

# Single-mode 1.25Gbps Transmitter / Receiver

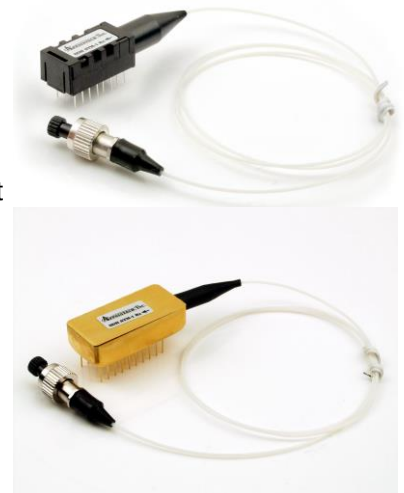
## Features

### Transmitter :

- 2 x 10 pins, 2 x 8 pins metal 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
- 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               | -                      | 1250       | -                      | 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              | 9                      | -          | -                      | 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 (20-80%)                          |                           | t <sub>r</sub>  | -                      | -          | 0.26                   | ns   |
| Output Fall Time (20-80%)                          |                           | t <sub>f</sub>  | -                      | -          | 0.26                   | 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<br>4.75           | 3.3<br>5.0 | 3.50<br>5.25           | V    |
| Supply Current                                     |                           | I <sub>CC</sub> | -                      | -          | 110                    | mA   |

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| Parameter                                                      |                           | Symbol           | Min.                   | Typ.       | Max.                  | Unit |
|----------------------------------------------------------------|---------------------------|------------------|------------------------|------------|-----------------------|------|
| <b>Receiver</b>                                                |                           |                  |                        |            |                       |      |
| Data Rate (NRZ)                                                |                           | B                | -                      | 1250       | -                     | Mb/s |
| Optical Input (avg.) Sensitivity <sup>(1)</sup> <sup>(5)</sup> |                           | P <sub>IN</sub>  | -                      | -          | -23                   | dBm  |
| Saturation                                                     |                           | P <sub>SAT</sub> | -3                     | 0          | -                     | dBm  |
| Optical Wavelength                                             |                           | $\lambda$        | 1100                   | -          | 1600                  | 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.)                                  |                           | P <sub>A</sub>   | -                      | -          | -23                   | dBm  |
| Signal Detect Deasserted (avg.)                                |                           | P <sub>D</sub>   | -35                    | -          | -                     | dBm  |
| Hysteresis                                                     |                           | P <sub>HYS</sub> | -                      | 2          | -                     | dB   |
| Supply Voltage                                                 |                           | V <sub>CC</sub>  | 3.10<br>4.75           | 3.3<br>5.0 | 3.50<br>5.25          | V    |
| Supply Current                                                 |                           | I <sub>CC</sub>  | -                      | -          | 100                   | mA   |

Notes :

- (1) With 0.275 NA, 9/125 $\mu$ m 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 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       |

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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  |

### Receptacle / Pigtail Type :

R1 : Receptacle Type

PG : Pigtail Type  
(fiber length 100cm)

### Package Type :

G : 2X8 Pins Metal 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

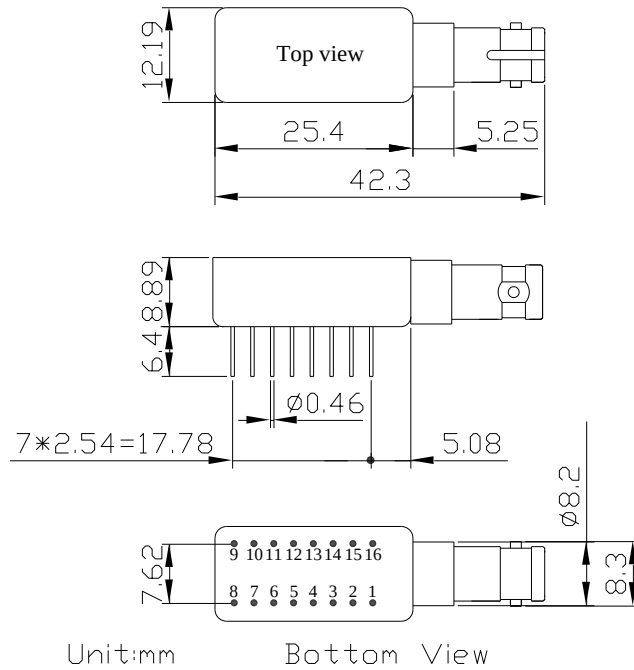
R : Receiver

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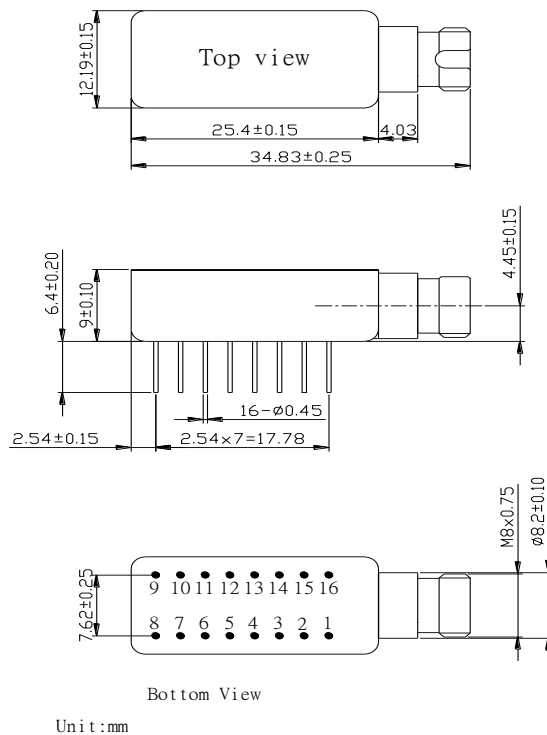
## Outline Drawing ( 2X8 Pins Package)

2X8 Pins Metal Case :

ST receptacle



FC receptacle



# Single-mode 1.25Gbps 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> |

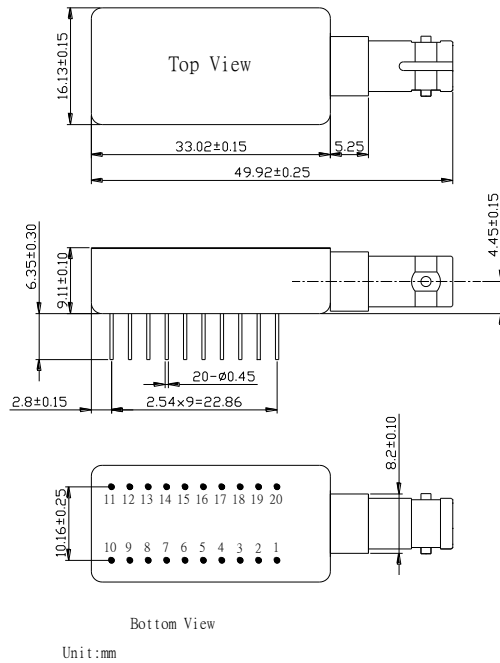
**Note :** Metal case version Pin1, Pin8, Pin9 and Pin16 internal connect to case.

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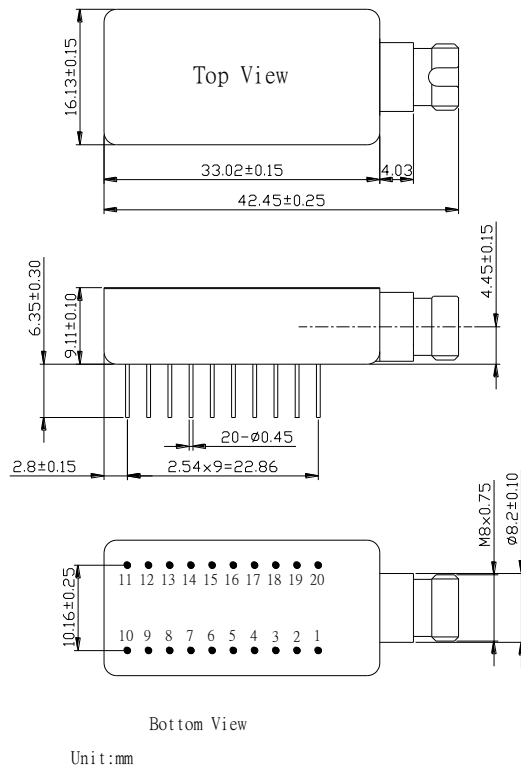
## Outline Drawing ( 2X10 Pins Metal Package)

2X10 Pins Metal Case :

ST receptacle



FC receptacle



# Single-mode 1.25Gbps 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".

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