

L9-SD311G-20CTC

1×9 1.25Gbps 1310nm Dual SC 20km Transceiver

Features

- VCSEL/FP/DFB Laser Diode Transmitter
- Up to 20 Km on 9/125μm SMF
- 3.3V or 5V power supply
- SC duplex optical interface
- CML Differential Input/ Output and TTL signal detect
- Class 1 Laser International Safety Standard IEC 825 Compliant
- Operating case temperature range: 0 to +70°C

Applications

- Gigabit Ethernet
- Fiber Channel
- Digital Video Transmission System
- Other Optic Link



Product Description

Link-pp's L9-SDxx1G-xxCTC series of transceiver modules are the perfect solution for high-speed communication networks.

These transceiver modules support data rates up to 1.5Gbps. These modules are fully compliant with the Multi-sourced 1×9 protocol.

These transceiver modules provide the system designer with products to implement a range of Fiber Channel and Gigabit Ethernet designs at the 1.06/1.25Gbps rate for communications.

Absolute Maximum Ratings

Operating of the transceiver beyond the Absolute Conditions Listed in Table 1 will degrade or damage the product. It's not implied that the product would function above the recommended operating environment, it's possible to reduce the reliability and lifetime of device if Recommended Operating Environment is exceeded (Refer to table 2)

Table 1--- Absolute Maximum Conditions

Parameter		Symbol	Min	Max	Units	Note
Storage Temperature		T _{ST}	-40	+85	°C	-
Relative Humidity		RH	5	95	%	-
Supply Voltage	3.3V power	V _{CC}	0	+3.6	V	-
	5V power		0	+6		-

Table 2--- Recommended Operating Environment and Electrical Characteristics

Parameter		Symbol	Min	Typ	Max	Units	Note
Supply Voltage	3.3V power	V _{CC}	+3.1	+3.3	+3.5	V	-
	5V power		+4.75	+5.0	+5.25		-
Supply Current		I _{CC}	-	-	260	mA	-
Operating Case Temperature		T _{OP}	0	-	+70	°C	1
			-40	-	+85		2
Data Rate		B	100	1250	1500	Mbps	-
Soldering temperature		-	-	-	350	°C	3
Soldering duration		-	-	-	10	Sec	3

Note 1.Standard level
2.Industrial level
3.Not recommended wave soldering.

Optical Parameters

Table 3--- L9-SD311G-10CTC/L9-SD311G-20CTC Transceiver Optical Characteristics
(Ambient Operating Temperature $T_a = +25 \pm 5^\circ\text{C}$, $V_{CC} = 3.3$ or $5.0 \pm 0.2\text{V}$)

Parameter	Symbol	Min	Typ	Max	Units	Note
Transmitter						
Data rate	B	100	1250	1500	Mbps	-
Output Center Wavelength	λ_c	1260	1310	1360	nm	-
Output Spectral width (RMS)	λ	-	-	4	nm	-
Average Optical Output Power	P_o	-10	-	-3	dBm	1,2
Extinction Ratio	ER	8.2	-	-	dB	1,2
Optic Output Eye: Compliant IEEE802.3						1,2
Receiver						
Receiver Sensitivity	P_{min}	-	-	-23	dBm	1,2
Receiver Saturation	P_{max}	-3	-	-	dBm	1,2
Operation Center Wavelength	λ_c	1260	-	1620	nm	-
SD	Deassert	PD	-35	-	dBm	1,2
	Assert	PA	-	-23	dBm	1,2
SD Hysteresis	SDHYS	0.5	-	-	dB	-

Note1: The optical power is launched into 9/125 μm SMF.

Note2: With a PRBS $2^{23}-1$ test pattern@1250Mbps.

Electrical Parameters

Table 4--- Transceiver Electrical Characteristics
(Ambient Operating Temperature $T_a = +25 \pm 5^\circ\text{C}$, $V_{CC} = 3.3$ or $5.0 \pm 0.2\text{V}$)

Parameter	Symbol	Min	Typ	Max	Units	Note
Supply Voltage	3.3V power	+3.1	+3.3	+3.5	V	-
	5V power	+4.75	+5.0	+5.25		-
Supply Current	I_{CC}	-	-	260	mA	-

Transmitter						
Differential Input Voltage	V _{in}	400	-	2000	mV _{p-p}	-
Input Differential Impedance	Z _{in}	90	100	110	Ω	-
Data Input Voltage - Low	V _{IL}	V _{CC} -1.81	-	V _{CC} -1.48	V	-
Data Input Voltage - High	V _{IH}	V _{CC} -1.17	-	V _{CC} -0.88	V	-
Receiver						
Differential Output Voltage	V _{OUT}	400	-	2000	mV _{p-p}	-
Data Output Voltage – Low	V _{OL}	V _{CC} -1.83	-	V _{CC} -1.56	V	1
Data Output Voltage – High	V _{OH}	V _{CC} -1.09	-	V _{CC} -0.88	V	1
SD Output Voltage-Low	V _{OL}	V _{CC} -2.0	-	V _{CC} -1.56	V	2
SD Output Voltage-High	V _{OH}	V _{CC} -1.1	-	V _{CC} -0.75	V	2
SD Output Voltage-Low	V _{OL}	0	-	0.8	V	3
SD Output Voltage-High	V _{OH}	2	-	V _{CC}	V	3

Note1: Outputs are terminated with 50Ω to VCC-2V&Related to VCC

Note2: (LV)PECL signal detect

Note3: (LV)TTL signal detect

Pin Definitions

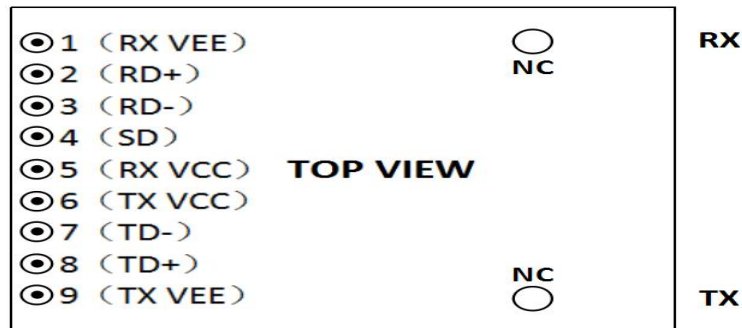


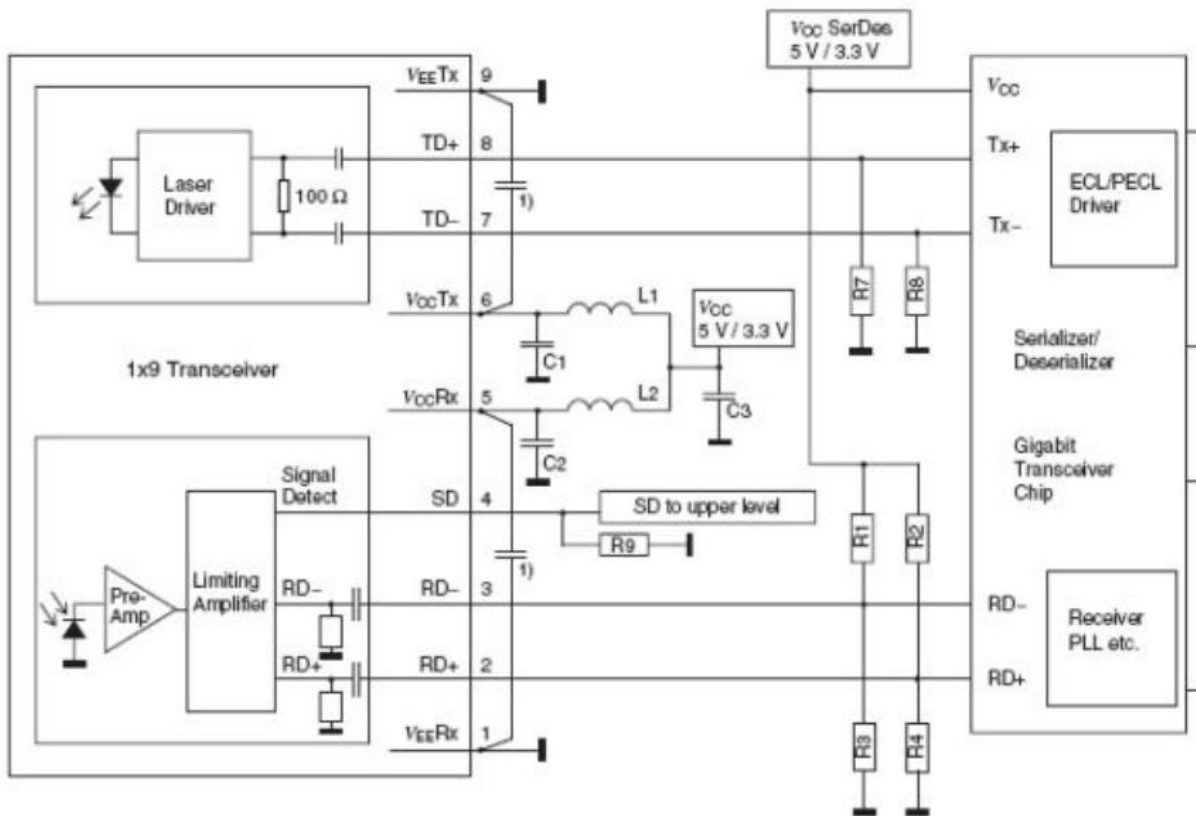
Table 5---Connector pin assignment

Pin #	Pin Name	Description	Note
1	RX VEE	Receiver Signal Ground	-
2	RD+	Receiver Data Out	-
3	RD-	Receiver Data Out Bar	-
4	SD	Signal Detect, TTL outputs	1
5	RX VCC	Receiver Power Supply	-

6	TX VCC	Transmitter Power Supply	-
7	TD-	Transmitter Data In Bar	-
8	TD+	Transmitter Data In	-
9	TX VEE	Transmitter Ground	-

Note1: (LV)PECL-Normal optical input levels to the receiver result in logic "1" output, pull-down 130Ω or 270Ω resistor; (LV)TTL-Normal optical input levels to the receiver result in logic "1" output, pull-up 10kΩ resistor.

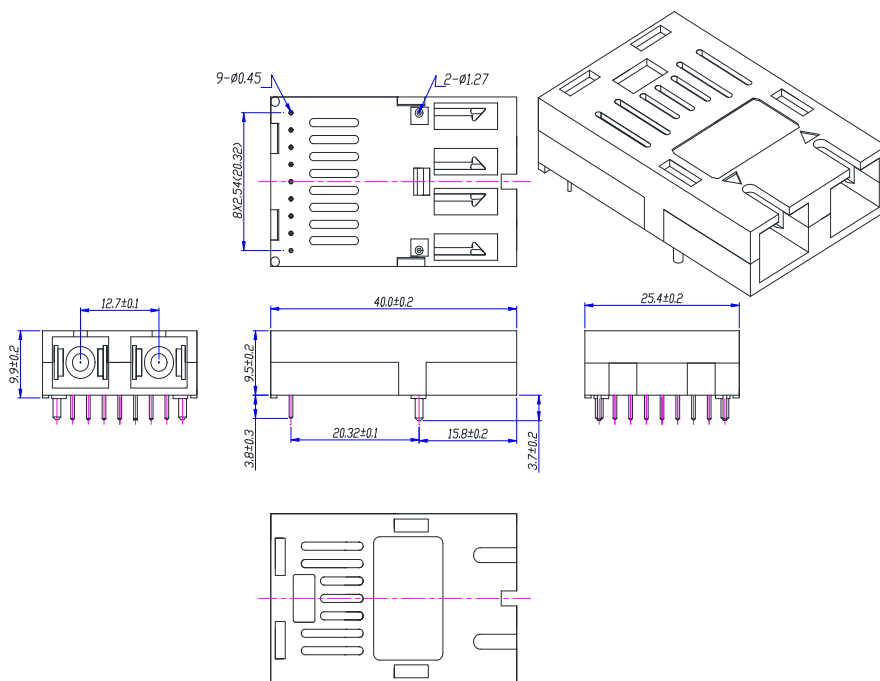
Recommended Circuit Schematic



- C1/2/3 = 4.7 μF
- L1/2 = 1 μH
- R1/2/3/4 = Depends on SerDes chip used
- R7/8 = Biasing (depends on SerDes chip)
- R9 = open (5 V/3.3 V TTL)
- = 510 Ω (5 V PECL)
- = 270 Ω (3.3 V PECL)

Place R1/2/3/4/7/8 close to SerDes chip.
Place R5/6 close to 1x9 transceiver.

Module Outline Drawing (Units in mm)



SC receptacle TYPE1(common)

Order Information

Type	Optical Interface	Fiber Type	Wavelength(nm)	Fiber Length(Km)	Note
L9-SD851G-S5CTC	duplex SC	MM	850(VCSEL)	0.5	TTL signal detect , 3.3V Supply Voltage default
L9-SD311G-S5CTC	duplex SC	MM	1310(FP)	0.55	
L9-SD311G-10CTC	duplex SC	SM	1310(FP)	10	
L9-SD311G-20CTC	duplex SC	SM	1310(FP)	20	
L9-SD311G-40CTC	duplex SC	SM	1310(DFB)	40	
L9-SD551G-20CTC	duplex SC	SM	1550(DFB)	20	
L9-SD551G-40CTC	duplex SC	SM	1550(DFB)	40	
L9-SD551G-80CTC	duplex SC	SM	1550(DFB)	80	