

# 1.25Gbps Multimode 780/850nm Single Fiber Bi-Directional Optical Transceiver

## Features

- Industrial standard 1x9 pin footprint
- Application wavelength 780nm / 850nm
- Single SC/ST/FC connector interface
- Receiver signal detect function
- Wide dynamic rang receiver with AGC function
- PECL/LVPECL logic interface, DC or AC coupling
- Single supply 3.3V or 5V
- Low power consumption



## Specifications

Parameter		Symbol	Min.	Typ.	Max.	Unit
<b>Transmitter</b>						
Data Rate (NRZ)		B	-	1.25	-	Gbps
Optical Output Power (avg.) <sup>(1) (2) (3)</sup>						
-1		P <sub>o</sub>	-9	-	-3	dBm
Extinction Ratio		ER	9	-	-	dB
Optical Wavelength	TR78R85	$\lambda$	760	780	800	nm
	TR85R78	$\lambda$	820	850	880	nm
Spectral Width	TR78R85	$\Delta\lambda$	-	1.0	2.5	nm
	TR85R78	$\Delta\lambda$	-	-	0.85	nm
Output Rise Time (20-80%)		t <sub>r</sub>	-	0.4	0.8	ns
Output Fall Time (20-80%)		t <sub>f</sub>	-	0.4	0.8	ns
Data Input <sup>(6)</sup>	DC Coupled	V <sub>IL</sub>	V <sub>CC</sub> -1.810	-	V <sub>CC</sub> -1.475	V
		V <sub>IH</sub>	V <sub>CC</sub> -1.165	-	V <sub>CC</sub> -0.880	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>	-	-	100	mA



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Parameter		Symbol	Min.	Typ.	Max.	Unit
<b>Receiver</b>						
Data Rate (NRZ)		B	-	1.25	-	Gbps
Optical Input Sensitivity (avg.) <sup>(1) (5)</sup>	TR78R85	P <sub>IN</sub>	-	-19	-17	dBm
	TR85R78	P <sub>IN</sub>	-	-19	-17	dBm
Saturation		-	-3	0	-	dBm
Optical Wavelength	TR78R85	λ	820	850	880	nm
	TR85R78	λ	760	780	800	nm
Output Rise Time (20-80%)		t <sub>r</sub>	-	-	0.4	ns
Output Fall Time (20-80%)		t <sub>f</sub>	-	-	0.4	ns
Data Output <sup>(6)</sup>	DC Coupled	V <sub>OL</sub>	V <sub>CC</sub> -1.840	-	V <sub>CC</sub> -1.62	V
		V <sub>OH</sub>	V <sub>CC</sub> -1.045	-	V <sub>CC</sub> -0.88	V
	AC Coupled (Differential)	V <sub>I</sub>	0.6	-	1.8	V
Signal Detect Asserted (avg.)	TR78R85	P <sub>A</sub>	-	-	-17	dBm
	TR85R78	P <sub>A</sub>	-	-	-17	dBm
Signal Detect Deasserted (avg.)		P <sub>D</sub>	-25	-	-	dBm
Hysteresis		P <sub>HYS</sub>	-	2	-	dB
Supply Voltage		V <sub>CC</sub>	3.10	3.3	3.50	V
			4.75	5.0	5.25	V
Supply Current		I <sub>CC</sub>	-	-	100	mA
Optical Return Loss		RL	50	-	-	dB
Optical Cross Talk		CT	20	-	-	dB

Note :

- (1) With 0.275 NA, 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<sup>7</sup> -1 PRBS, BER= 10<sup>-12</sup>.
- (6) Compatible with PECL/LVPECL logic levels.
- (7) The transmitter output should not be viewed directly.

## Absolute Maximum Ratings

Parameter		Min.	Max.	Unit
Operating Temperature	-1	-40	70	°C
	-2	-40	85	°C
Lead Soldering Limits		-	240/10	°C/sec
Supply Voltage	5V	-0.2	7	V
	3.3V	-0.2	4	V

# 1.25Gbps Multimode 780/850nm Single Fiber Bi-Directional Optical Transceiver

## Ordering Information

Transmitter : 1310nm / Receiver : 850nm

**T R 7 8 R 8 5 M 3 - 1 - 1 -** **M**

**Operating Temperature Range :**

1 : -40°C ~ 70°C

2 : -40°C ~ 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 :**

R : Receptacle Type

P : Pigtail Type (Fiber Length 100cm)

# 1.25Gbps Multimode 780/850nm Single Fiber Bi-Directional Optical Transceiver

Transmitter : 850nm / Receiver : 1310nm

**T R 8 5 R 7 8 M 3 - 1 - 1 -**     **M**

**Operating Temperature Range :**

- 1 : -40°C ~ 70°C
- 2 : -40°C ~ 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

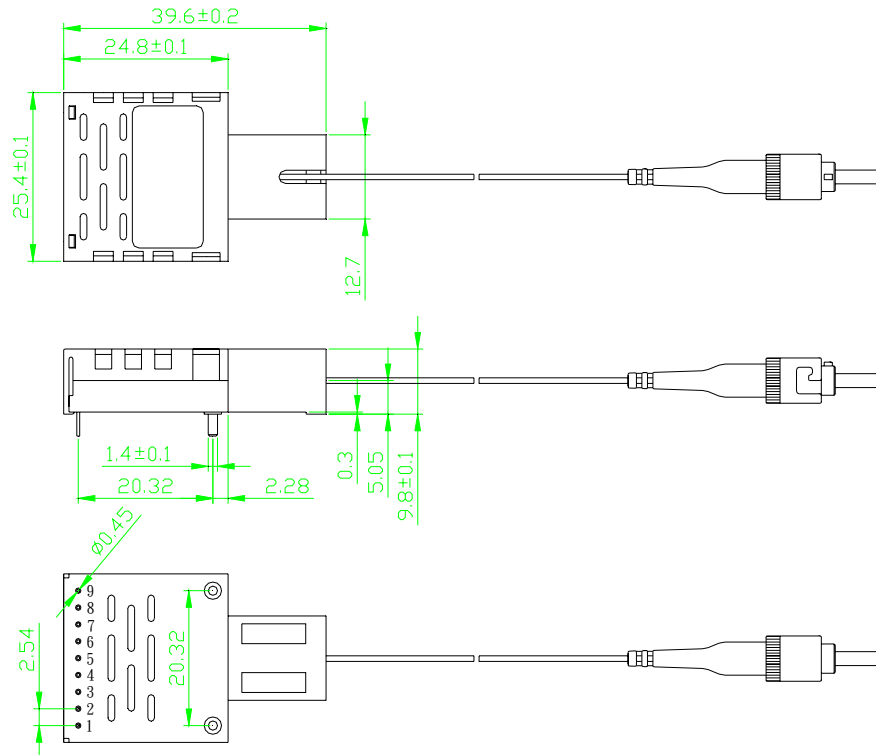
**Package Type :**

- R : Receptacle Type
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# 1.25Gbps Multimode 780/850nm Single Fiber Bi-Directional Optical Transceiver

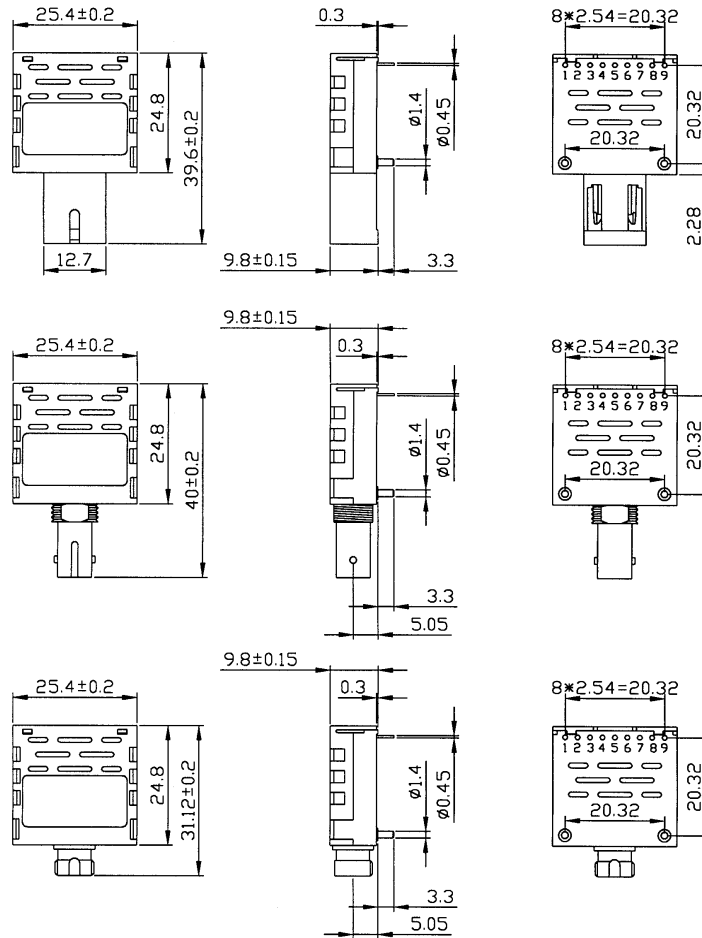
## Outline Drawing

Pigtail Type :



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Receptacle Type :



Pin No.	PIN Name	
1	$V_{EER}$	Rx Ground
2	RD	Rx Data Out
3	$\overline{RD}$	Rx Data Out (Inverted)
4	SD	Rx Signal Detect
5	$V_{CCR}$	Rx Power Supply
6	$V_{CCT}$	$V_{CC}$ Power Supply
7	$\overline{TD}$	Tx Data In (Inverted)
8	TD	Tx Data In
9	$V_{EET}$	Tx Ground

**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