3Gbps Single Mode Video SFP single Receiver MSA

V1xx09-SFP-RLC.P

Features

- SD, HD, 3G-SDI SFP Receiver
- SMPTE 297-2006 Compatible
- Supports SDI pathological patterns for SD-SDI, HD-SDI, 3G-SDI
- Up to 2.97Gbps data rate
- PIN photo detector
- Compliant with SFP MSA
- Simplex LC receptacle optical interface compliant
- Single +3.3V power supply
- DDMI function available with internally calibrated mode
- Hot-pluggable
- Receiver loss of signal output
- International Class1 laser safety certified
- Operating temperature range:
  Commercial: -5°C~70°C
  Industrial: -40°C~85°C
- RoHS Compliant

Application

- SMPTE 297-2006 Electrical-to-Optical Interfaces
- HDTV, SDTV Service Interfaces

Ordering Information

Part Number	Specifications					
	Package	Data Rate (Gbps)	Wavelength (nm)	Temperature (°C)	Reach (km)	DDM
V1xx09-SFP-RLC.P	SFP	2.97	1260 to 1610	-5~70	10	Yes
V1xx09-SFP-RLC.P(WT)	SFP	2.97	1260 to 1610	-40~85	10	Yes

Specification

Absolute Maximum Ratings				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
Storage temperature	TS	-40	85	°C
Power Supply Voltage	V_{CC}	0	3.6	V
Relative Humidity	RH	5	95	%

Recommended Operating Conditions						
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Operating Case Temperature	T_C	-5		70	°C	V1xx09-SFP-RLC.P
		-40		85		V1xx09-SFP-RLC.P(WT)
Power Supply Voltage	V_{CC}	3.13	3.3	3.47	V	
Data Rate			2.97		Gbps	
Fiber Length 9/125µm core SMF				10	km	

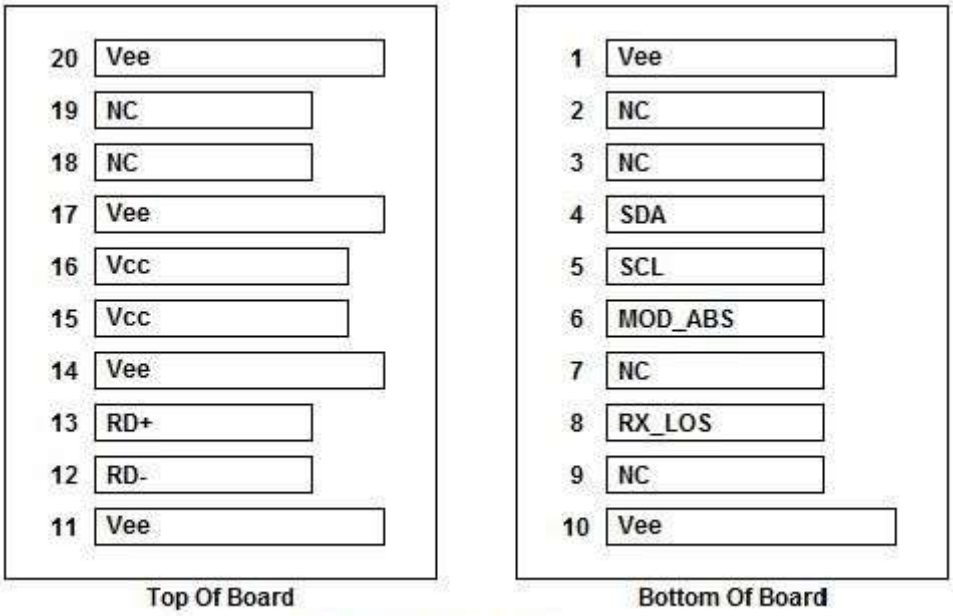
Electrical Characteristics						
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Total Supply Current	I_{CC}			150	mA	
Receiver						
Receiver Differential Output Voltage		300		850	mV	
LOS Output Voltage - High	V_{OH}	2.4		Vcc	V	LVTTL
LOS Output Voltage - Low	V_{OL}	0		0.4	V	LVTTL
Output Differential Impedance		90	100	110	Ω	

Optical Receiver Characteristics							
Parameter		**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Center Wavelength		λc	1260		1610	nm	
Receiver Sensitivity (PRBS)	SD-SDI	P_{SEN}			-20	dBm	1
	HD-SDI				-20		
	3G-SDI				-20		
Receiver Sensitivity (Pathological)	SD-SDI	P_{SEN}			-16	dBm	1
	HD-SDI				-15		
	3G-SDI				-14		

Input Saturation Power (Overload)	P_{SAT}	0			dBm	
Optical Receiver Characteristics						
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Receiver Reflectance				-12	dB	
LOS De-assert Level	LOSD			-20	dBm	
LOS Assert Level	LOSA	-30			dBm	
LOS hysteresis	HYS	0.5		6	dB	

Note1. Measured with Pathological Patterns 2.97Gbps(2048*1080, 100% Bars)

Pin Definition



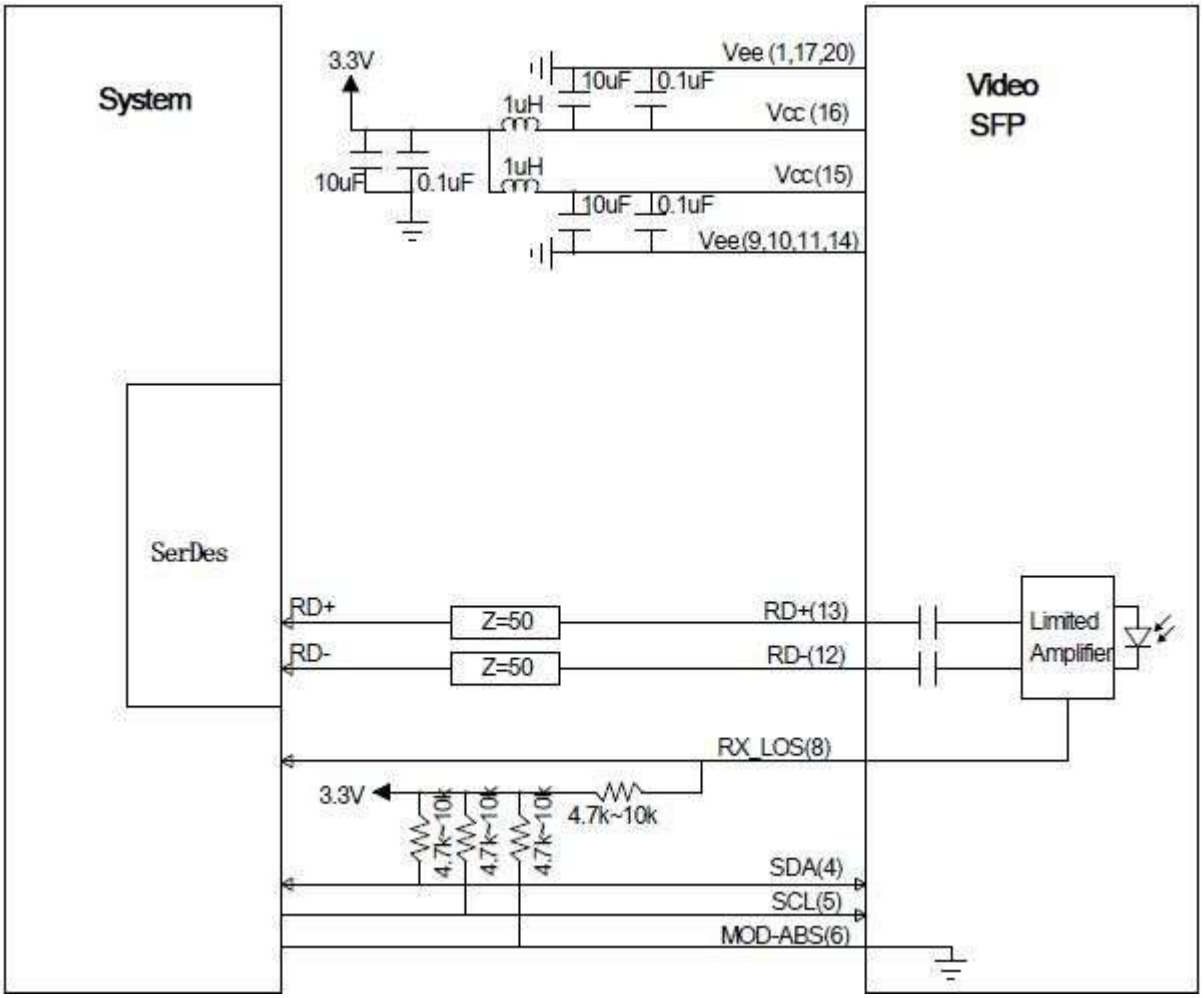
As Viewed Through Top of Board

Pin No.	Symbol	Name/Description	Power Seq.	Notes
1	Vee	Ground	1st	
2	NC	Not Connected	3rd	
3	NC	Not Connected	3rd	
4	SDA	I2C Serial Data Signal	3rd	1
5	SCL	I2C Serial Clock Signal	3rd	1
6	Mod_ABS	Module Absent, Grounded in the Module	3rd	2
7	NC	Not Connected	3rd	
8	RX_LOS	Receiver Loss of Signal indication High: loss of signal; Low: signal detected	3rd	3
9	NC	Not Connected	3rd	

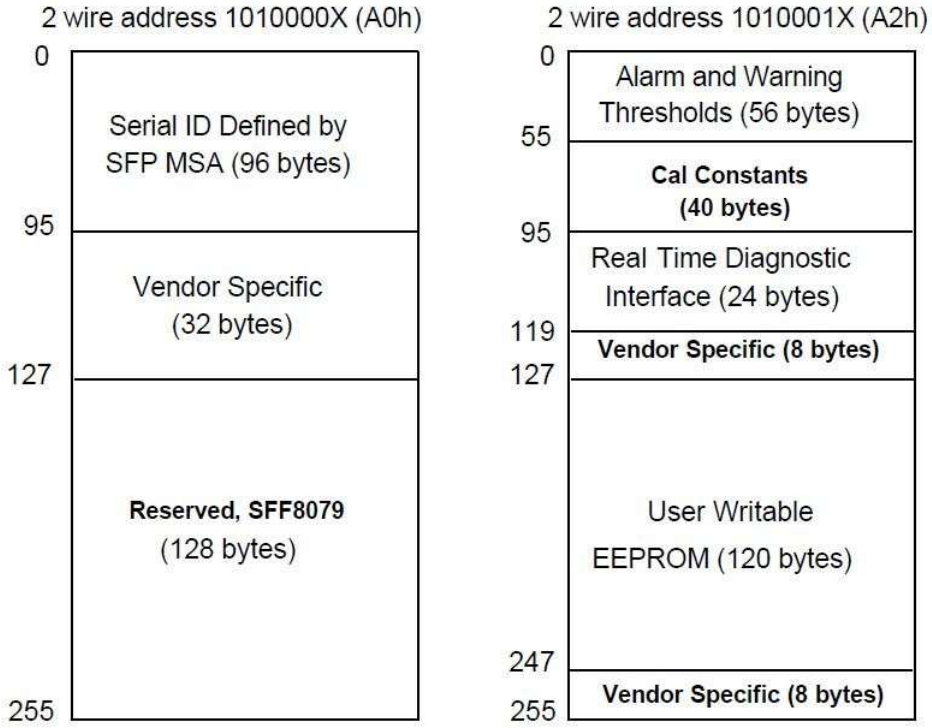
10	Vee	Ground	1st	
Pin No.	**Symbol**	**Name/Description**	**Power Seq.**	**Notes**
11	Vee	Ground	1st	
12	RD-	Receiver Inverted Data out. AC Coupled	3rd	
13	RD+	Receiver Non-inverted Data out. AC Coupled	3rd	
14	Vee	Ground	1st	
15	Vcc	Power Supply	2nd	
16	Vcc	Power Supply	2nd	
17	Vee	Ground	1st	
18	NC	Not Connected	3rd	
19	NC	Not Connected	3rd	
20	Vee	Ground	1st	

Power Seq.: Pin engagement sequence during hot plugging.
Note1. SDA&SCL (I2C) shall be pulled up with a 4.7k - 10kΩ resistors on host board.
Note2. Mod_ABS is connected to Ground inside the module.
Note3. RX_LOS is loss of signal indication, shall be pulled up with a 4.7k - 10kΩ resistor on host board.

Typical Application Circuit



Digital Diagnostic Memory Map



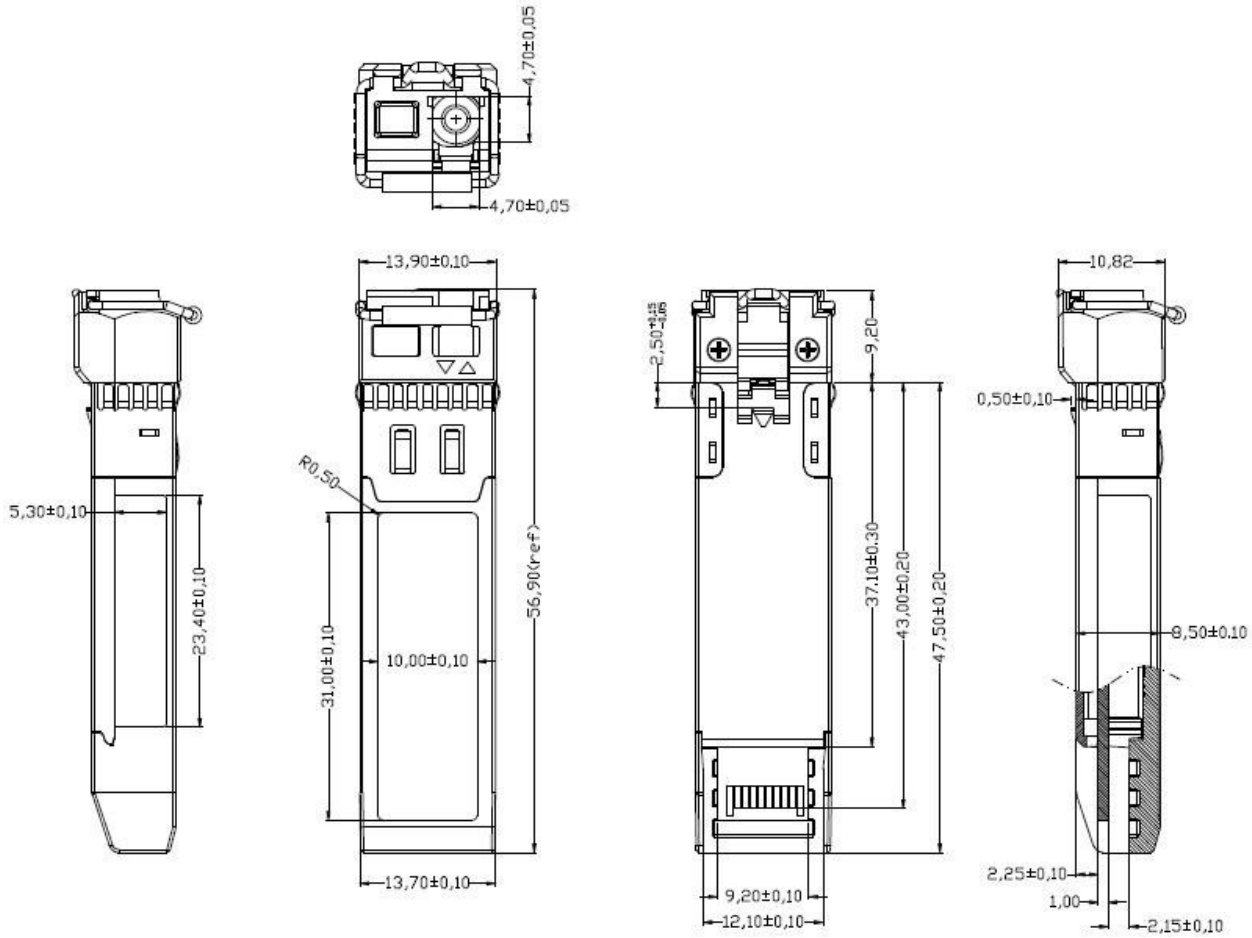
EEPROM Serial ID Memory Contents

The optical transceiver contains an EEPROM. It provides access to sophisticated identification information that describes the transceiver's capabilities, standard interfaces, manufacturer, and other information. When the serial protocol is activated, the host generates the serial clock signal (SCL, Mod Def 1). The positive edge clocks data into those segments of the EEPROM that are not writing protected within the SFP transceiver. The negative edge clocks data from the SFP transceiver. The serial data signal (SDA, Mod Def 2) is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially.

The Module provides diagnostic information about the present operating conditions. The transceiver generates this diagnostic data by digitization of internal analog signals. Calibration and alarm/warning threshold data is written during device manufacture. Received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring all are implemented. The diagnostic data are raw A/D values and must be converted to real world units using calibration constants stored in EEPROM locations 56 - 95 at wire serial bus address A2h. The digital diagnostic memory map specific data fields define as following.

Package Outline

Dimensions are in millimeters. All dimensions are ±0.1mm unless otherwise specified. (Unit: mm)



Revision History

Version	Revision	Release Date
V1.0	New Release	Nov. 07, 2023

For More Information

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