

SPE-2100VWG /SPE-2100AVWG

(RoHS Compliant)

12G-SDI SFP+ COAXIAL TRANSCEIVER

FEATURES

- ST2082, ST2081, ST424, ST292, ST259 Compliant
- Hot-Pluggable SFP+ Footprint Coaxial Video Transceiver with Built-in Reclocker
- HD-BNC Connector Type
- SFP+ MSA compatible
- Speed up to 11.88 Gb/s
- Equalized Belden 1694A cable up to 30 m for 12G-SDI
- Support Video Pathological Patterns for SD-SDI, HD-SDI, 3G-SDI, 6G-SDI, and 12G-SDI
- Single +3.3 V Power Supply
- Temperature and Voltage monitoring
- RoHS Compliant
- 0 to 70°C Operation: SPE-2100VWG
- -40 to 85°C Operation: SPE-2100AVWG

DESCRIPTION

SPE-2100VWG series is a coaxial transceiver module designed to transmit/receive serial digital signals such as defined in ST2082, ST2081, ST424, ST292, and ST259 over 75ohms coaxial cables via HD-BNC connectors. It supports up to 12Gbps and is specifically designed to transmit/receive the pathological patterns for 12G-SDI, 6G-SDI, 3G-SDI, HD-SDI, and SD-SDI. It is with the SFP+ 20-pin connector to allow hot plug capacity. Temperature and voltage monitoring functions are available via an I²C.

APPLICATIONS

- Video, Camera, and Security Monitoring
- High-density Video Routers

ORDER INFORMATION

P/No.	Type	Bit Rate (Gb/s)	Connector	Distance (m)	Package	Temp. (°C)	RoHS Compliant
SPE-2100VWG	Transceiver	Up to 12	HDBNC, 75ohm	30	SFP+ with DMI	0 to 70	Yes
SPE-2110AVWG	Transceiver	Up to 12	HDBNC, 75ohm	30	SFP+ with DMI	-40 to 85	Yes

Absolute Maximum Ratings

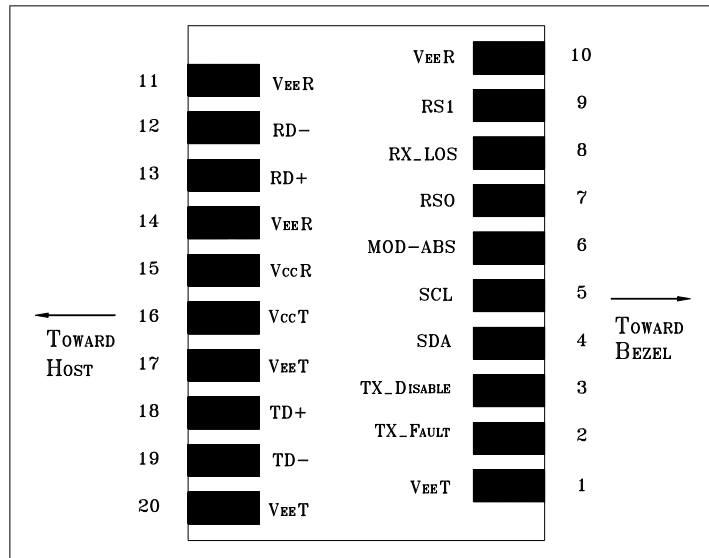
Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	Tstg	-40	85	°C	
Operating Case Temperature	Topr	0 -40	70 85	°C	SPE-2100VWG SPE-2100AVWG
Power Supply Voltage	Vcc	-0.5	3.6	V	

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units / Notes
Power Supply Voltage	Vcc	3.13	3.3	3.47	V
Operating Case Temperature	Topr	0 -40		70 85	°C / SPE-2100VWG °C / SPE-2100AVWG
Power Supply Current	I _{CC(TX+RX)}		320	340	mA
Data Rate		270		11880	Mbps

Electrical Characteristics						
Parameter	Symbol	Min	Typ	Max	Units	Notes
Transmitter						
Differential Input Impedance	R _{in}		100		Ω	
Differential Data Input Amplitude		200		1200	mV _{pp}	Internally AC coupled
SDI Output Return Loss	RL _{TX}			-15	dB	@ 0 – 1.5 GHz
				-10	dB	@ 1.5 – 3 GHz
				-7	dB	@ 3 – 6 GHz
				-4	dB	@ 6 – 12 GHz
Receiver						
Differential Output Impedance	R _{out}		100		Ω	
Differential Data Output Amplitude		350			mV _{pp}	Internally AC coupled
SDI Input Return Loss	RL _{RX}			-15	dB	@ 0 – 1.5 GHz
				-10	dB	@ 1.5 – 3 GHz
				-7	dB	@ 3 – 6 GHz
				-4	dB	@ 6 – 12 GHz
Cable Length (Belden 1694A)	L			120	m	@ 3G-SDI
				60	m	@ 6G-SDI
				30	m	@ 12G-SDI
LOS Output Voltage -- High		2.4		V _{cc}	V	
LOS Output Voltage -- Low		GND		0.5	V	

CONNECTION DIAGRAM



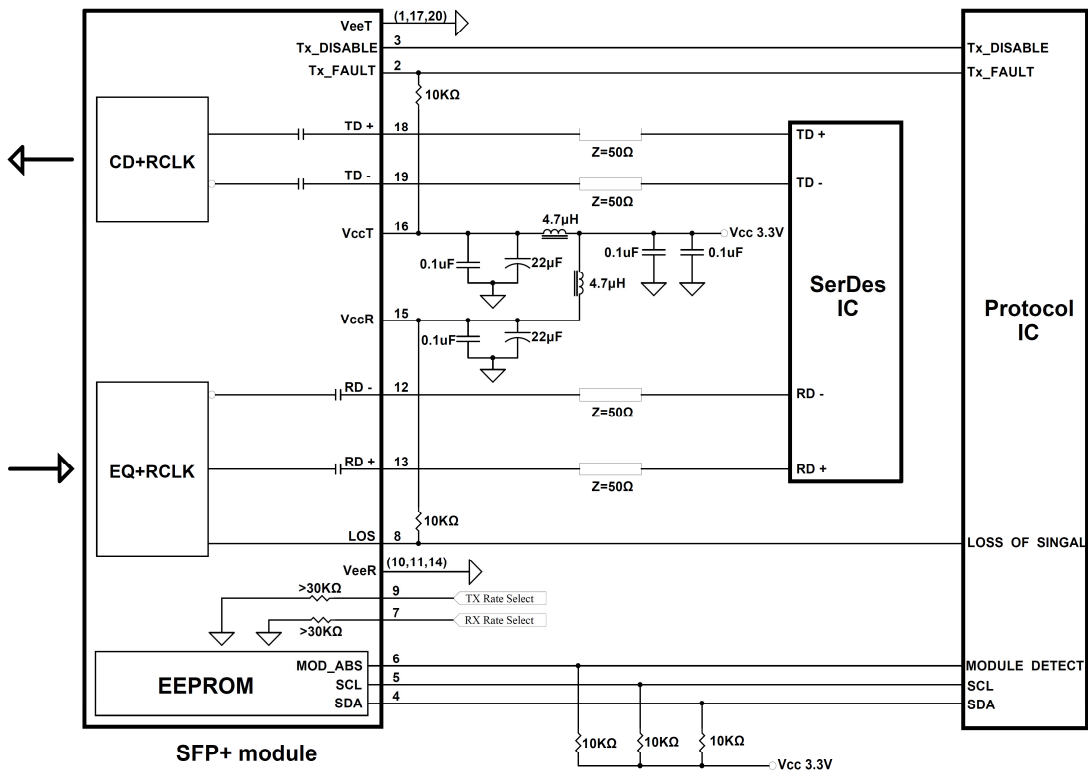
PIN	Signal Name	Description	PIN	Signal Name	Description
1	VEET	Transmitter Signal Ground	11	VEER	Receiver Signal Ground
2	TX_Fault	Transmitter Fault Indication. Logic "1" Output = Laser Fault. Logic "0" Output = Normal Operation	12	RD-	Inverse Receiver Data Out
3	TX_Disable	Logic "1" Input (or no connection) = Laser off, Logic "0" = Laser on.	13	RD+	Receiver Data Out
4	SDA	Modulation Definition 2 – Two wires serial ID Interface	14	VEER	Receiver Signal Ground
5	SDL	Modulation Definition 1 – Two wires serial ID Interface	15	VccR	Receiver Power – 3.3V±5%
6	MOD-ABS	Modulation Definition 0 – Ground in Module	16	VccT	Transmitter Power – 3.3V±5%
7	RS0	RX Rate Select (LVTTL). This pin has an internal 30k pulldown to ground. A signal on this pin will not affect module performance.	17	VEET	Transmitter Signal Ground
8	RX_LOS	Loss of Signal Out (OC).	18	TD+	Transmitter Data In
9	RS1	TX Rate Select (LVTTL). This pin has an internal 30k pulldown to ground. A signal on this pin will not affect module performance.	19	TD-	Inverse Transmitter Data In
10	VEER	Receiver Signal Ground	20	VEET	Transmitter Signal Ground

MODULE DEFINITION

Module Definition	PIN 4	PIN 5	PIN 6	Interpretation by Host
4	SDA	SCL	MOD-ABS	Serial module definition protocol

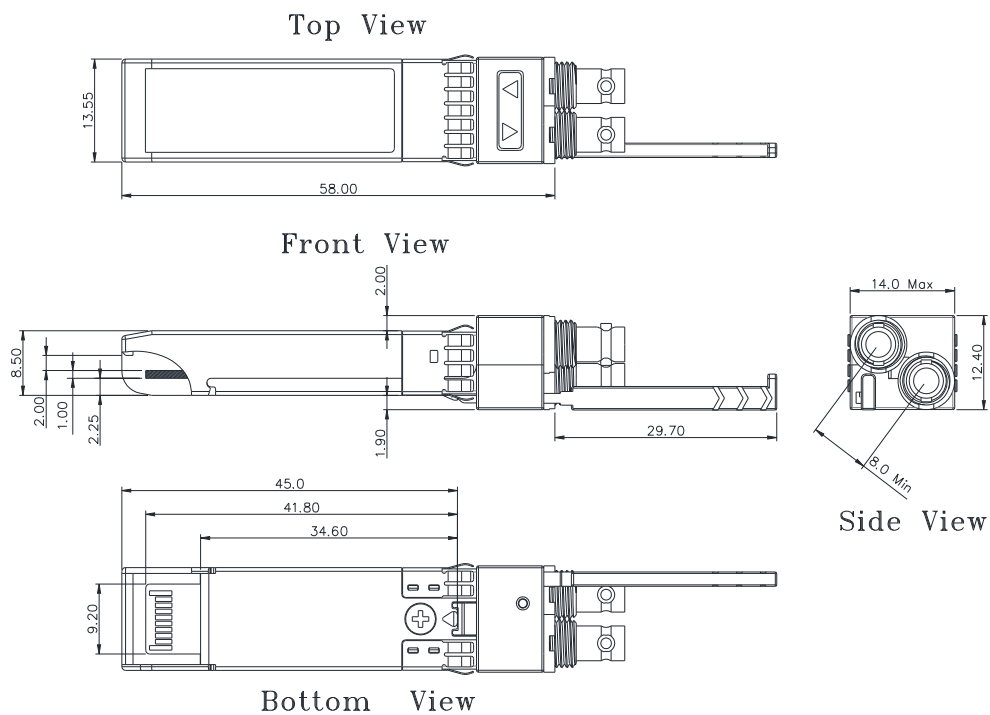
Module Definition 4 specifies a serial definition protocol. For this definition, upon power up, SDA and SDL appear as no connector (NC) and MOD-ABS is TTL LOW. When the host system detects this condition, it activates the serial protocol. The protocol uses the 2-wire serial CMOS E²PROM protocol of the ATMEL AT24C01A/02/04 family of components.

BLOCK DIAGRAM OF TRANSCEIVER



PACKAGE DIAGRAM

Units in mm



Note: Specifications subject to change without notice.

REVISION HISTORY

Version	Subject	Release Date
1.0	Initial datasheet	2019/2/20
1.1	Change Package Diagram	2019/8/16