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℃ ~ + 70℃
2 : 3.3V - 40 ℃ ~ + 85℃

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	LVTTL	+ 0 °C~ + 70 °C	550m (Table 1)
TSP-D2CH2-C11						- 40 °C~ + 85 °C	

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

Formerica Optoelectronics Inc.
4F, No.31, Xintai Rd, Zhubei City,
Hsinchu County 302, Taiwan
Ph: +886-3-5512858 Fax: +886-3-5537118

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**
- **LVTTL 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)	Tc	0	-	70	ºC
Operating Case temperature (TSP-D2CH2-C11)		-40	-	85	
Total Current (Transmitter + Receiver)	Icc	-	-	250	mA
Hand Lead Soldering Temperature / Time	Th	-	-	260/10	ºC /sec
Wave Lead Soldering Temperature / Time	Tw	-	-	260/10	ºC /sec

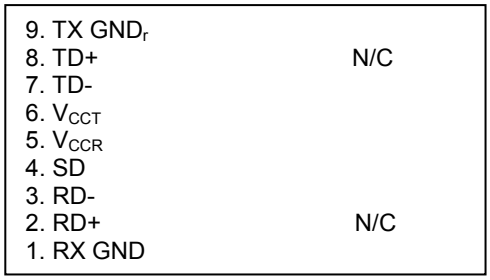
Transmitter Specifications (V_{CC}=3.1V~3.5V ; Tc= 0°C~70°C / Tc= -40°C~85°C)

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~3.5V ; Tc= 0°C~70°C / Tc= -40°C~85°C)

Parameter	Symbol	Min	Typ	Max	Unit
Optical Characteristics					
Optical Input Power-maximum	P_{SATIN}	0	--	--	dBm
Receiver Sensitivity (PRBS=2^7-1 ; BER≦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

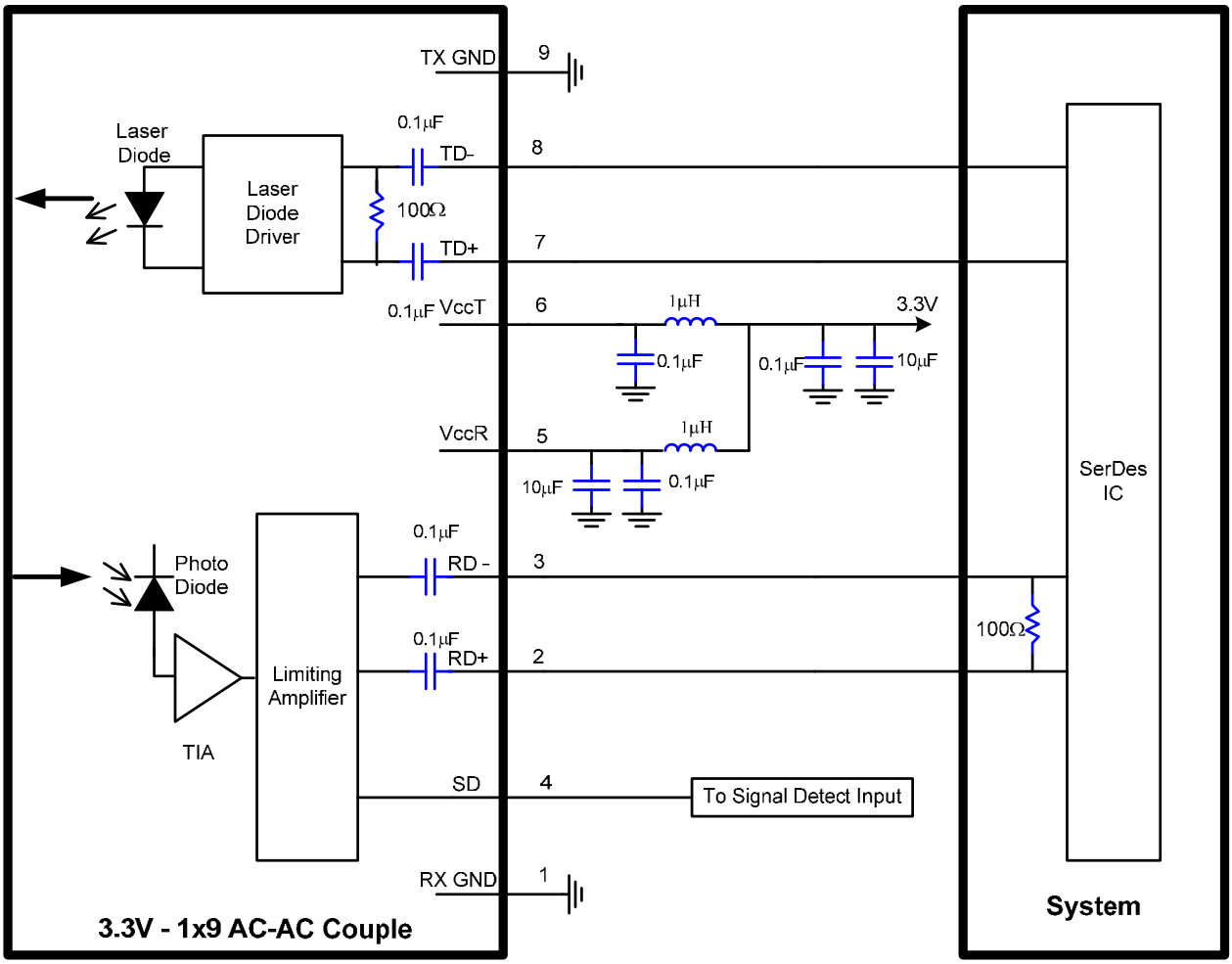
Pin Definition and Descriptions



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



Mechanical Outlines

(Unit : mm)

