

## Single-mode 155Mbps Transmitter / Receiver

### Features

#### Transmitter :

- 2 x 10 pins, 2 x 8 pins metal case / plastic case
- 1310nm, 1550nm LD transmitter with automatic power control
- AC or DC coupled LVPECL or PECL compatible data input and output
- Single 3.3V or 5V power supply



#### Receiver :

- 2 x 10 pins, 2 x 8 pins metal case / plastic case
- InGaAs PIN detector
- PECL or TTL signal detect output
- Single 3.3V or 5V power supply



### Specifications

Parameter		Symbol	Min.	Typ.	Max.	Unit
<b>Transmitter</b>						
Data Rate (NRZ)		B	10	155	250	Mb/s
Optical Output Power (avg.) <sup>(1) (2) (3)</sup>						
-1		P <sub>o</sub>	-12	-	-6	dBm
-2		P <sub>o</sub>	-6	-	0	dBm
Extinction Ratio		ER	8.3	-	-	dB
Optical Wavelength						
1310nm FP LD		$\lambda_c$	1260	1310	1360	nm
1310nm DFB LD		$\lambda_c$	1290	1310	1330	nm
1550nm FP LD		$\lambda_c$	1490	1550	1610	nm
1550nm DFB LD		$\lambda_c$	1530	1550	1570	nm
Spectral Width (RMS, -20dB)						
1310nm FP LD		$\Delta\lambda$	-	1.0	2.0	nm
1550nm FP LD		$\Delta\lambda$	-	1.0	2.5	nm
Side Mode Suppression Ratio						
1310nm DFB LD		SMSR	30	40	-	dB
1550nm DFB LD		SMSR	30	40	-	dB
Output Rise Time (10-90%)		t <sub>r</sub>	-	0.4	1.0	ns
Output Fall Time (10-90%)		t <sub>f</sub>	-	1.0	1.5	ns
Data Input <sup>(6)</sup>	DC Coupled	V <sub>IL</sub> V <sub>IH</sub>	V <sub>CC</sub> -1.810 V <sub>CC</sub> -1.165	- -	V <sub>CC</sub> -1.475 V <sub>CC</sub> -0.880	V V
	AC Coupled (Differential)	V <sub>I</sub>	0.25	-	1.6	V
Supply Voltage		V <sub>CC</sub>	3.10 4.75	3.3 5.0	3.50 5.25	V
Supply Current		I <sub>CC</sub>	-	-	110	mA



## Single-mode 155Mbps Transmitter / Receiver

Parameter	Symbol	Min.	Typ.	Max.	Unit	
<b>Receiver</b>						
Data Rate (NRZ)	B	10	155	250	Mb/s	
Optical Input (avg.) Sensitivity <sup>(1)(5)</sup>	P <sub>IN</sub>	-	-38	-35	dBm	
Saturation	P <sub>SAT</sub>	-3	0	-	dBm	
Optical Wavelength	λ	1100	-	1600	nm	
Output Rise Time (10-90%)	t <sub>r</sub>	-	1.5	2.0	ns	
Output Fall Time (10-90%)	t <sub>f</sub>	-	1.5	2.0	ns	
Data Output <sup>(6)</sup>	DC Coupled	V <sub>OL</sub> V <sub>OH</sub>	V <sub>CC</sub> -1.840 V <sub>CC</sub> -1.045	- -	V <sub>CC</sub> -1.62 V <sub>CC</sub> -0.88	V V
	AC Coupled (Differential)	V <sub>I</sub>	0.6	-	1.8	V
Signal Detect Asserted (avg.)	P <sub>A</sub>	-	-	-35	dBm	
Signal Detect Deasserted (avg.)	P <sub>D</sub>	-45	-	-	dBm	
Hysteresis	P <sub>HYS</sub>	-	2	-	dB	
Supply Voltage	V <sub>CC</sub>	3.10 4.75	3.3 5.0	3.50 5.25	V	
Supply Current	I <sub>CC</sub>	-	-	100	mA	

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<sup>23</sup>-1 PRBS, BER= 10<sup>-10</sup>.
- (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		-0.2	4	V

# Single-mode 155Mbps Transmitter / Receiver

## Ordering Information

□ 0 □ □ S M 1 - □ □ □ □ □ □ □ □ □ □

**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

**Receptacle / Pigtail Type :**

- R1 : Receptacle Type
- PG : Pigtail Type  
(fiber length 100cm)

**Package Type :**

- G : 2X8 Pins Metal Case
- P : 2X8 Pins Plastic Case
- K : 2X10 Pins Metal Case

**Supply Voltage :**

- 5 : 5V
- 3 : 3.3V

**Connector Type :**

- SC : SC Connector (only for pigtail type)
- FC : FC Connector
- ST : ST Connector

**Laser Type :**

- L : FP LD
- F : DFB LD

**Tx Output Power Grade :**

- (refer to Specifications)
- 1 : -1
- 2 : -2

**Wavelength :**

- 13 : 1310nm
- 15 : 1550nm

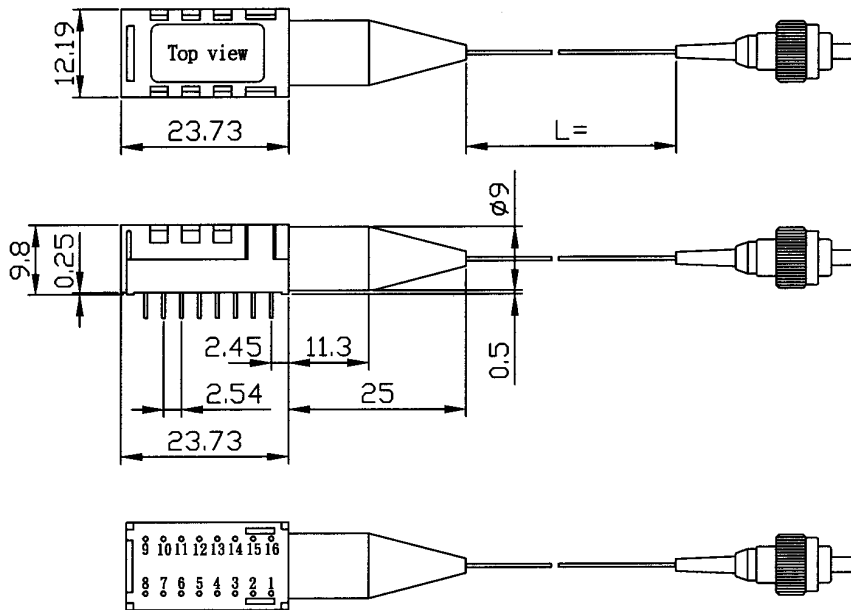
**TX / RX :**

- T : Transmitter
- R : Receiver

# Single-mode 155Mbps Transmitter / Receiver

## Outline Drawing ( 2X8 Pins Plastic Package)

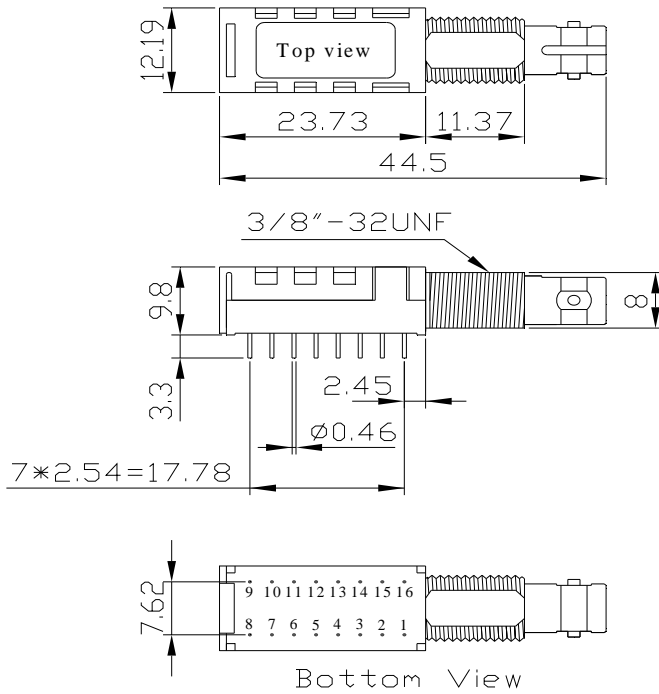
### Pigtailed



UNIT : mm

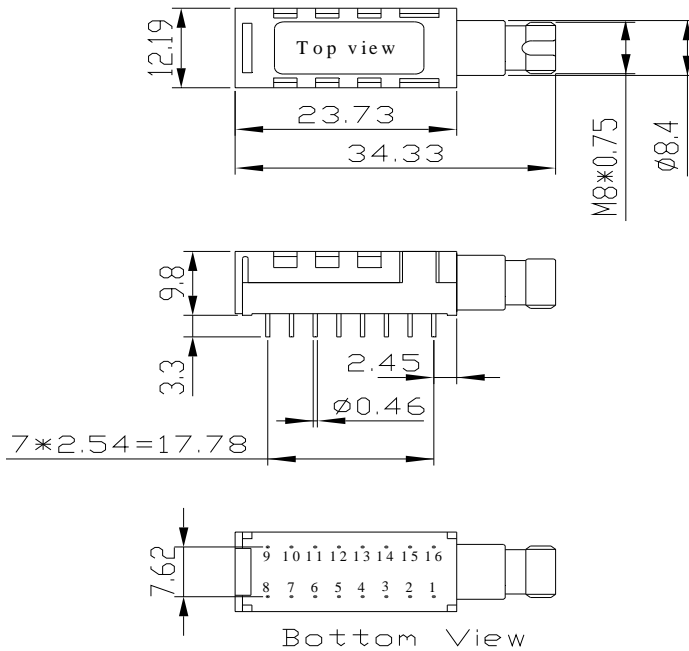
# Single-mode 155Mbps Transmitter / Receiver

## ST Receptacle



Unit:mm

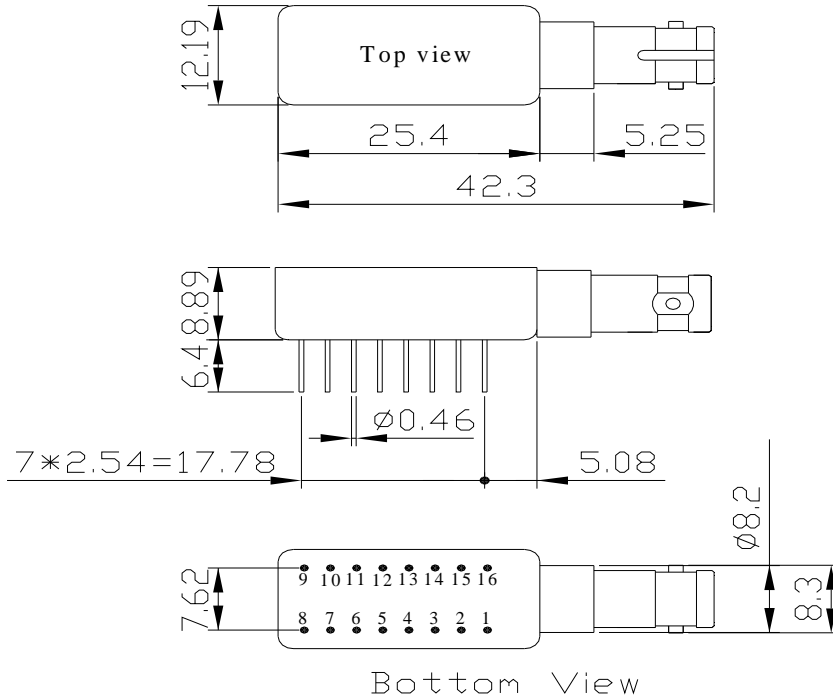
## FC Receptacle



Unit:mm

## Outline Drawing (2X8 Pins Metal Package) :

## Single-mode 155Mbps Transmitter / Receiver



### Pinout Description ( 2X8 Pins Package)

#### Transmitter Pin Assignment

Pin No.	Description
1	No Connection <sup>(Note)</sup>
2	No Connection
3	Vee (Ground)
4	Vee (Ground)
5	Vee (Ground)
6	Vee (Ground)
7	No Connection
8	No Connection <sup>(Note)</sup>
9	No Connection <sup>(Note)</sup>
10	Vee (Ground)
11	Vcc (Supply Voltage)
12	Vcc (Supply Voltage)
13	Vee (Ground)
14	Data In
15	Data In (Inverted)
16	No Connection <sup>(Note)</sup>

#### Receiver Pin Assignment

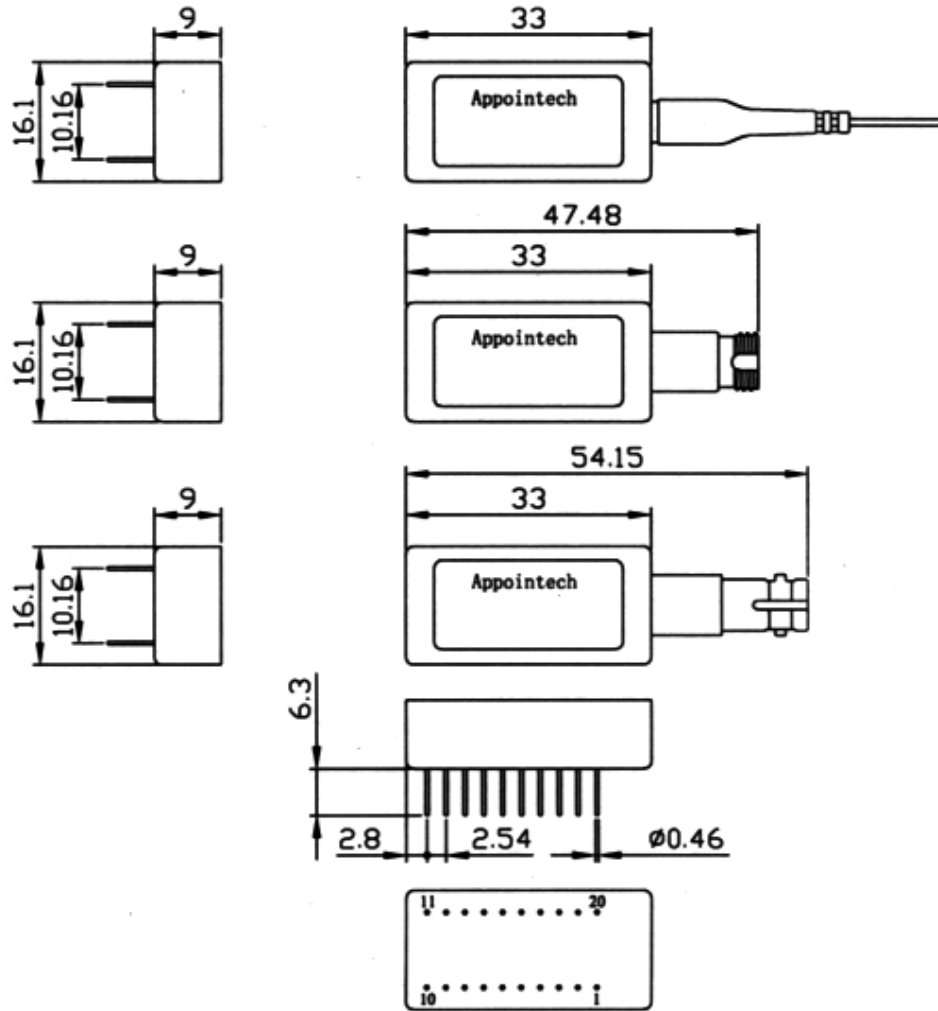
Pin No.	Description
1	No Connection <sup>(Note)</sup>
2	Data Out (Inverted)
3	Data Out
4	Vcc (Supply Voltage)
5	Vcc (Supply Voltage)
6	Vcc (Supply Voltage)
7	Vee (Ground)
8	No Connection <sup>(Note)</sup>
9	No Connection <sup>(Note)</sup>
10	No Connection
11	Vee (Ground)
12	Vee (Ground)
13	Vee (Ground)
14	SD
15	/SD
16	No Connection <sup>(Note)</sup>

**Note :** Metal case version Pin1, Pin8, Pin9 and Pin16 internal connect to case.

# Single-mode 155Mbps Transmitter / Receiver

## Outline Drawing ( 2X10 Pins Package)

2X10 Pins Metal Case :



UNIT : mm



## Single-mode 155Mbps Transmitter / Receiver

### Pinout Description (2x10 Pins Package)

Transmitter Pin Assignment

Pin No.	Description
1	No Connection
2	No Connection
3	No Connection
4	No Connection
5	Vee(Ground)
6	Vcc(Supply Voltage)
7	Transmitter Disable <sup>(Note)</sup>
8	Vcc(Supply Voltage)
9	Vcc(Supply Voltage)
10	No Connection
11	Vee(Ground)
12	Vcc(Supply Voltage)
13	Vee(Ground)
14	Vee(Ground)
15	Data In (Inverted)
16	Data In
17	No Connection
18	Vcc(Supply Voltage)
19	No Connection
20	No Connection

Receiver Pin Assignment

Pin No.	Description
1	No Connection
2	No Connection
3	No Connection
4	No Connection
5	No Connection
6	Vee(Ground)
7	Data Out
8	Vee(Ground)
9	Data Out (Inverted)
10	No Connection
11	Vcc(Supply Voltage)
12	SD
13	Vee(Ground)
14	/SD
15	Vee(Ground)
16	Vee(Ground)
17	No Connection
18	No Connection
19	No Connection
20	No Connection

**Note** : Input TTL Logic Low Level to Switch Laser "ON".  
Input TTL Logic High Level to Switch Laser "OFF".