

Specification

1X9 Form Factor

Duplex SC Receptacle – DSC

Optical Transceivers

1000BASE-SX

1250Mbit/s



Ordering Information

T S P - D x C H 2 - C 1 1

Voltage / Temperature

1: 3.3V + 0°C ~ + 70°C

2: 3.3V - 40 °C ~ + 85°C

Model Name	Voltage	Category	Device type	Interface	SD/LOS	Temperature	Distance
TSP-D1CH2-C11	3.3 V	W/O DDMI	VCSEL / PIN	AC / AC Coupling	LVTTTL	+ 0°C ~ + 70°C	550m
TSP-D2CH2-C11						-40°C ~ + 85°C	(Table 1)

Media	Wavelength	Fiber Core Dimension	Bandwidth	Fiber Type	Distance
Multi-Mode Fiber	850nm	50 μ m	500 MHz * km	OM2	550m
		50 μ m	400 MHz * km		500m
		62.5 μ m	200 MHz * km	OM1	275m
		62.5 μ m	160 MHz * km		220m

Table 1

Features

- ROHS Compliant
- Standard 1X9 Form Factor
- Gigabit Ethernet Standard (IEEE802.3Z 1000BASE-SX) Compliant
- Fibre Channel Standard (100-M5-SN-I and 100-M6-SN-I) Compliant
- Laser Class 1 Product – IEC60825-1 Compliant
- Standard Duplex SC Receptacle Optical Interface
- Single + 3.3 V Power Supply
- Differential LVPECL Data Input and Output
- LVTTTL Signal Detect
- Low Power Consumption

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Storage temperature	T_S	-40	-	85	°C
Supply voltage	V_{CC}	0	-	4	V
Operating Relative Humidity	-	5	-	95	%
Input voltage	V_{IN}	0	-	V_{CC}	V

Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	$V_{CC(3.3V)}$	3.1	3.3	3.5	V
Operating Case temperature (TSP-D1CH2-C11)	T_C	0	-	70	°C
Operating Case temperature (TSP-D2CH2-C11)		-40	-	85	
Total Current (Transmitter + Receiver)	I_{CC}	-	-	250	mA
Hand Lead Soldering Temperature / Time	T_h	-	-	260/10	°C /sec
Wave Lead Soldering Temperature / Time	T_w	-	-	260/10	°C /sec

Transmitter Specifications ($V_{CC}=3.1V\sim3.5V$; $T_C=0^{\circ}C\sim70^{\circ}C$ / $T_C=-40^{\circ}C\sim85^{\circ}C$)

Parameter	Symbol	Min	Typ	Max	Unit
Optical Characteristics					
Output Optical Power	P _{out}	-9	--	-3	dBm
Extinction Ratio	ER	9	--	--	dB
Center Wavelength	λ _C	830		860	nm
Spectral Width (RMS)	σ	--	--	0.85	nm
Rise/Fall time (20-80%)	T _{r,f}	--	--	260	ps
Relative Intensity Noise	RIN	--	--	-117	dB/Hz
Output Eye	Compliant with IEEE 802.3z				
Electrical Characteristics					
Differential Input Voltage	V _{DIFF}	0.4	--	2.0	V

Receiver Specifications ($V_{CC}=3.1V\sim3.5V$; $T_C=0^{\circ}C\sim70^{\circ}C$ / $T_C=-40^{\circ}C\sim85^{\circ}C$)

Parameter	Symbol	Min	Typ	Max	Unit
Optical Characteristics					
Optical Input Power-maximum	P_{SATIN}	0	--	--	dBm
Receiver Sensitivity ($PRBS=2^7-1$; $BER \leq 10^{-12}$)	P_{SAN}	--	--	-18	dBm
Operating Center Wavelength	λ_C	770		860	nm
Signal Detect – Asserted	P_{SA}	--	--	-18	dBm
Signal Detect – De-asserted	P_{SD}	-35	--	--	dBm
Signal Detect – Hysteresis	P_{SH}	0.5		6	dB
Electrical Characteristics					
Differential Output Voltage	V_{DIFF}	0.4	--	2.0	V
Signal Detect Output Voltage -Low	V_{SDL}	0	--	0.8	V
Signal Detect Output Voltage -High	V_{SDH}	2	--	$V_{CC}+0.3$	V

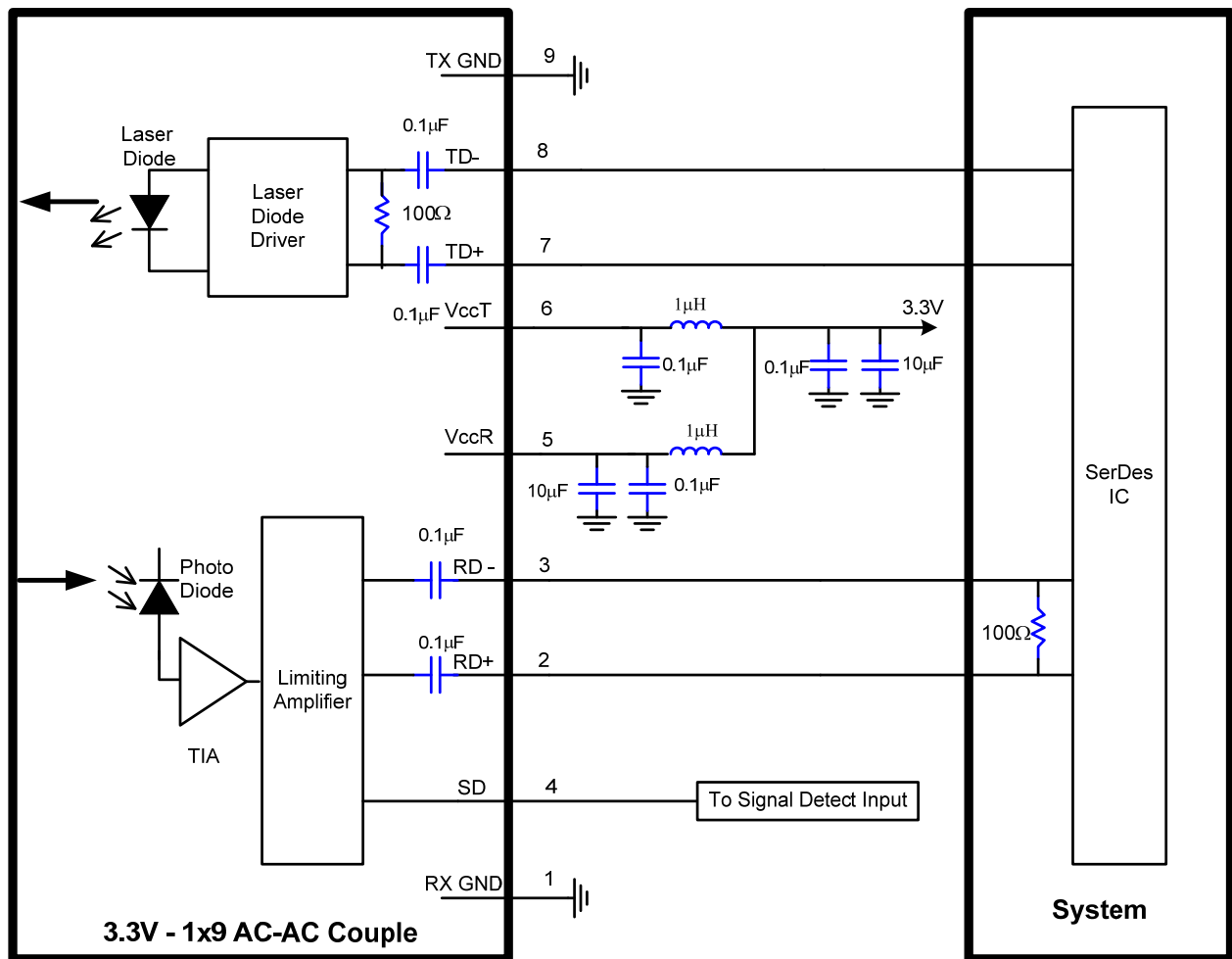
Pin Definition and Descriptions

9. TX GND _r	N/C
8. TD+	
7. TD-	
6. V _{CCT}	
5. V _{CCR}	N/C
4. SD	
3. RD-	
2. RD+	
1. RX GND	

Bottom VIEW

Pin	Name	Description
1	RX GND	Receiver Signal Ground
2	RD+	Receiver Data Out
3	RD-	Receiver Data Out Bar
4	SD	Signal Detect
5	V _{CCR}	Receiver Power Supply
6	V _{CCT}	Transmitter Power Supply
7	TD-	Transmitter Data In Bar
8	TD+	Transmitter Data In
9	TX GND	Transmitter Signal Ground

Recommended Circuit Diagram



(Unit : mm)

