

Specification

1X9 Form Factor

Duplex SC Receptacle – DSC

Optical Transceivers

STM-1 / OC-3 / 100BASE
 155.52Mbit/s



Ordering Information

T S P - D x A A 2 - M 2 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-D1AA2-M21	3.3 V	W/O DDMI	FP / PIN	DC / DC Coupling	LVPECL	+0°C ~ +70°C	60km
TSP-D2AA2-M21						-40°C ~ +85°C	

Features

- ROHS Compliant
- Standard 1X9 Form Factor
- SONET/SDH Standard Compliant
- Fast Ethernet Standard 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
- LVPECL 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}	3.1	3.3	3.5	V
Operating Case temperature (TSP-D1AA2-M21)	T _c	0	-	70	°C
Operating Case temperature (TSP-D2AA2-M21)		-40	-	85	
Total Current (Transmitter + Receiver)	I _{CC}	-	-	250	mA
Hand Lead Soldering Temperature / Time	Th	-	-	260/10	°C /sec
Wave Lead Soldering Temperature / Time	Tw	-	-	260/10	°C /sec

Transmitter Specifications ($V_{CC}=3.1V\sim 3.5V$; $T_C= 0^{\circ}C\sim 70^{\circ}C$ / $T_C= -40^{\circ}C\sim 85^{\circ}C$)

Parameter	Symbol	Min	Typ	Max	Unit
Optical Characteristics					
Output Optical Power	P_{out}	-5	--	0	dBm
Extinction Ratio	ER	9	--	--	dB
Center Wavelength	λ_c	1270	1310	1355	nm
Spectral Width (RMS)	σ	--	--	2.5	nm
Rise/Fall time (10-90%)	$T_{r,f}$	--	--	2	ns
Relative Intensity Noise	RIN	--	--	-120	dB/Hz
Output Eye	Compliant with ITU-T G.957				
Electrical Characteristics					
Transmitter Data Input Voltage - High	$V_{IH} -V_{CC}$	-1.1	--	-0.74	V
Transmitter Data Input Voltage - Low	$V_{IL} -V_{CC}$	-2.0		-1.58	V

Receiver Specifications ($V_{CC}=3.1V\sim 3.5V$; $T_C= 0^{\circ}C\sim 70^{\circ}C$ / $T_C= -40^{\circ}C\sim 85^{\circ}C$)

Parameter	Symbol	Min	Typ	Max	Unit
Optical Characteristics					
Optical Input Power-maximum	P_{SATIN}	-3	--	--	dBm
Receiver Sensitivity (PRBS= $2^{23}-1$; $BER \leq 10^{-10}$)	P_{SAN}	--	--	-35	dBm
Operating Center Wavelength	λ_c	1260		1610	nm
Signal Detect – Asserted	P_{SA}	--	--	-35	dBm
Signal Detect – De-asserted	P_{SD}	-45	--	--	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 - High	$V_{OH} -V_{CC}$	-1.1	--	-0.74	V
Signal Detect Output Voltage - Low	$V_{OL} -V_{CC}$	-2.0		-1.58	V

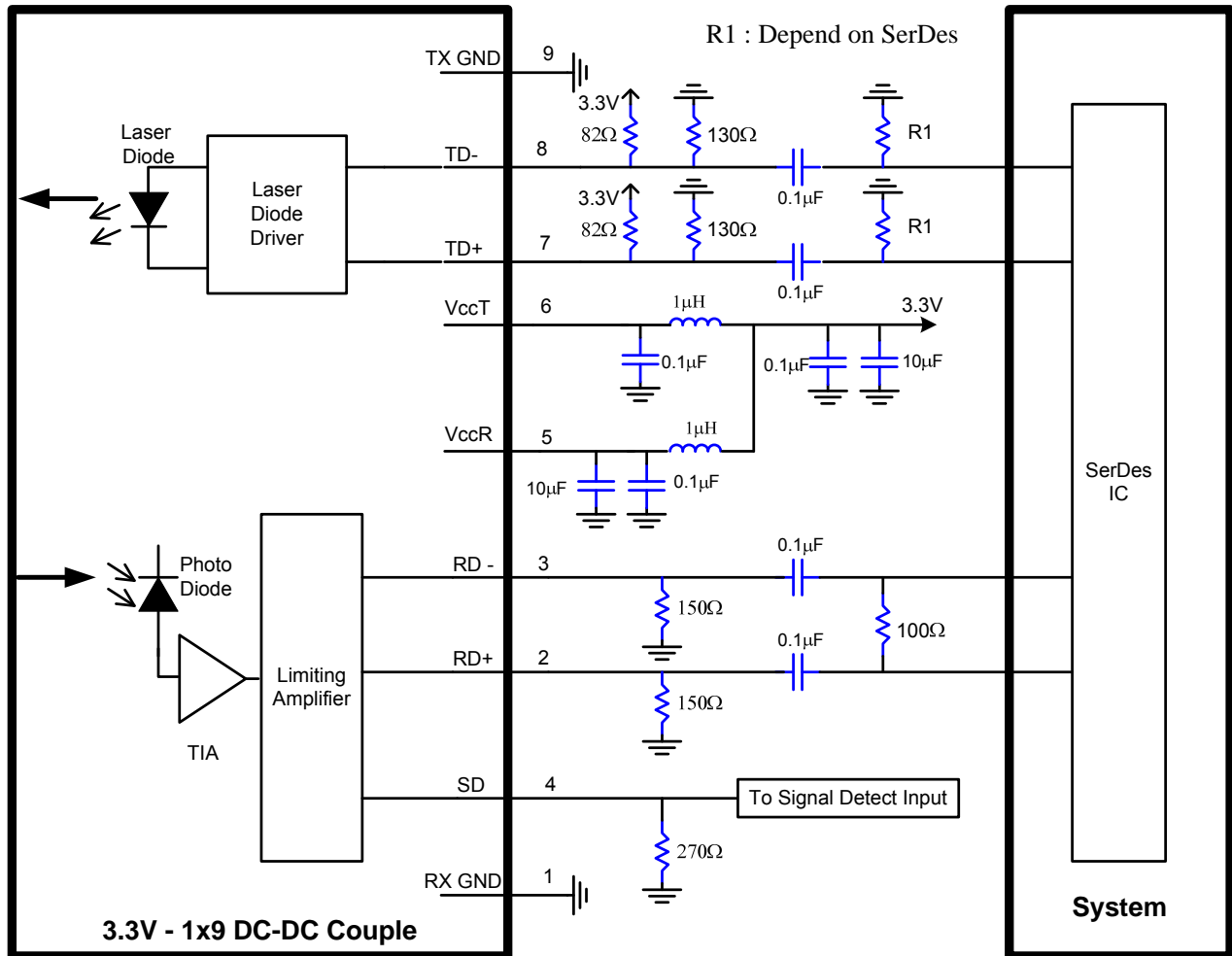
Pin Definition and Descriptions

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



Mechanical Outlines

(Unit : mm)

