# TTR-1A42-xxx/TTR-1A43-xxx

## Connectorized high speed VCSEL with monitor PD

### FEATURES:

- Industry standard connector of metallic ST*-type receptacle.
- Pre-aligned for multi-mode fiber communication.
- With attenuating coating and monitoring PD.
- Three laser/photodiode polarities.
- Suitable for 10/100/155 Mbps and above applications.
- Alternative solution for LED transmitter.

* ST is a registered trademark of AT&T.

### ELECTRO-OPTICAL CHARACTERISTICS:

| PARAMETERS | SYMBOL | MIN | TYP | MAX | UNIT | TEST CONDITIONS |
|---|---|---|---|---|---|---|
| Threshold Current | $I_{th}$ | | 3 | 6 | mA | |
| Fiber Coupled Power (50/125, 62.5/125 μm MMF) (2) | $P_o$ | -4<br>-10<br>-15 | | 0<br>-4<br>-10 | dBm | $I_F$ =12 mA |
| Wavelength | $\lambda_P$ | 830 | 850 | 860 | nm | $I_F$ =12 mA |
| Spectral Width (RMS) | $\Delta\lambda$ | | | 0.85 | nm | $I_F$ =12 mA |
| Relative Intensity Noise | RIN | | -128 | | dB/Hz | $I_F$ =12 mA ,f=1 GHz |
| Rise/Fall Time (20%~80%) | $T_R/T_F$ | | 150/200 | | ps | $T_A$=25°C<br>Extinction Ratio > 10dB |
| Forward Voltage | $V_F$ | 1.7 | 1.8 | 2.2 | V | $I_F$ =12 mA |
| Breakdown voltage | $V_{BD}$ | 10 | 17 | | V | $I_R$ =10 μA |
| Series Resistance | $R_S$ | 15 | 25 | 35 | Ω | $I_F$ =12 mA |
| Monitor Current | $I_M$ | 30 | 100 | | μA | $V_R$ =5 V & $I_F$ =12 mA |
| PD Capacitance | C | | 3 | | pF | $V_R$ =5 V & F =1 MHz |
| PD Reverse Breakdown voltage | $V_{BD-PD}$ | -35 | | | V | $I_R$ =100 μA |

Notes:

1. TTR-1A42 is specified for 50/125μm MMF, and TTR-1A43 is specified for 62.5/125μm MMF.
2. Specific power range can be provided under request.

### THERMAL CHARACTERISTICS:

| PARAMETERS | SYMBOL | MIN | TYP | MAX | UNIT | TEST CONDITIONS |
|---|---|---|---|---|---|---|
| Thermal Resistance | $R_{th}$ | | 900 | | °C/W | $T_A$=25°C |
| $I_{th}$ Temperature Variation | $\Delta I_{th}$ | -0.5 | | 2.5 | mA | $T_A$=0~70°C |
| $V_F$ Temperature Coefficient | $\Delta V_F/\Delta T$ | -3.5 | -2.5 | -2.0 | mV/°C | $T_A$=0~70°C, $I_F$=12 mA |
| $\eta$ Temperature Coefficient | $\Delta\eta/\Delta T$ | | -0.15 | | %/°C | $T_A$=0~70°C, $I_F$=12 mA |
| $\lambda_P$ Temperature Coefficient | $\Delta\lambda_P/\Delta T$ | | 0.06 | | nm/°C | $T_A$=0~70°C, $I_F$=12 mA |

### ABSOLUTE MAXIMUM RATINGS:

| PARAMETERS | MIN | MAX | UNIT | CONDITIONS |
|---|---|---|---|---|
| Storage Temperature | -40 | 100 | °C | |
| Operating Temperature | -20 | 85 | °C | |
| Lead Solder Temperature | | 260 | °C | 10 seconds |
| Continuous Forward Current | | 40 | mA | |
| Continuous Reverse Voltage | | 10 | V | |

Fig. 1 Typical Optical Characteristics

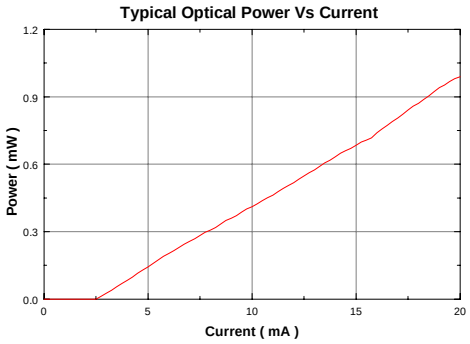



Fig. 2 Typical Electrical Characteristics

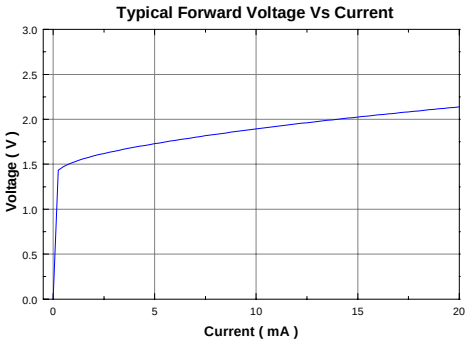



Fig. 3 Spectrum When Driving Current 12 mA

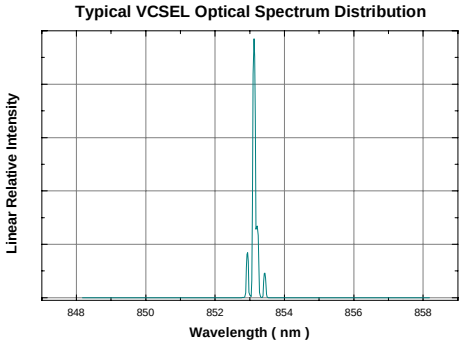
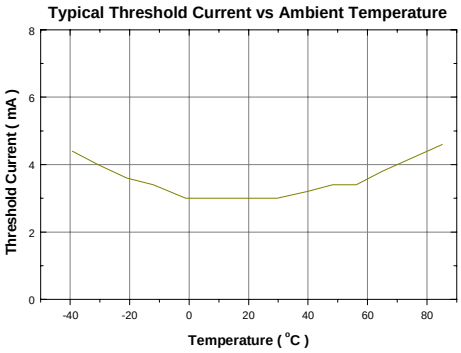



Fig. 4 Temperature Dependence of Threshold Current

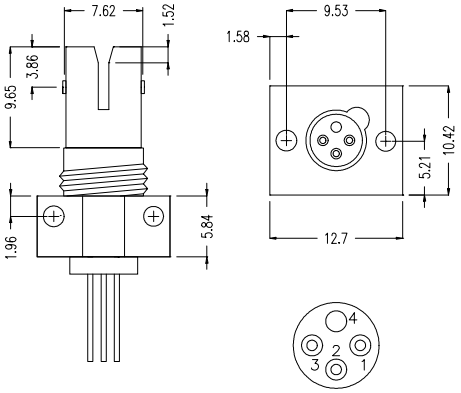



## WARNING:

The VCSEL is a class IIIb laser in the safety standard ANSI Z136.1 and should be treated as a potential eye hazard.

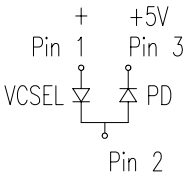
## OUTLINE DIMENSIONS:

UNIT:mm



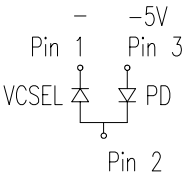

PINOUT:

TTR-1A42/TTR-1A43 -100




Pin 1:VCSEL Anode
Pin 2:VCSEL Cathode/PD Anode
Pin 3:PD Cathode
Pin 4:Case

TTR-1A42/TTR-1A43 -200




Pin 1:VCSEL Cathode
Pin 2:VCSEL Anode/PD Cathode
Pin 3:PD Anode
Pin 4:Case