SNR-SFP+W37-20/SNR-SFP+W73-20 Series

Tx: 1270nm/Rx: 1330nm BID! SFP+ Transceiver for 10GbE Tx: 1330nm/Rx: 1270nm BID! SFP+ Transceiver for 10GbE RoHS 6 Compliant 0.6~10Gb/s CPRI/OBSAI

Features

- Operating data rate up to11.1Gbps
- Two types:

  A: 1270nm DFB Transmitter/ 1330nm Receiver B: 1330nm DFB Transmitter/ 1270nm Receiver
- Power budget up to 12dB
- Single 3.3V Power supply and TTL Logic Intel
- LC Connector Interface
- Hot Pluggable
- Power Dissipation < 1.5W
- Operating Case Temperature
  Standard: 0~+70°C
  Industrial: -40~+8
- Compliant with SFP+ MSA Specification SFF-8431
- Compliant with IEEE 802.3ae 10GBASE-LR

- Compliant with
- IEEE 802.3ae 10GBASE-LW
- Compliant with SFF-8472

Applications

- 10GBASE-LR at 10.3125Gbps
- 10GBASE-LW at 9.953Gbps
- OBSAI rates 6.144 Gb/s, 3.072 Gb/s, 1.536 Gb/s, 0.768Gb/s
- CPRI rates 9.830 Gb/s,7.373Gb/s, 6.144 Gb/s, 4.915 Gb/s, 2.458 Gb/s, 1.229 Gb/s, 0.614Gb/s
- Other Optical Links

Ordering information

Part No.	Data Rate	Laser	Temp.	Power budget	Optical Interface	DDMI
SNR-SFP+W73-20	10.3Gbps	1270nm DFB	Standard	12dB	LC	YES
SNR-SFP+W37-20 Note1	10.3Gbps	1330nm DFB	Standard	12dB	LC	YES
SNR-SFP+W73-20-I	10.3Gbps	1270nm	Industrial	12dB	LC	YES
		DFB				
SNR-SFP+W37-20-I	10.3Gbps	1330nm DFB	Industrial	12dB	LC	YES

*Note1: Standard version

Regulatory Compliance*Note2

Product Certificate	Certificate Number	Applicable Standard
TUV	R50135086	EN 60950-1:2006+A11+A1+A12
		EN 60825-1:2007
		EN 60825-2:2004+A1+A2
UL	E317337	UL 60950-1
		CSA C22.2 No. 60950-1-07
EMC CE	AE 50285865 0001	EN 55022:2010
		EN 55024:2010
CB	/ \ JPTUV-049251	IEC 60825-1
		IEC 60950-1
FCC	WTF14F0514437E	47 CFR PART 15 OCT., 2013
FDA	1331340-000	CDRH 1040.10
ROHS	RHS01G006464	2011/65/EU

Note2: The above certificate number updated to June 2014, because some certificate will be updated every year, #
such as FCC, FDA and ROHS. For the latest certification information, please check with NAG.

Product Description

The SNR-SFP+WXX-20 series single mode transceiver is small form factor pluggable module for duplex optical data communications such as 10GBASE-LR/LW defined by IEEE 802.3ae. It is with the SFP+ 20-pin connector to allow hot plug capability.

The SNR-SFP+W73-20 module is designed for single mode fiber and operates at a nominal wavelength of 1270nm; SNR-SFP+W37-20 module is designed for single mode fiber and operates at a nominal wavelength of 1330nm. The transmitter section uses a multiple quantum well DFB, which is 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* Note3

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T_s	-40	+85	°C
Supply Voltage	V_{cc}	-0.5	3.6	V

*Note3: Exceeding any one of these values may destroy the device permanently.

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T_c	0		+70	°C
		-40	-	85	
Power Supply Voltage	V_{CC}	3.15	3.3	3.45	V
Power Supply Current	I_{CC}			430	mA
Surge Current	I_{Surge}			+30	mA
Baud Rate		0.6		11.1	GBaud

Optical and Electrical Characteristics

SNR-SFP+W73-20, 1330nm DF & PIN

Parameter		Symbol	Min.	Typical	Max.	Unit
Power budget			12			dB
Data Rate			0.6		11.1	Gbps
Transmitter						
Centre Wavelength		A_c	1260	1270	1280	nm
Spectral Width (-20dB)					1	nm
Side Mode Suppression Ratio		SMSR	30			dB
Average Output Power*note4		$P_{out, AVG}$	-2		3	dBm
Extinction Ratio		ER	3.5			dB
Transmitter and Dispersion Penalty		TDP			2	dB
Average Power of OFF Transmitter					-30	dBm
Relative Intensity Noise		RIN			-128	dB/Hz
Input Differential Impedance		Z_{in}	90	100	110	0
TX Disable Assert Time		t off			10	us
Receiver						
Centre Wavelength		$Л_c$	1320		1340	nm
Sensitivity*note5		P_{in}			-14	dBm
Receiver Overload		P_{max}	0.5			dBm
Output Differential Impedance		P_{in}	90	100	110	0
LOS De-Assert		LOS_d			-18	dBm
LOS Assert		LOS_a	-30			dBm
LOS	High		2.0		V_{cc}+0.3	V
	Low		0		0.8	

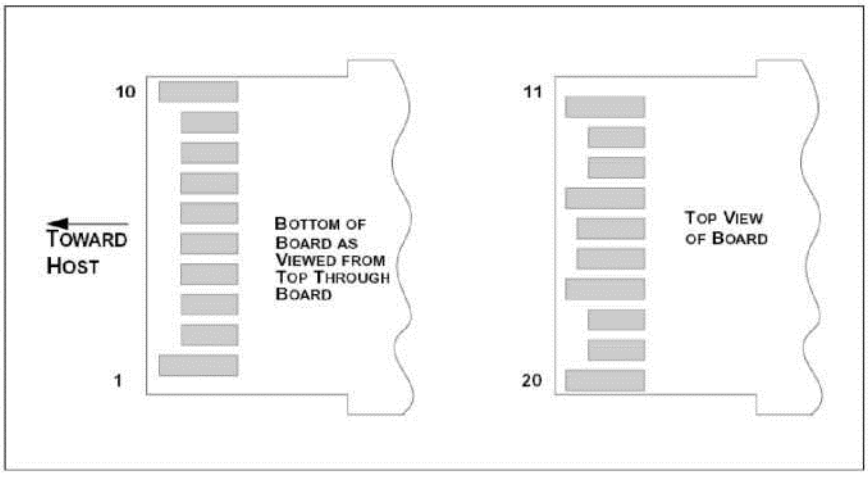
(SNR-SFP+W37-20, 1330nm DF PIN/TIA)

Parameter	Symbol	Min.	Typical	Max.	Unit
Power budget		12			dB
Data Rate		0.6		11.1	Gbps
Transmitter					
Centre Wavelength	Λc	1320	1330	1340	nm
Spectral Width (-20dB)				1	nm
Side Mode Suppression Ratio	SMSR	30			dB
Average Output Power*note4	$P_{out, AVG}$	-2		3	dBm
Extinction Ratio	ER	3.5			dB
Transmitter and Dispersion Penalty	TDP			2	dB
Average Power of OFF Transmitter				-30	dBm
Relative Intensity Noise	RIN			-128	dB/Hz
Input Differential Impedance	Z_{IN}	90	100	110	0
TX Disable Assert Time	t off			10	us
Receiver					
Centre Wavelength	Λc	1260		1280	nm
Sensitivity*note5	PIN			-14	dBm
Receiver Overload	P_{MAX}	0.5			dBm
Output Differential Impedance	P_{in}	90	100	110	0
LOS De-Assert	LOS_d			-18	dBm
LOS Assert	LOS_a	-30			dBm
LOS High		2.0		V_{cc}+0.3	V
LOS Low		0		0.8	

Note4: Output is coupled into a 9/125um SMF.

*Note5: Measured with worst ER, BER less than 1E-12 and PRBS 2^{31}-1 at 10.3125Gbps

SFP+ Transceiver Electrical Pad Layout



Pin Num.	Name	FUNCTION	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	Note 5
2	TX Fault	Transmitter Fault Indication	3	Note 1
3	TX Disable	Transmitter Disable	3	Note 2, Module disables on high or open
4	SDA	Module Definition 2	3	2-wire Serial Interface Data Line.
5	SCL	Module Definition 1	3	2-wire Serial Interface Clock.
6	MOD_ABS	Module Definition 0	3	Note 3
7	RS0	RX Rate Select (LVTTL).	3	Rate Select 0, optionally controls SFP+ module receiver. This pin is pulled low to VeeT with a >30K resistor..
8	LOS	Loss of Signal	3	Note 4
9	RS1	TX Rate Select (LVTTL).	1	Rate Select 1, optionally controls SFP+ module transmitter. This pin is pulled low to VeeT with a >30K resistor.
10	VeeR	Receiver Ground	1	Note 5
11	VeeR	Receiver Ground	1	Note 5
12	RD-	Inv. Received Data Out	3	Note 6
13	RD+	Received Data Out	3	Note 6
14	VeeR	Receiver Ground	1	Note 5
15	VccR	Receiver Power	2	3.3 V ± 5%, Note 7
16	VccT	Transmitter Power	2	3.3 V ± 5%, Note 7
17	VeeT	Transmitter Ground	1	Note 5
18	TD+	Transmit Data In	3	Note 8
19	TD-	Inv. Transmit Data In	3	Note 8
20	VeeT	Transmitter Ground	1	Note 5

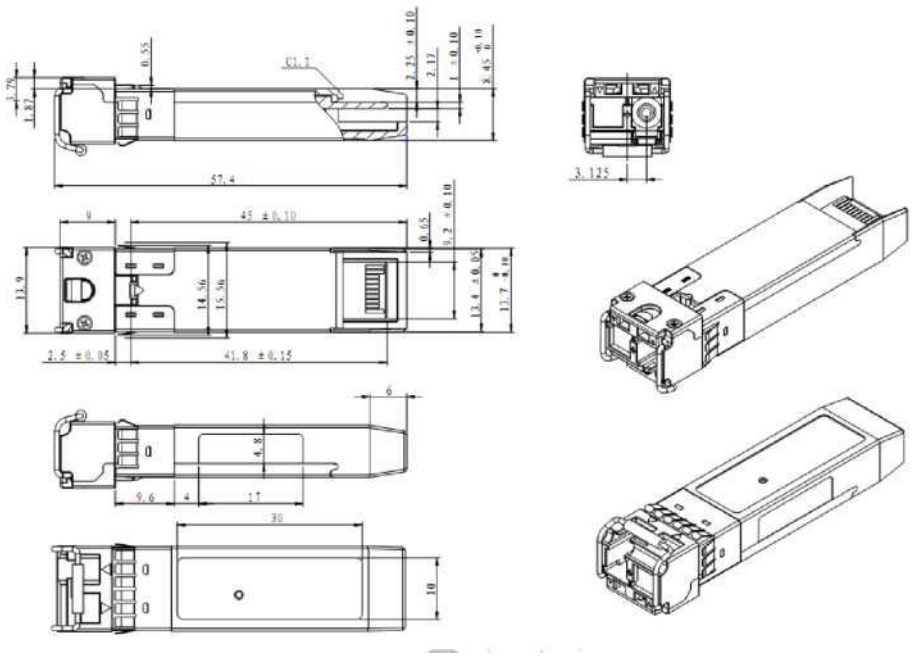
1) TX Fault is an open collector/drain output, which should be pulled up with a 4.7K - 10K0 resistor on the host board. Pull up voltage between 2.0V and VccT/R+0.3V. When high, output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to < 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 4.7K - 10 KO 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) Module 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 - 10K0 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.

Mechanical Specifications



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