAG has the ability to supply the customized products since Jan 1st, 2007, which meet the requirements of RoHS6 (Restrictions on use of certain Hazardous Substances) of European Union.

In light of item 5 in RoHS exemption list of RoHS Directive 2002/95/EC, Item 5: Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.

In light of item 13 in RoHS exemption list of RoHS Directive 2005/747/EC, Item 13: Lead and cadmium in optical and filter glass. The three exemptions are being concerned for NAG's transceivers, because NAG's transceivers use glass, which may contain Pb, for components such as lenses, windows, isolators, and other electronic components.

Product Description

The SNR-SFP-SGMII series is a small form factor pluggable module for single-mode fiber 100BASE-FX and 1000BASE-X application, with a built-in PHY device supporting SGMII interface. And integrating a built-in high performance MCU, Host can more easily configure all functions for this module. It is with the SFP 20-pin connector to allow hot plug capability. The transmitter section uses a multiple quantum well 1310nm/1490nm/1550nm laser and is a class 1 laser compliant according to International Safety Standard IEC 60825. The receiver section uses an integrated InGaAs detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	+85	°C
Supply Voltage	Vcc	-0.5	3.6	V
Operating Relative Humidity		-	95	%

*Exceeding any one of these values may destroy the device immediately.

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	
Operating Case Temperature	T _c	SNR-SFP-SGMII-LX-10	0	-	+70	°C
		SNR-SFP-SGMII-LX-10-I	-20	-	+85	
Power Supply Voltage	Vcc	3.15	3.3	3.45	V	
Power Supply Current	Icc	-	-	360	mA	
Data Rate	100BASE-FX	-	125	-	Mbps	
	1000BASE-X	-	1250	-		

Performance Specifications - Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
Transmitter						
LVPECL Inputs(Differential)	Vin	400	-	2000	mVpp	AC coupled inputs*(Note6)
Input Impedance (Differential)	Zin	85	100	115	ohm	Rin > 100 kohm @ DC
TX_Dis	Disable	2	-	Vcc+0.3	V	
	Enable	0	-	0.8		
TX_FAULT	Fault	2	-	Vcc+0.3	V	
	Normal	0	-	0.5		
Receiver						

SNR-SFP-SGMII-LX-10

SNR-SFP-SGMII series

LVPECL Outputs (Differential)		Vout	400	-	2000	mVpp	AC coupled outputs*(Note6)
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	

Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
93m Core Diameter SMF	L		10		km
Data Rate		-	0.125/1.25	-	Gbps
Transmitter					
Center Wavelength	λ_c	1260	1310	1360	nm
Spectral Width (-20dB)	$\Delta\lambda$	-	-	4	nm
Average Output Power*(Note4)	Pout	-9.5	-	-3	dBm
Extinction Ratio*(Note5)	ER	9	-	-	dB
Rise/Fall Time(20%~80%)	tr/tf	-	-	0.26	ns
Total Jitter	TJ	-	-	0.43	UI
Output Optical Eye*(Note5)	Compatible with IEEE 802.3ah-2004*(Note9)				
TX_Disable Assert Time	t_off	-	-	10	us
Pout@TX Disable Asserted	Pout	-	-	-45	dBm
Receiver					
Center Wavelength	λ_c	1260		1600	nm
Receiver Sensitivity*(Note7)	Pmin			-22	dBm
Receiver Overload	Pmax	-3			dBm
LOS De-Assert	LOSD	-	-	-23	dBm
LOS Assert	LOSA	-40	-	-	dBm
LOS Hysteresis*(Note10)		1	-	3	dB

Note4: PECL logic, internally AC coupled.

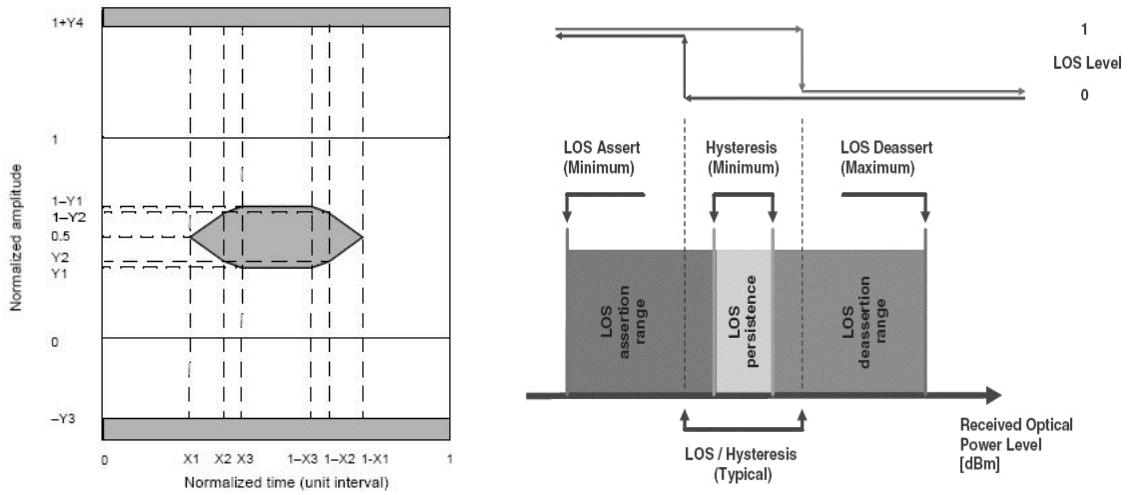
Note5: Output is coupled into a 9/125 μ m single-mode fiber.

Note6: Measured with 4B/5B pattern for 125Mbps and 8B/10B pattern for 1250Mbps.

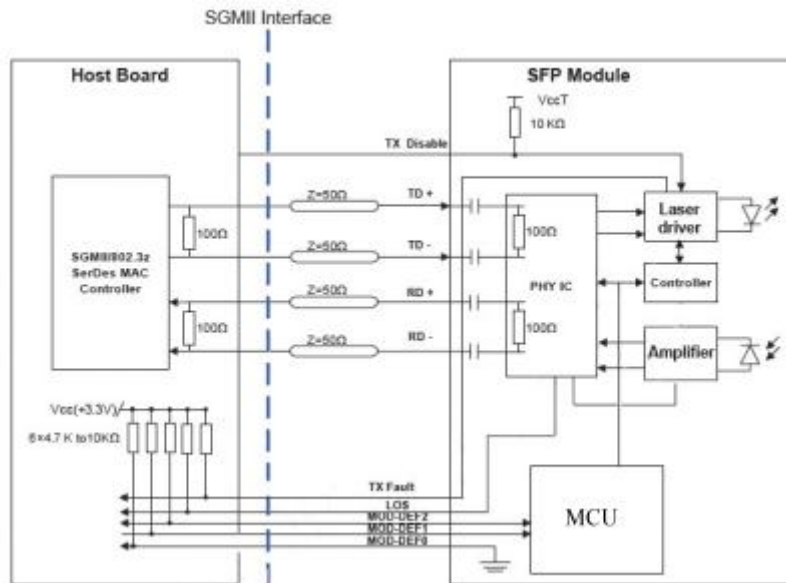
Note7: Measured with 4B/5B pattern for 125Mbps and 8B/10B pattern for 1250Mbps, worst-case extinction ratio, and BER 1E-12.

SNR-SFP-SGMII-LX-10

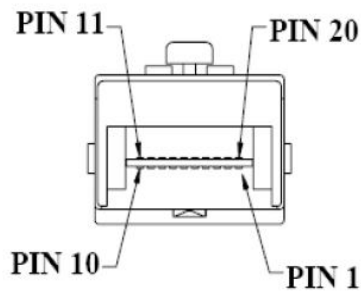
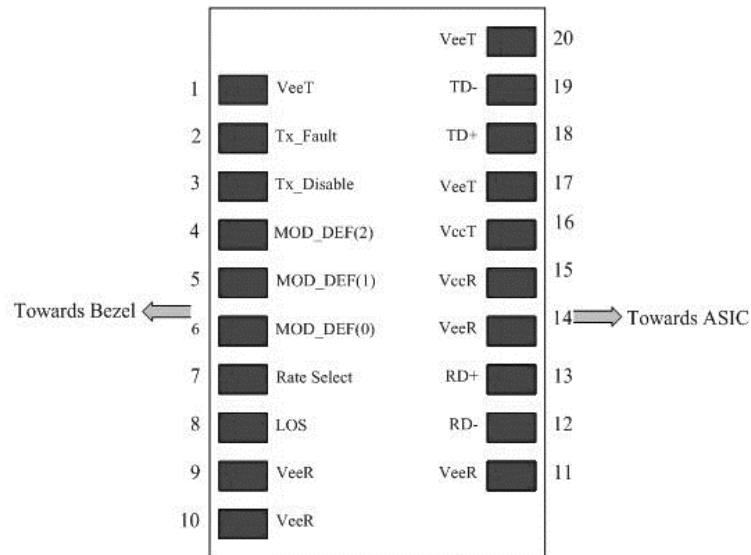
SNR-SFP-SGMII series



Recommend Circuit Schematic

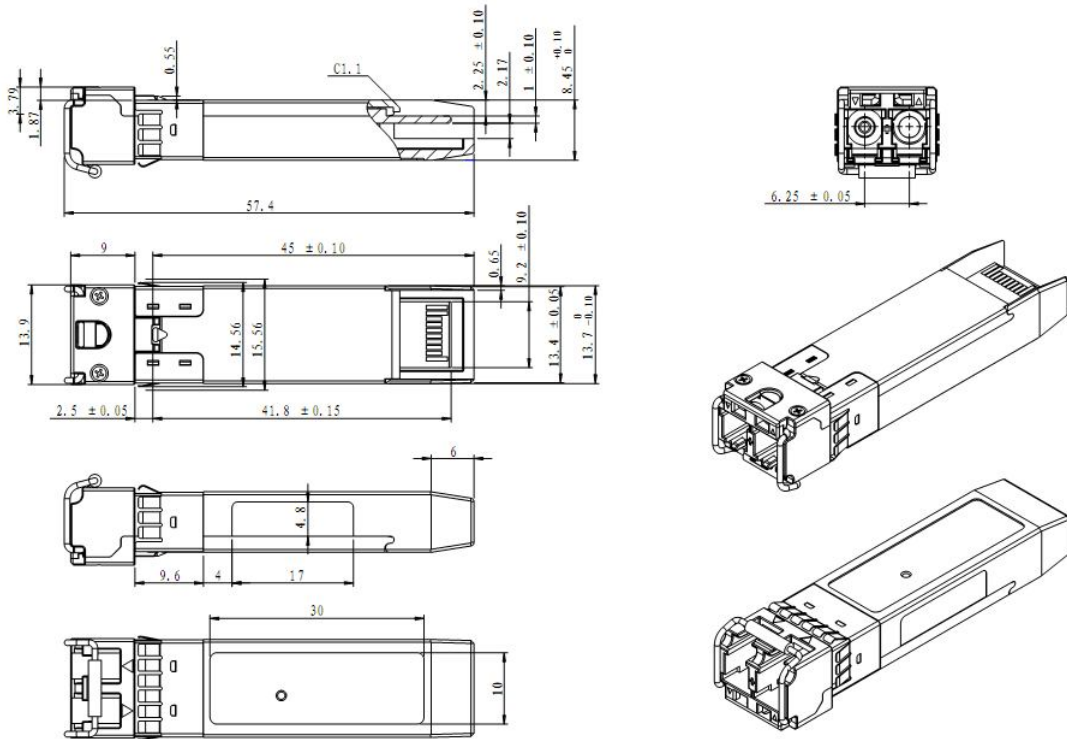


SFP Transceiver Electrical Pad Layout



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.

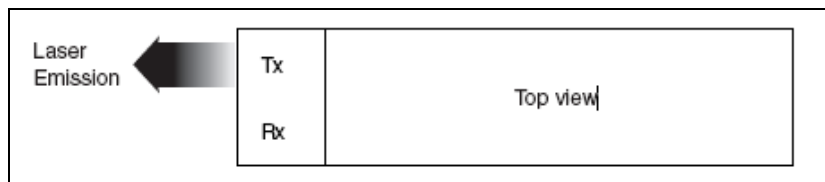
Mechanical Specifications



Laser Emission Data

Wavelength	>1260nm
Total output power (as defined by FDA: 7mm aperture at 20cm distance)	<0.79Mw
Total output power (as defined by IEC: 7mm aperture at 10cm distance)	<10Mw
Beam divergence	12.5°

Laser Emission



GUARANTEE:



CONTACT:

Address: Building 56/2, Predelnaya Street, Yekaterinburg, Russia

Tel: +7(343) 379-98-38

Fax: +7(343) 379-98-38

E-mail: info@nag.ru

Online shop: <http://shop.nag.ru>