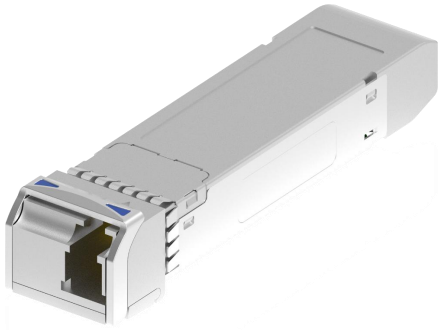
GHR-3G-xxx

3G-SDI SFP Rx，Without DDM

Features



- HD-SDI SFP Receiver available
- SD-SDI SFP Receiver available
- 3G-SDI SFP Receiver available
- SMPTE 297-2006 Compatible
- Metal enclosure for Lower EMI
- PIN photodetector
- Supports video pathological patterns for SD-SDI, HD-SDI and 3G-SDI
- Compliant with SFP MSA and SFF-8472 with duplex LC receptacle
- Without DDM(Digital Diagnostic functions)
- Compatible with RoHS
- +3.3V single power supply
- Operating case temperature:

  Standard : 0 to +70℃

Applications

- SMPTE 297-2006 Compatible Electrical-to-Optical Interfaces.
- HDTV/SDTV Service Interfaces.

Description

The video series transceivers are high performance, cost effective modules for duplex video transmission application over single mode fiber.

The receiver is designed to receive data rates from 50Mbps to 2.97Gbps and is specifically designed for robust performance in the presence of SDI pathological patterns for SMPTE 259M, SMPTE 344M, SMPTE 292M and SMPTE 424M serial rates. The module is fully compliant with

SMPTE 297M-2006.

The receiver is consists of a PIN photodiode integrated with a trans-impedance preamplifier (TIA). All modules satisfy class I laser safety requirements.

The receivers are compatible with SFP Multi-Source Agreement (MSA). For further information, please refer to SFP MSA.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	4.5	V
Storage Temperature	Ts	-40	+85	℃
Operating Humidity	-	5	85	%

Recommended Operating Conditions

Parameter		Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Standard	Tc	0		+70	℃
						℃
Power Supply Voltage		Vcc	3.13	3.3	3.47	V
Power Supply Current		Icc			150	mA
Data Rate				3		Gbps

Optical and Electrical Characteristics

Parameter		Symbol		Min	Typical	Max	Unit	Notes
Receiver								
Rise/Fall Time (20%~80%)		SD-SDI	tr/tf			1500	ps	1
		HD-SDI				270		
		3G-SDI				135		
Total Output Jitter	PRBS and colour bar	SD-SDI			70	200	ps	
		HD-SDI			50	135		
		3G-SDI			70	100		
	pathological	SD-SDI			200	300		
		HD-SDI			115			

	3G-SDI			120			
Centre Wavelength		λc	1260		1580	nm	
Receiver Sensitivity （PRBS）	SD-SDI				-20	dBm	
	HD-SDI				-20	dBm	
	3G-SDI				-20	dBm	
Receiver Sensitivity （Pathological）	SD-SDI				-16	dBm	
	HD-SDI				-15	dBm	
	3G-SDI				-14	dBm	
Receiver Overload			0			dBm	3
LOS De-Assert		LOS_D			-20	dBm	
LOS Assert		LOS_A	-30			dBm	
LOS Hysteresis			1		4	dB	
Data Output Swing Differential		Vout	650	800	1000	mV	2
LOS		High	2.0		Vcc	V	
		Low			0.8	V	

Notes:
1. Rise and fall times, 20% to 80%, are measured following a fourth-order Bessel-Thompson filter with a bandwidth of 0.75 x clock frequency corresponding to the serial data rate
2. PECL input, internally AC-coupled and terminated.
3. Internally AC-coupled.

Timing and Electrical

Parameter	Symbol	Min	Typical	Max	Unit
LOS Assert Time	t_loss_on			100	μs
LOS De-assert Time	t_loss_off			100	μs
Serial ID Clock Rate	f_serial_clock			280	KHz
MOD_DEF (0:2)-High	V_H	2		Vcc	V
MOD_DEF (0:2)-Low	V_L			0.8	V

Diagnostics Specification

Parameter	Range	Unit	Accuracy	Calibration
Temperature	0 to +70	℃	±3℃	Internal / External
Voltage	3.0 to 3.6	V	±3%	Internal / External
RX Power	-20 to -6	dBm	±3dB	Internal / External

I2C Bus Interface

The I2C bus interface uses the 2-wire serial CMOS E2PROM protocol. The serial interface meets the following specifications:

1.Support a maximum clock rate of 280Khz.

2. Input/Output levels comply with LVCMOS/LVTTL or compatible logics.

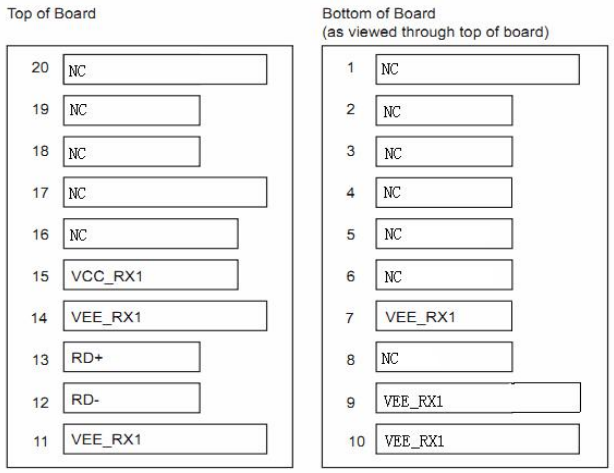
Low: 0 – 0.8 V

High: 2.0 – 3.3 V

Undefined: 0.8 – 2.0 V

Pin Definitions

Pin Diagram

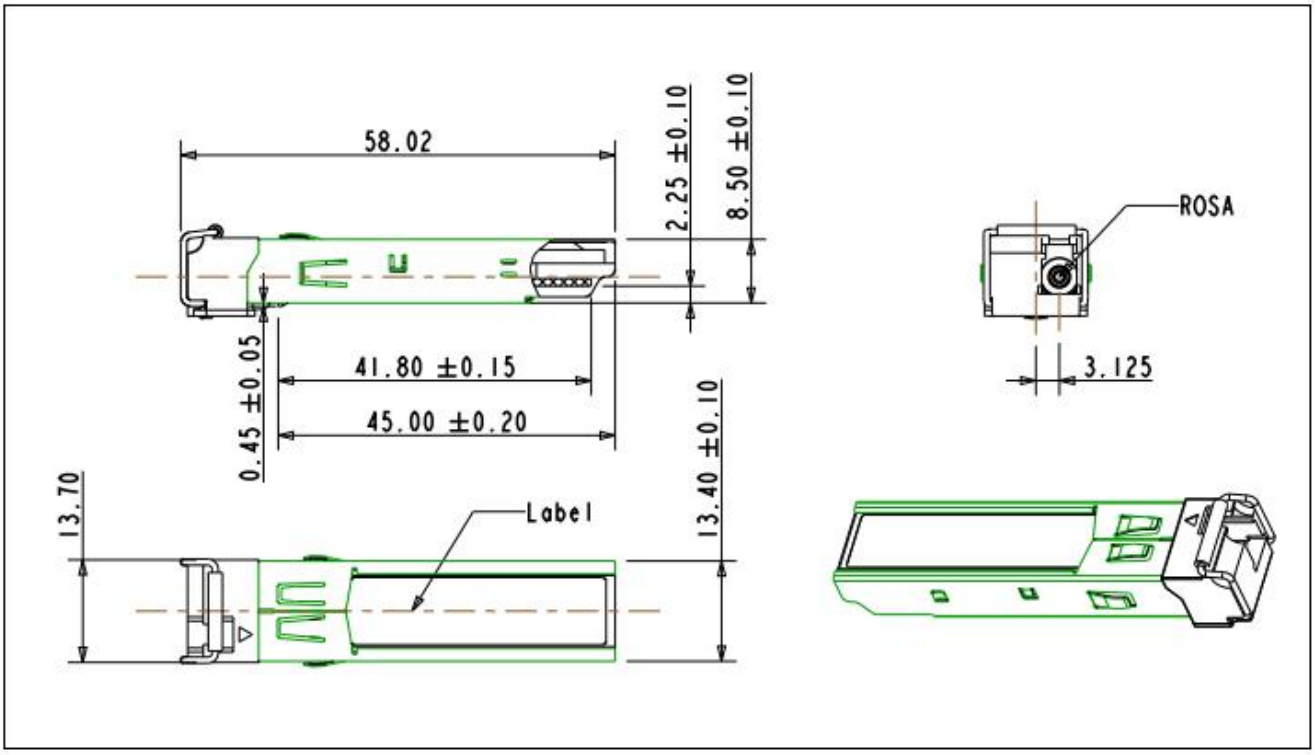


Pin Descriptions

Pin	Signal Name	Description	Plug Seq.	Notes
1	NC	Not Connected	1	
2	NC	Not Connected	3	
3	NC	Not Connected	3	
4	NC	Not Connected	3	
5	NC	Not Connected	3	
6	NC	Not Connected	3	
7	VEE_RX1	Receiver1 Ground	3	
8	NC	Not Connected	3	
9	VEE_RX1	Receiver1 Ground	1	
10	VEE_RX1	Receiver1 ground	1	
11	VEE_RX1	Receiver1 ground	1	
12	RD-	Inv. Received Data Out	3	Note 1
13	RD+	Received Data Out	3	Note 1
14	VEE_RX1	Receiver1 ground	1	
15	VCC_RX1	Receiver1 Power Supply	2	
16	NC	Not Connected	2	
17	NC	Not Connected	1	
18	NC	Loss of Signal	3	
19	NC	Not Connected	3	
20	NC	Not Connected	1	

Notes:
Plug Seq.: Pin engagement sequence during hot plugging.
1) RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100 differential lines which should be terminated with 100Ω (differential) at the user SERDES.

Mechanical Dimensions



Ordering information

Part Number	Product Description
GHR-3G-XXC	PIN, 3Gbps, 0℃ ~ +70℃, Without DDM(Digital Diagnostic Monitoring)

Important Notice

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Revision History

Version	Date	Description
V0	Mar. 10th, 2012	New release
V1	Oct. 20th, 2021	Change Max PRBS receiver sensitivity -22dBm to -20dBm; Change Max pathological Rx sensitivity SD-SDI -20dBm to -16dBm, HD-SDI -22dBm to -15dBm, 3G-SDI -22dBm to -14dBm