Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

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

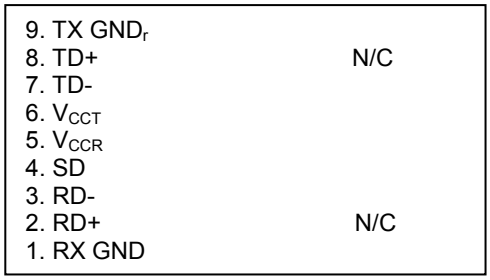
Transmitter Specifications (V_{CC}=3.1V~3.5V ; Tc= 0°C~70°C / Tc= -40°C~85°C)

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

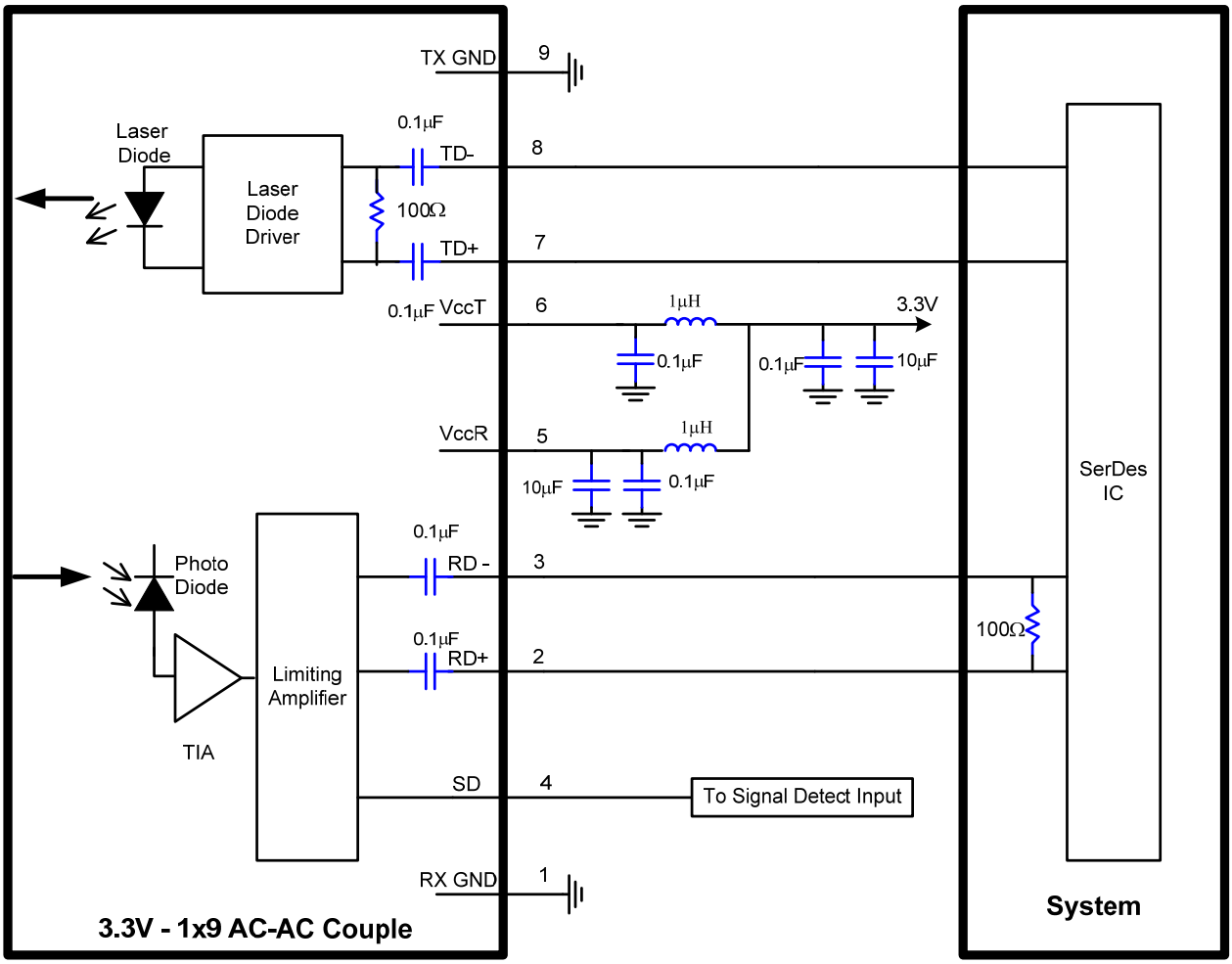
Pin Definition and Descriptions



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)