

Specification

Small Form Factor Pluggable

Simplex LC Receptacle – SFP BIDI

OLT - Bidirectional Optical Transceivers

1000BASE-BX10-D

1250Mbit/s




Ordering Information

T B S - S x C K 1 - G 1 1

Voltage / Temperature

1 : 3.3V / +0°C ~ +70°C

2 : 3.3V / -40 °C ~ +85°C

| Model Name | Voltage | Category | Device type | Interface | SD/LOS | Temperature | Distance | Latch Color |
|---------------|---------|----------|-------------|-----------|--------|---------------|----------|---|
| TBS-S1CK1-G11 | 3.3V | W/O | DFB / PIN | AC / AC | LVTTL | +0°C ~ +70°C | 20km | Blue |
| TBS-S2CK1-G11 | | DDMI | | Coupling | | -40°C ~ +85°C | |  |

Features

- RoHS Compliant
- Standard Small Form Factor Pluggable Package – SFP MSA Compliant
- IEEE802.3AH 1000BASE-BX10-D Compliant
- Laser Class 1 Product – IEC/EN 60825-1 Compliant
- Standard Simplex LC Receptacle Optical Interface
- Single Fiber and Full Duplex Solution – Integrated WDM Filter
- Single + 3.3 V Power Supply
- Differential LVPECL Data Input and Output
- LVTTTL Loss of Signal
- Serial ID through I²C Interface
- Low Power Consumption

Absolute Maximum Ratings

| Parameter | Symbol | Min | Typ | Max | Unit |
|-----------------------------|-----------------|-----|-----|-----------------|------|
| Storage temperature | T _S | -40 | -- | 85 | °C |
| Supply voltage | V _{CC} | 0 | -- | 4 | V |
| Operating Relative Humidity | -- | 5 | -- | 95 | % |
| Input voltage | V _{IN} | 0 | -- | V _{CC} | V |

Operating Conditions

| Parameter | Symbol | Min | Typ | Max | Unit |
|---|-----------------|-----|-----|-----|------|
| Supply Voltage | V _{CC} | 3.1 | 3.3 | 3.5 | V |
| Operating Case temperature (TBS-S1CK1-G11) | Top | 0 | -- | 70 | °C |
| Operating Case temperature (TBS-S2CK1-G11) | | -40 | -- | 85 | |
| Total Current (Transmitter + Receiver) | I _{CC} | -- | -- | 300 | mA |

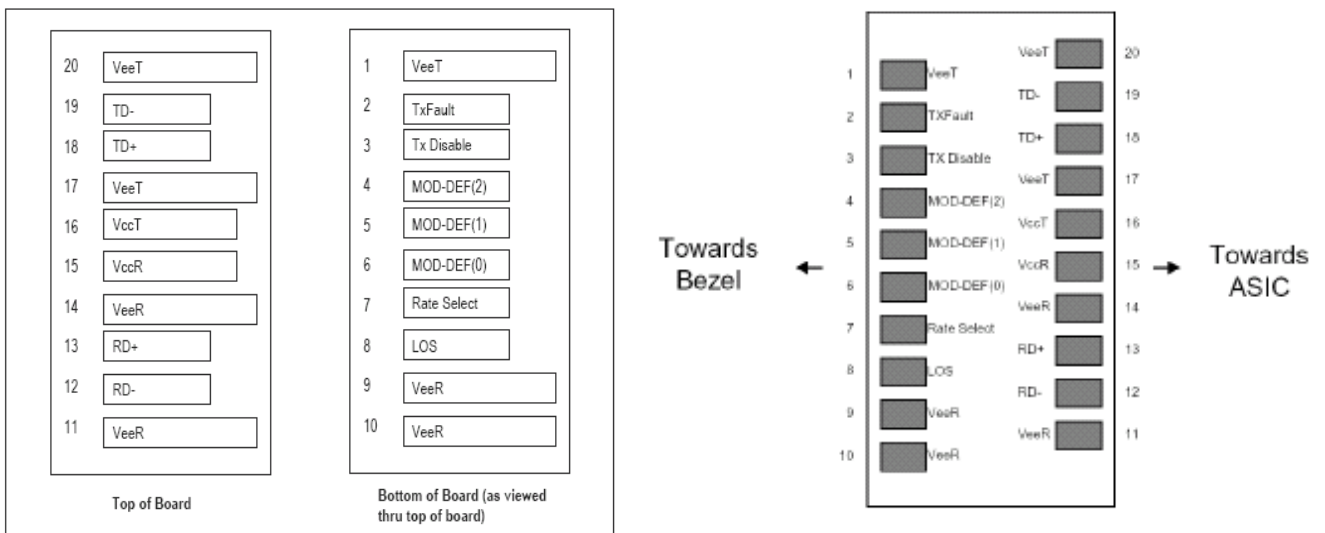
Transmitter Specifications ($V_{CC}=3.1V\sim 3.5V$; $T_{op}=0^{\circ}C\sim 70^{\circ}C$ / $T_{op}=-40^{\circ}C\sim 85^{\circ}C$)

| Parameter | Symbol | Min | Typ | Max | Unit |
|------------------------------------|-----------------------------|------|-----|--------------|-------|
| Optical Characteristics | | | | | |
| Output Optical Power | P_o | -8 | -- | -2 | dBm |
| Extinction Ratio | ER | 9 | -- | -- | dB |
| Center Wavelength | λ | 1480 | -- | 1580 | nm |
| Spectral Width (RMS) | $\sigma\lambda$ | -- | -- | 1 | nm |
| Side Mode Suppression Ratio | SMSR | 30 | -- | -- | dB |
| Rise/Fall time (20-80%) | $T_{r,f}$ | -- | -- | 260 | ps |
| Relative Intensity Noise | RIN | -- | -- | -120 | dB/Hz |
| Output Eye | Compliant with IEEE 802.3AH | | | | |
| Max. P_{out} TX-DISABLE Asserted | P_{OFF} | -- | -- | -45 | dBm |
| Electrical Characteristics | | | | | |
| Differential Input Voltage | V_{DIFF} | 0.4 | -- | 2.0 | V |
| Tx_Disable_Input_High | V_{DISH} | 2.0 | -- | $V_{CC}+0.3$ | V |
| Tx_Disable_Input_Low | V_{DISL} | 0 | -- | 0.8 | V |
| Tx_Fault_Output_High | V_{FH} | 2.0 | -- | $V_{CC}+0.3$ | V |
| Tx_Fault_Output_Low | V_{FL} | 0 | -- | 0.8 | V |

Receiver Specifications ($V_{CC}=3.1V\sim 3.5V$; $T_{op}=0^{\circ}C\sim 70^{\circ}C$ / $T_{op}=-40^{\circ}C\sim 85^{\circ}C$)

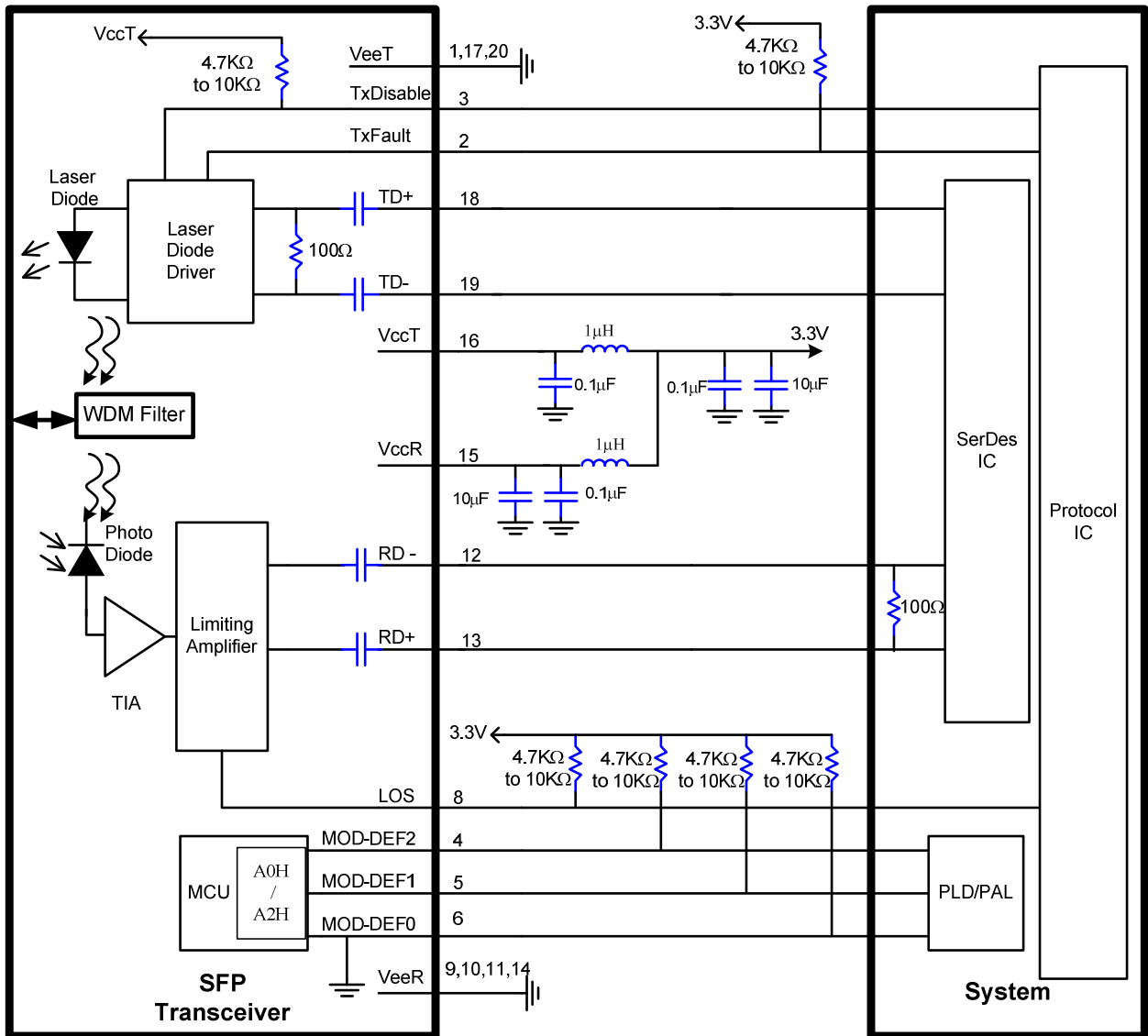
| Parameter | Symbol | Min | Typ | Max | Unit |
|--|------------|------|-----|--------------|------|
| Optical Characteristics | | | | | |
| Optical Input Power-maximum | P_{MAX} | -3 | -- | -- | dBm |
| Receiver Sensitivity (PRBS= 2^7-1 ; BER $\leq 10^{-12}$) | Sens | -- | -- | -23 | dBm |
| Operating Center Wavelength | λ | 1260 | -- | 1360 | nm |
| Optical Return Loss | ORL | 14 | -- | -- | dB |
| Loss of Signal – De-asserted | P_{SD} | -- | -- | -23 | dBm |
| Loss of Signal - Asserted | P_{SA} | -45 | -- | -- | dBm |
| Loss of Signal - Hysteresis | P_{SH} | 0.5 | -- | 6 | dB |
| Electrical Characteristics | | | | | |
| Differential Output Voltage | V_{DIFF} | 0.4 | -- | 2.0 | V |
| Receiver Loss of Signal Output Voltage -Low | V_{LOSL} | 0 | -- | 0.8 | V |
| Receiver Loss of Signal Output Voltage -High | V_{LOSH} | 2 | -- | $V_{CC}+0.3$ | V |

Pin Definition and Descriptions



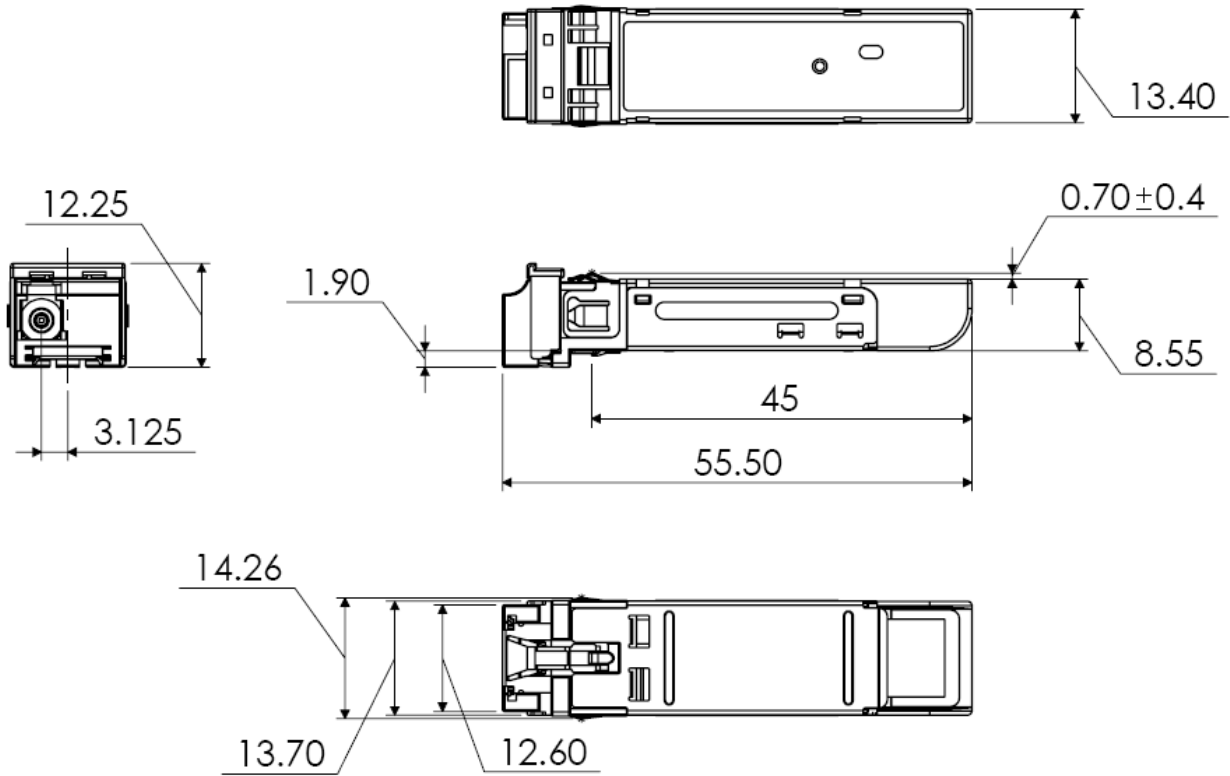
| Pin | Name | Input/Output Level | Description |
|-----|-------------|--------------------|---|
| 1 | VeeT | Input | Transmitter ground |
| 2 | TXFault | Output/LVTTL | Laser failure indication. High level indicates "laser failure". Externally pulled up |
| 3 | TXDisable | Input/LVTTL | Transmitter disable, High signal/open disables TX laser output. Low level enables TX output, internally pulled up. |
| 4 | MOD-DEF(2) | Input/output | Module definition 2, SDA, Data line for I2C bus. Externally pulled up |
| 5 | MOD-DEF(1) | Input | Module definition 1, SCL, Clock for I2C bus. Externally pulled up |
| 6 | MOD-DEF(0) | Output | Module definition 0, Module present. Ground inside module. |
| 7 | Rate Select | - | No connection. |
| 8 | LOS | Output/LVTTL | Receiver loss of signal indication. Low signal indicates optical signal is present at RX input. Should be Externally pulled up. |
| 9 | VeeR | Input | Receiver ground |
| 10 | VeeR | Input | Receiver ground |
| 11 | VeeR | Input | Receiver ground |
| 12 | RD - | Output/CML | Inverted receiver data output (AC coupled) |
| 13 | RD + | Output/CML | Non-inverted receiver data output (AC coupled) |
| 14 | VeeR | Input | Receiver ground |
| 15 | VccR | Input | Receiver power supply |
| 16 | VccT | Input | Transmitter power supply |
| 17 | VeeT | Input | Transmitter ground |
| 18 | TD + | Input/LVPECL | Non-inverted transmitter data input (AC coupled) |
| 19 | TD - | Input/LVPECL | Inverted transmitter data input (AC coupled) |
| 20 | VeeT | Input | Transmitter ground |

Recommended Circuit Diagram



Mechanical Outlines

(Unit : mm)



ESD

Normal ESD precautions are required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.



Contact Information

Formerica OptoElectronics Inc.

5F-11, No.38, Taiyuan St., Zhubei City,
Hsinchu County 30265, Taiwan

Tel: +886-3-5600286

Fax: +886-3-5600239

San Diego, CA

Tel: 1-949-466-8069

inquiry@formericaoe.com

www.formericaoe.com



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.