

Singlemode 2.5Gbps Bi-Directional Single Fiber 2x5 SFF Optical Transceiver

Features

- Intermediate and long reach
- Industrial standard 2 x 5 pin footprint
- Single SC Receptacle
- Single Pigtailed SC/ST/FC connector interface
- Transmitter disable function
- Receiver signal detect function
- Wide dynamic rang receiver with AGC
- LVPECL logic interface, AC coupling
- Single supply 3.3V
- Low power consumption



Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit
Transmitter					
Data Rate (NRZ)	B	-	2500	-	Mb/s
Optical Output Power (avg.) ^{(1) (3)}					
-1	P _o	-10	-	-5	dBm
-2	P _o	-5	-	0	dBm
Extinction Ratio	ER	9	-	-	dB
Optical Wavelength					
TR13R15 (1310nm FP LD)	λ_c	1260	1310	1360	nm
TR31R15 (1310nm DFB LD)	λ_c	1290	1310	1330	nm
TR55R13 (1550nm DFB LD)	λ_c	1530	1550	1570	nm
Spectral Width					
TR13R15 (RMS)	$\Delta\lambda$	-	1.0	2.5	nm
TR31R15 (-20dB) TR55R13 (-20dB)	$\Delta\lambda$	-	-	1	nm
Side Mode Suppression Ratio					
TR31R15 TR55R13	SMSR	30	-	-	dB
Output Rise Time (20-80%)	t _r	-	-	180	ps
Output Fall Time (20-80%)	t _f	-	-	180	ps
Data Input ⁽⁶⁾	V _{IL} V _{IH}	V _{CC} -1.810 V _{CC} -1.165	- -	V _{CC} -1.475 V _{CC} -0.880	V
Tx Disable Input	V _{DIL} V _{DIH}	0 2	- -	0.8 V _{CC}	V
Supply Voltage	V _{CC}	2.97	3.3	3.63	V
Supply Current	I _{CC}	-	-	120	mA

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Parameter	Symbol	Min.	Typ.	Max.	Unit
Receiver					
Data Rate (NRZ)	B	-	2500	-	Mb/s
Optical Input (avg.) Sensitivity ⁽¹⁾ ⁽⁵⁾					
-1	P _{IN}	-	-	-15	dBm
Saturation	P _{SAT}	-3	0	-	dBm
Optical Wavelength					
TR13R15 TR31R15	λ	1100	1310	1350	nm
TR15R13 TR55R13	λ	1500	1550	1600	nm
Output Rise Time (20-80%)	t _r	-	-	120	ps
Output Fall Time (20-80%)	t _f	-	-	120	ps
Data Differential Output Voltage	V _o	600	-	1200	mV _{p-p}
LOS Output	V _{LOS L}	0	-	0.4	V
	V _{LOS H}	2.4	-	V _{CC}	
Supply Voltage	V _{CC}	3.1	3.3	3.5	V
Supply Current	I _{CC}	-	-	120	mA
Optical Cross Talk	CT	20	-	-	dB

Notes :

- (1) With 0.275 NA, 9/125μm fiber.
- (2) Driven with a differential signal.
- (3) Class 1 eye safe per FDA and IEC.
- (4) Transmitter eye mask diagram is compliant to ITU-T G.957 Eye Diagram.
- (5) 2²³ -1 PRBS, BER= 10⁻¹⁰.
- (6) Compatible with LVPECL logic levels.
- (7) The transmitter output should not be viewed directly.

Absolute Maximum Ratings

Parameter		Min.	Max.	Unit
Operating Temperature	-1	0	70	°C
	-2	-40	85	°C
Storage Temperature		-40	100	°C
Lead Soldering Limits		-	260/10	°C /sec
Supply Voltage	3.3V	-0.5	4	V

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Ordering Information

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Operating Temperature Range :

1 : 0 ~ 70°C

2 : -40 ~ 85°C

Data Coupling & SD Output Level :

Symbol	Tx Coupling	Rx Coupling	SD
F	AC	AC	TTL

Supply Voltage :

3 : 3.3V

Connector Type :

SC : SC Connector

FC : FC Connector only for pigtail

ST : ST Connector only for pigtail

Package Type :

P : Pigtail

R : Receptacle

Sensitivity Grade :

(refer to Specifications)

1 : -1

Tx Output Power Grade :

(refer to Specifications)

1 : -1

2 : -2

Receiver Wavelength / Laser Type :

13 : 1310nm (FP LD)

31 : 1310nm (DFB LD)

55 : 1550nm (DFB LD)

Transmitter Wavelength / Laser Type :

13 : 1310nm (FP LD)

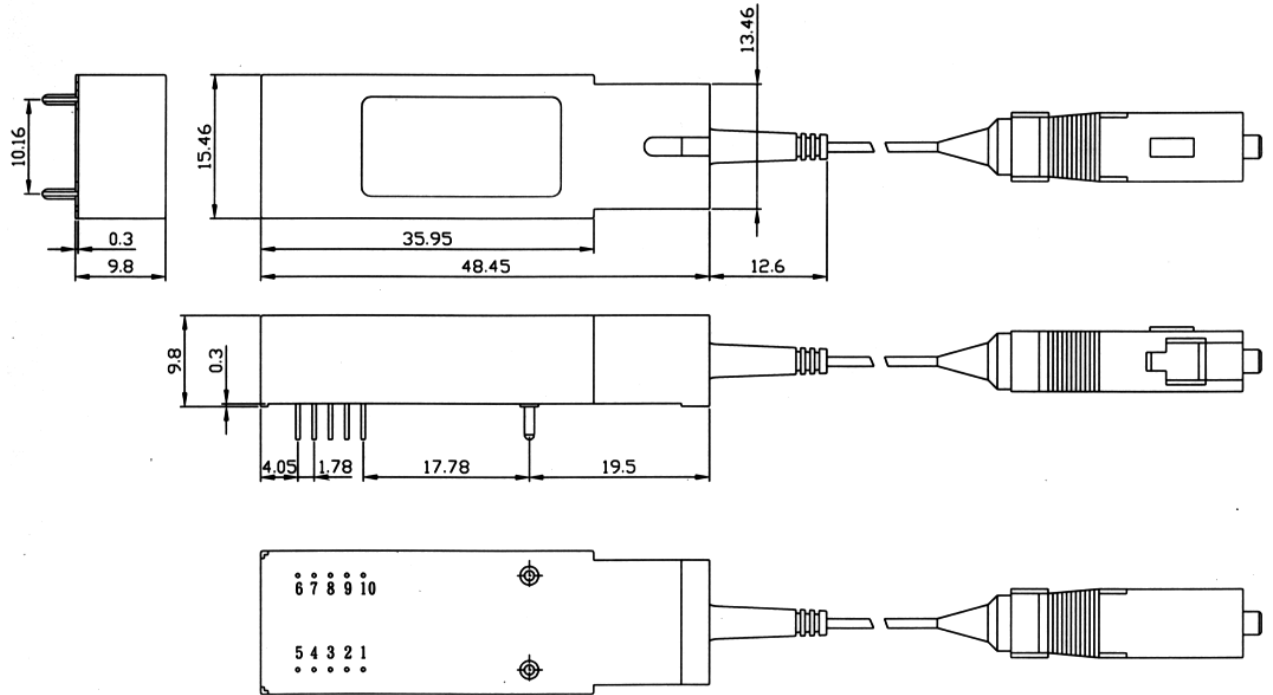
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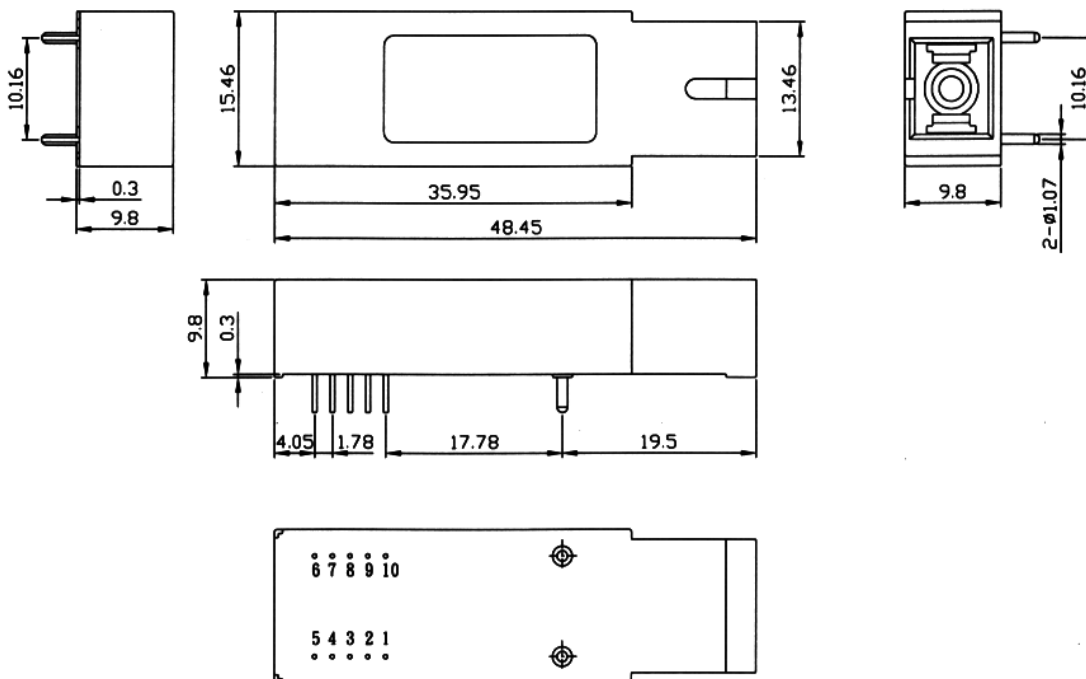
Outline Drawing

Pigtail 2x5 pins SFF



UNIT : mm

Receptacle 2x5 pins SFF



UNIT : mm

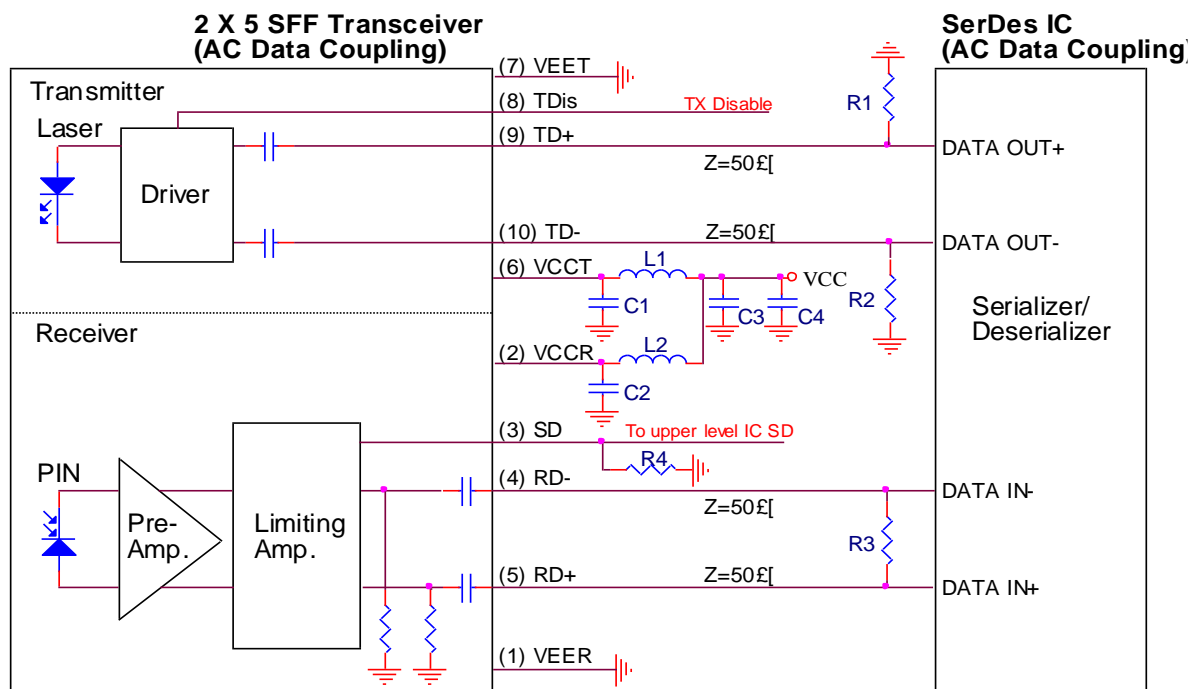
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Pinout Description

Pin No.	Symbol	Description
1	V_{EER}	Receiver Ground
2	V_{CCR}	Receiver Power Supply (3.3V)
3	SD	Receiver Signal Detect
4	RD-	Receiver Data Out (Inverted)
5	RD+	Receiver Data Out
6	V_{CCT}	Transmitter Power Supply (/3.3V)
7	V_{EET}	Transmitter Ground
8	TDis	Input Logic Low Level to Switch Laser "ON" Input Logic High Level to Switch Laser "OFF"
9	TD+	Transmitter Data in
10	TD-	Transmitter Data In (Inverted)

Application Notes

Recommended AC Coupling Interface Circuit :



$L1=L2=1\text{gH}$ or ferrite bead
 $C1=C2=C3=0.1\text{gF}$
 $C4=10\text{gF}$
 R1, R2, R3 depends on SerDes IC specification.
 (Consult the SerDes IC application information)
 $R4=510\Omega$

NOTE_{1G}

1. Transmission line characteristic impedance $Z=50\Omega$.
2. R1, R2, R3 as close to SerDes IC as possible.

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