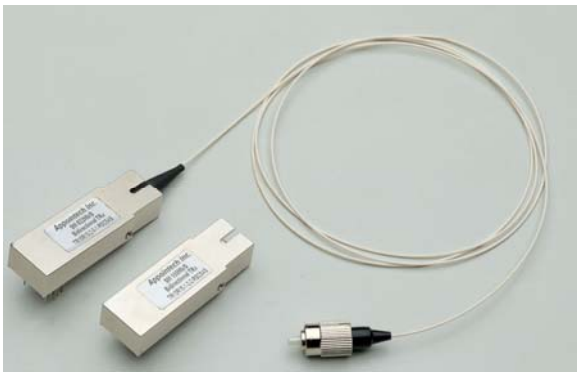
Singlemode 155Mbps Bi-Directional Single Fiber 2x5 SFF Optical Transceiver

Features

- Intermediate and long reach
- Industrial standard 2 x 5 pin footprint
- Single SC/ST/FC connector interface
- 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	10	155	250	Mb/s
Optical Output Power (avg.) (1) (3)					
-1	Po	-15	-	-8	dBm
-2	Po	-8	-	-3	dBm
-3	Po	-3	-	0	dBm
Extinction Ratio	ER	8.3	-	-	dB
Optical Wavelength					
TR13R15 (1310nm FP LD)	λ_C	1260	1310	1360	nm
TR31R15 (1310nm DFB LD)	λ_C	1290	1310	1330	nm
TR15R13 (1550nm FP LD)	λ_C	1490	1550	1610	nm
TR55R13 (1550nm DFB LD)	λ_C	1530	1550	1570	nm
Spectral Width					
TR13R15 (RMS) TR15R13 (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 (10-90%)	t_r	-	0.4	1.0	ns
Output Fall Time (10-90%)	t_f	-	1.0	1.5	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	- -	3. 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	10	155	250	Mb/s
Optical Input (avg.) Sensitivity (1) (5)					
-1	P_{IN}	-	-30	-28	dBm
-2	P_{IN}	-	-34	-31	dBm
Saturation	P_{SAT}	-3	0	-	dBm
Optical Wavelength					
TR13R15 TR31R15	λ	1500	1550	1600	nm
TR15R13 TR55R13	λ	1100	1310	1350	nm
Output Rise Time (10-90%)	t_r	-	1.5	2.5	ns
Output Fall Time (10-90%)	t_f	-	1.5	2.5	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	-	-	-28	dBm
Signal Detect Deasserted (avg.)	P_D	-48	-	-	dBm
Hysteresis	P_{HYS}	-	3	-	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	30	-	-	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) Eye mask diagram is compliant to ITU-T G.957 Eye Diagram.
(5) 2^{23} –1 PRBS, BER= 10^{-10}
(6) Compatible with LVPECL and PECL logic levels.
(7) Mates with optical connectors meeting JIS C 5973.
(8) 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

2：-2

Tx Output Power Grade：

(refer to Specifications)

1：-1

2：-2

3：-3

Receiver Wavelength / Laser Type：

13：1310nm (FP LD)

15：1550nm (FP LD)

31：1310nm (DFB LD)

55：1550nm (DFB LD)

Transmitter Wavelength / Laser Type：

13：1310nm (FP LD)

15：1550nm (FP LD)

31：1310nm (DFB LD)

55：1550nm (DFB LD)

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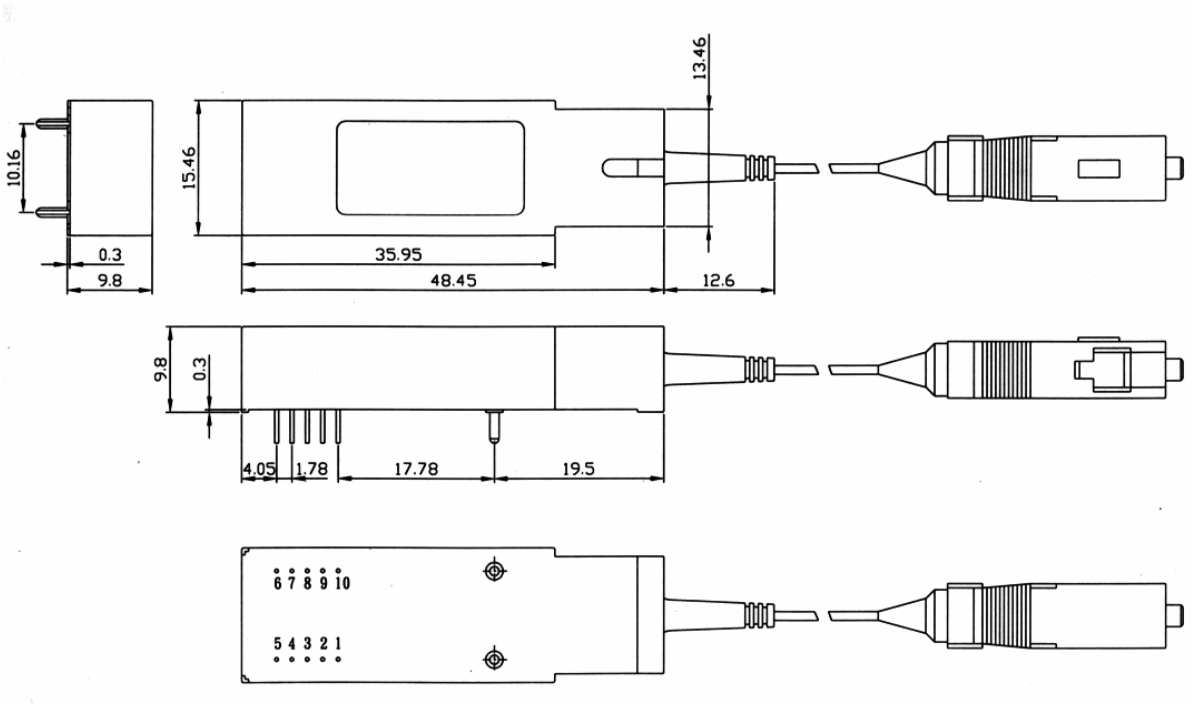
Outline Drawing

Pigtail 2x5 pins SFF



UNIT : mm

Receptacle 2x5 pins SFF

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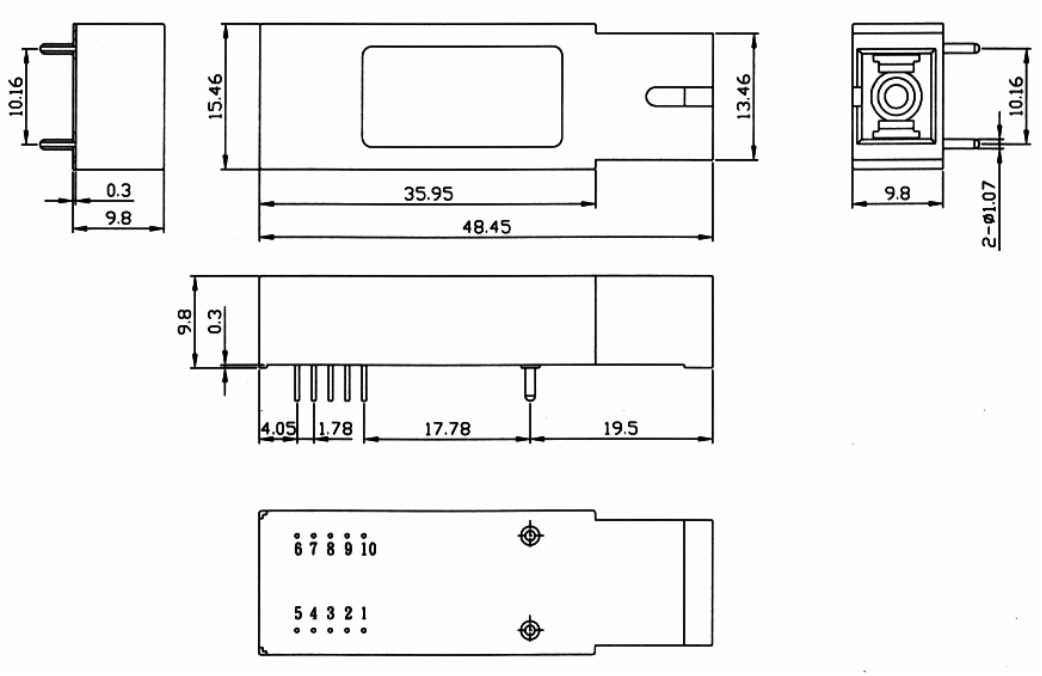

UNIT : mm

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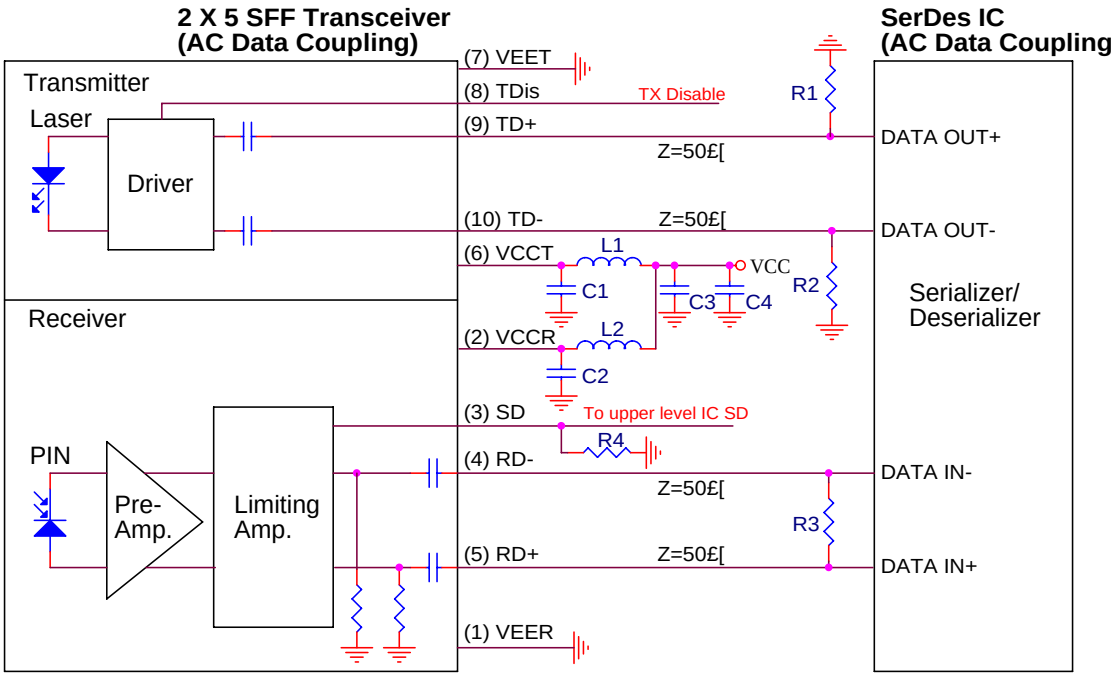
Pinout Description

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.

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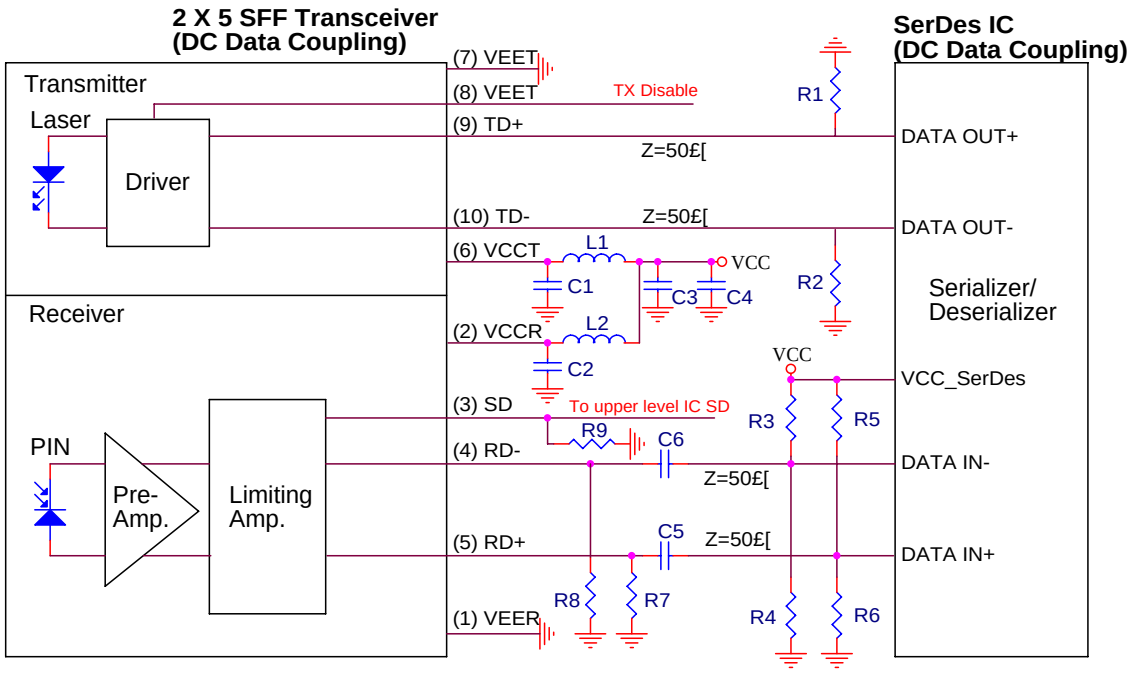
Recommended DC Coupling Interface Circuit :



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.

Appointech, Inc.
6F-2, NO.192 Tung-Kuan Rd.,
Hsinchu, Taiwan, R.O.C.
TEL：886-3-573-8478
FAX：886-3-573-8441
E-mail：sales@appointech.com
http://www.appointech.com

US Office :
Versatek, Inc.
TEL：(714)630-5222
FAX：(714)630-5051