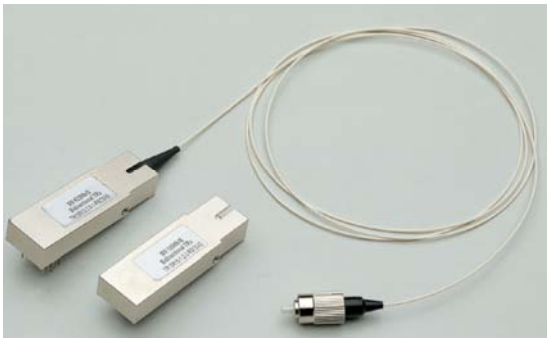
Multi-mode 155Mbps Bi-Directional Single Fiber 2x5 SFF Optical Transceiver

Features

- Industrial standard 2 x 5 pin footprint
- Single SC/ST/FC connector interface
- Receptacle only with SC
- Receiver signal detect function
- Wide dynamic rang receiver with AGC
- PECL/LVPECL logic interface, DC or AC coupling
- Single supply 5V/3.3V
- Low power consumption



Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit
Transmitter					
Data Rate (NRZ)	B	-	155	-	Mb/s
Optical Output Power (avg.) [(1) (3)]					
-1	Po	-6	-	-3	dBm
Extinction Ratio	ER	9	-	-	dB
Optical Wavelength					
TR78R85 (780nm FP LD)	λ_C	760	780	800	nm
TR85R78 (850nm VCSEL)	λ_C	820	850	880	nm
Spectral Width	$\Delta\lambda$		1.0	2.5	nm
Output Rise Time (10-90%)	t_r	-	0.4	0.8	ns
Output Fall Time (10-90%)	t_f	-	0.4	0.8	ns
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}	4.75 3.10	5.0 3.3	5.25 3.50	V
Supply Current	I_{CC}	-	-	110	mA

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Parameter	Symbol	Min.	Typ.	Max.	Unit
Receiver					
Data Rate (NRZ)	B	-	155	-	Mb/s
Optical Input (avg.) Sensitivity (1) (5)					
-1	P_{IN}	-	-	-20	dBm
Saturation	P_{SAT}	-3	0	-	dBm
Optical Wavelength					
TR78R85	λ	820	850	880	nm
TR85R78		760	780	800	
Output Rise Time (10-90%)	t_r	-	-	0.4	ns
Output Fall Time (10-90%)	t_f	-	-	0.4	ns
Data Output (6)	V_{OL} V_{OH}	V_{CC} -1.840 V_{CC} -1.045	- -	V_{CC} -1.62 V_{CC} -0.88	V
Signal Detect Asserted (avg.)	P_A	-	-	-21	dBm
Signal Detect Deasserted (avg.)	P_D	-25	-	-	dBm
Hysteresis	P_{HYS}	-	2	-	dB
Supply Voltage	V_{CC}	4.75 3.10	5.0 3.3	5.25 3.50	V
Supply Current	I_{CC}	-	-	100	mA
Optical Return Loss	RL	50	-	-	dB
Optical Cross Talk	CT	20	-	-	dB

Notes：

(1) With 62.5/125μm fiber.
(2) Driven with a differential signal.
(3) Class 1 eye safe per FDA and IEC.
(4) Eye mask diagram is compliant to IEEE802.3z Eye Diagram
(5) 2^7 -1 PRBS, BER= 10^{-12}.
(6) Compatible with LVPECL and PECL 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		-	240/10	°C /sec
Supply Voltage	5V	-0.2	7	V
	3.3V	-0.2	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
C	AC	DC	PECL
D	AC	DC	TTL
E	AC	AC	PECL
F	AC	AC	TTL
G	DC	DC	PECL
H	DC	DC	TTL
I	DC	AC	PECL
J	DC	AC	TTL

Supply Voltage：
5：5V
3：3.3V

Connector Type：
SC：SC Connector
FC：FC Connector
ST：ST Connector

Package Type：
P：Pigtail
R：Receptacle

Sensitivity Grade：
(refer to Specifications)
1：-1

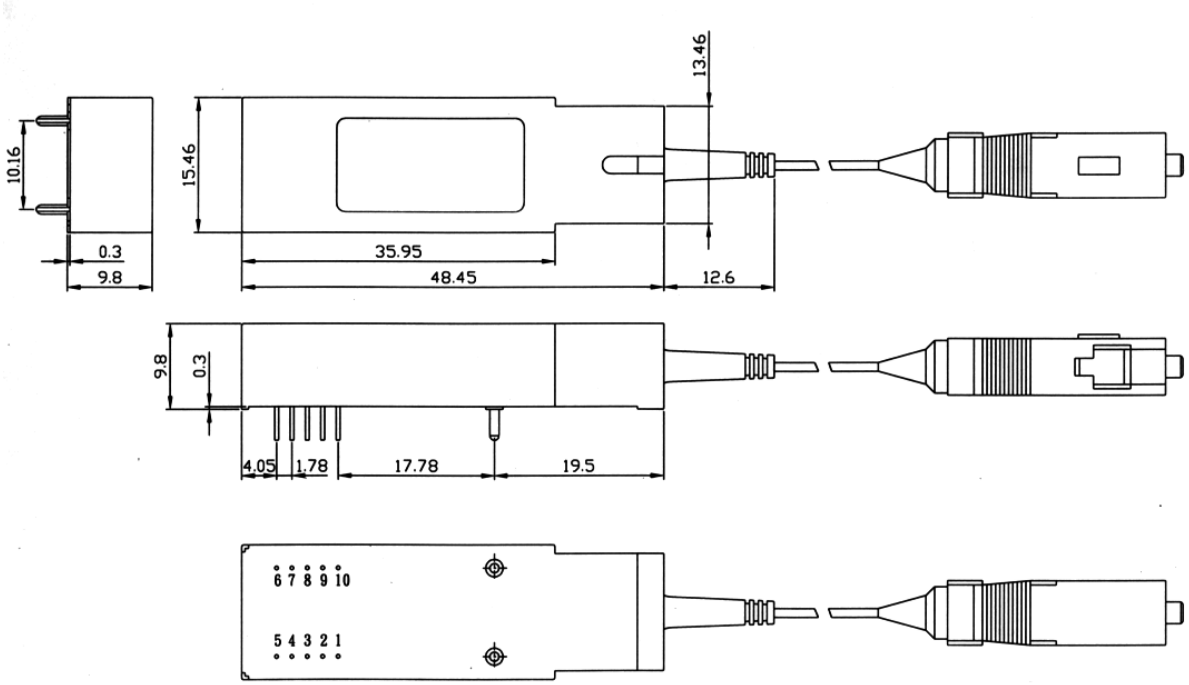
Tx Output Power Grade：
(refer to Specifications)
1：-1

Receiver Wavelength / Laser Type：
85：for 850nm
78：for 780nm

Transmitter Wavelength / Laser Type：
78：780nm (FP LD)
85：850nm (VCSEL LD)

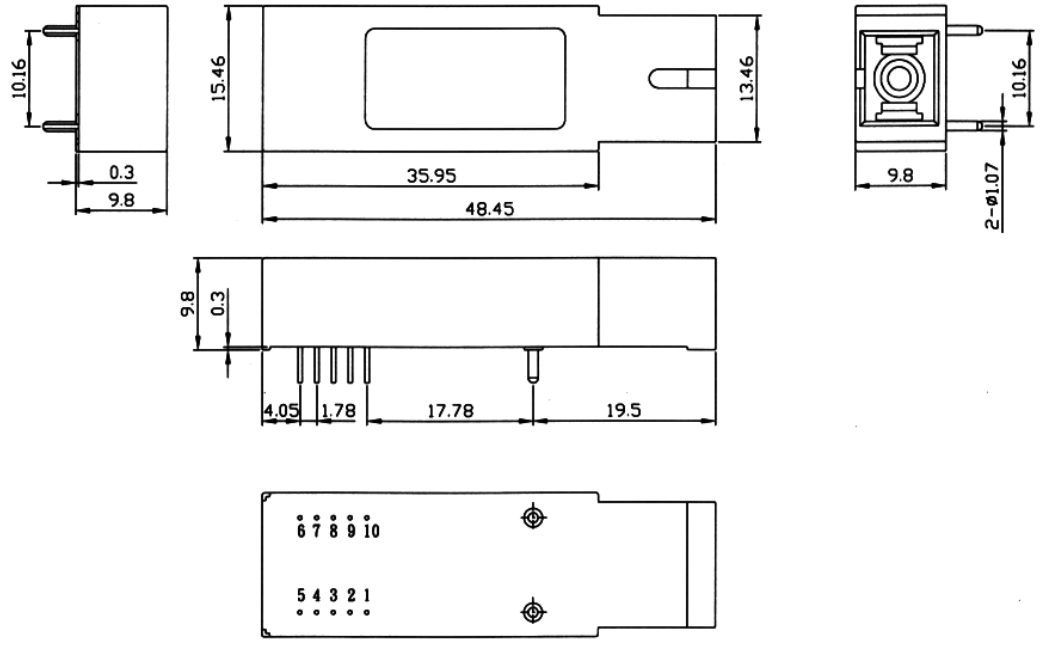
Outline Drawing

Pigtail 2x5 pins SFF



UNIT：mm

Receptacle 2x5 pins SFF



UNIT：mm

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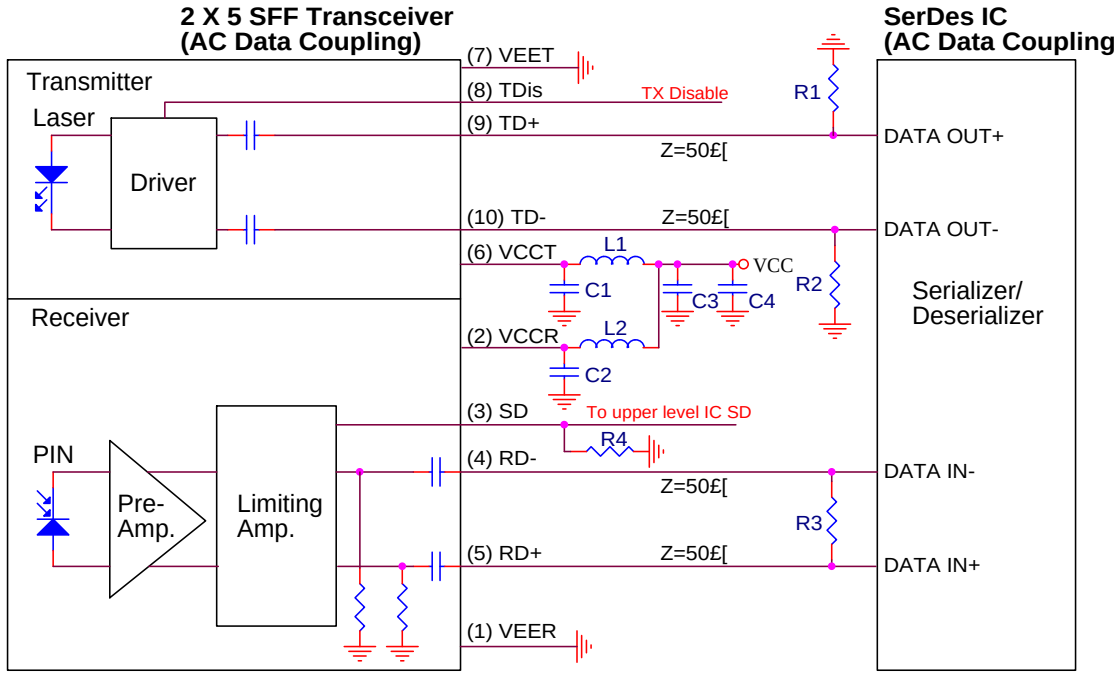
Pinout Description

Pin No.	Symbol	Description
1	V_{EER}	Receiver Ground
2	V_{CCR}	Receiver Power Supply (5V/3.3V)
3	SD	Receiver Signal Detect
4	RD-	Receiver Data Out (Inverted)
5	RD+	Receiver Data Out
6	V_{CCT}	Transmitter Power Supply (5V/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

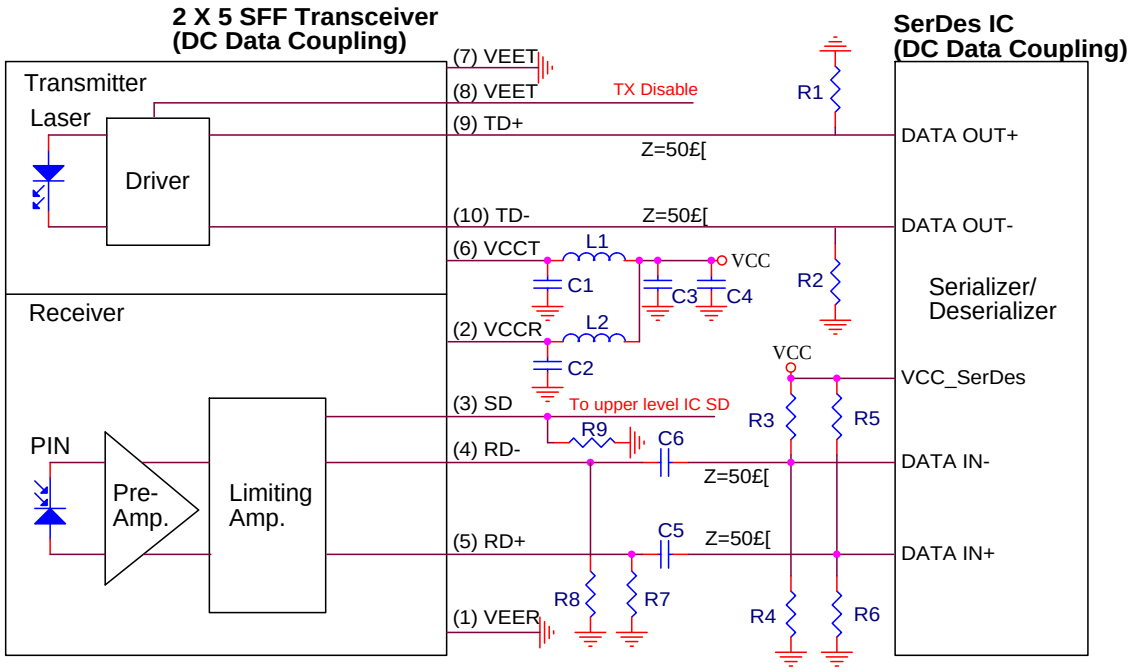
Recommended AC Coupling Interface Circuit：



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

NOTE¡G
1. Transmission line characteristic impedance Z=50£[.
2. R1, R2, R3 as close to SerDes IC as possible.

Recommended DC Coupling Interface Circuit：



L1=L2=1£gH or ferrite bead
C1=C2=C3=C5=C6=0.1£gF
C4=10£gF
R1, R2, R3, R4, R5, R6 depends on SerDes IC specification.
(Consult the SerDes IC application information)
R7=R8=270£[(VCC=3.3V)
=510£[(VCC=5V)
R9=510£[

NOTE¡G
1. Transmission line characteristic impedance Z=50£[.
2. R1, R2, R3, R4, R5, R6 as close to SerDes IC as possibl
3. R7, R8 as close to 1X9 Transceiver as possible.