



10Mbps Low Speed 1x9 Transceiver

Multimode 850nm or 1310nm

Single mode 1310nm

Features

- 1x9 footprint package
- 0~10Mbps data rate
- SC, FC, ST connector available
- TTL /LVTTTL signal input and output
- Multimode, single mode available
- Max. 2km via multimode 1310nm
- Max. 20km via single mode
- 3.3V, 5V available
- 0~ 70°C, -40°C to 85°C available
- RoHS compliant

Applications

- RS232/422/485 serial communication

Description

ETU-Link's series 1x9 optical transceivers is design for RS232/422/485 serial communication. It adopts TTL data interface that supporting data-rate of 0~10Mbps, supports max. 2km via multimode fiber, or 20km via single mode fiber.



Ordering Information

| Part Number | Data Rate | Signal input/output | SD | Wavelength | Distance | Voltage | Connector | Temperature |
|--------------------|-----------|---------------------|-------|----------------|--------------|---------|-----------|-------------|
| E1B35005-5S C20 | 0~10Mbps | DC/DC | TTL | 850nm VCSEL | 1km@MM F | 5V | SC* | 0~70°C |
| E1B35005-5SI 20 | 0~10Mbps | DC/DC | TTL | 850nm VCSEL | 1km@MM F | 5V | SC* | -40~85°C |
| E1B35005-3S C20 | 0~10Mbps | DC/DC | LVTTL | 850nm VCSEL | 1km@MM F | 3.3V | SC* | 0~70°C |
| E1B35005-3SI 20 | 0~10Mbps | DC/DC | LVTTL | 850nm VCSEL | 1km@MM F | 3.3V | SC* | -40~85°C |
| E1B35005-5F C20 | 0~10Mbps | DC/DC | TTL | 1310nm FP | 2km@MM F | 5V | SC* | 0~70°C |
| E1B35005-5FI 20 | 0~10Mbps | DC/DC | TTL | 1310nm FP | 2km@MM F | 5V | SC* | -40~85°C |
| E1B35005-3F C20 | 0~10Mbps | DC/DC | LVTTL | 1310nm FP | 2km@MM F | 3.3V | SC* | 0~70°C |
| E1B35005-3FI 20 | 0~10Mbps | DC/DC | LVTTL | 1310nm FP | 2km@MM F | 3.3V | SC* | -40~85°C |
| E1B35005-5T C20 | 0~10Mbps | DC/DC | TTL | 1310nm FP | 20km@S MF | 5V | SC* | 0~70°C |
| E1B35005-5TI 20 | 0~10Mbps | DC/DC | TTL | 1310nm FP | 20km@S MF | 5V | SC* | -40~85°C |
| E1B35005-3T C20 | 0~10Mbps | DC/DC | LVTTL | 1310nm FP | 20km@S MF | 3.3V | SC* | 0~70°C |
| E1B35005-3TI 20 | 0~10Mbps | DC/DC | LVTTL | 1310nm FP | 20km@S MF | 3.3V | SC* | -40~85°C |

*FC, ST, pigtail available.

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|--------------------------------|---------------------|------|---------|--------|------|
| Storage Temperature | T _s | -40 | | +85 | °C |
| Supply Voltage | V _{ccT, R} | -0.5 | | 6 | V |
| Relative Humidity | RH | 0 | | 95 | % |
| Soldering Conditions Temp/Time | | | | 260/10 | °C/s |



Recommended Operating Environment

| Parameter | | Symbol | Min. | Typical | Max. | Unit |
|----------------------------|------------|-----------------|-------|---------|-------|------|
| Case operating Temperature | Industrial | T _c | -40 | | 85 | °C |
| | Commercial | | 0 | | +70 | °C |
| Supply Voltage | 3.3V | V _{cc} | 3.135 | 3.5 | 3.465 | V |
| | 5V | | 4.75 | 5 | 5.25 | |
| Supply Current | | I _{cc} | | | 300 | mA |
| Data rate | | | 0 | | 500 | kbps |

Optical and Electrical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|--------------------------|-----------------------|------|---------|-----------------|-------|
| Transmitter | | | | | |
| Centre Wavelength | λ_c | 840 | 850 | 860 | nm |
| Spectral Width(RMS) | $\Delta\lambda$ | | | 1 | nm |
| Average Output Power | P _{out} | -15 | | -8 | dBm |
| Extinction Ratio | ER | 9 | | | dB |
| Relative Intensity Noise | RIN | | | -117 | dB/Hz |
| Input High Voltage | V _H | 2 | | V _{CC} | V |
| Input Low Voltage | V _L | 0 | | 0.8 | V |
| Eye Diagram | ITU-T G.957 Compliant | | | | |
| Data Input | TTL | | | | |
| Receiver | | | | | |
| Input center wavelength | C | 770 | | 870 | nm |
| Receiver Sensitivity | P _{min} | | | -16 | dBm |
| Receiver Overload | P _{max} | -7 | | | dBm |
| SD Assert | SD _A | | | -18 | dBm |
| SD De-Assert | SD _D | -30 | | | dBm |
| Output High Voltage | V _H | 2.4 | | V _{cc} | V |
| Output Low Voltage | V _L | 0 | | 0.4 | V |
| Data Output | TTL | | | | |



ETU-Link's series 1310nm 2km multimode

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|--------------------------|-----------------------|------|---------|-----------------|-------|
| Transmitter | | | | | |
| Centre Wavelength | λ_c | 1260 | 1310 | 1360 | nm |
| Spectral Width(RMS) | $\Delta\lambda$ | | | 4 | nm |
| Average Output Power | P _{out} | -15 | | -8 | dBm |
| Extinction Ratio | ER | 9 | | | dB |
| Relative Intensity Noise | RIN | | | -117 | dB/Hz |
| Input High Voltage | V _H | 2 | | VCC | V |
| Input Low Voltage | V _L | 0 | | 0.8 | V |
| Eye Diagram | ITU-T G.957 Compliant | | | | |
| Data Input | TTL | | | | |
| Receiver | | | | | |
| Input center wavelength | C | 1260 | | 1620 | nm |
| Receiver Sensitivity | P _{min} | | | -20 | dBm |
| Receiver Overload | P _{max} | -10 | | | dBm |
| SD Assert | SD _A | | | -22 | dBm |
| SD De-Assert | SD _D | -30 | | | dBm |
| Output High Voltage | V _H | 2.4 | | V _{cc} | V |
| Output Low Voltage | V _L | 0 | | 0.4 | V |
| Data Output | TTL | | | | |

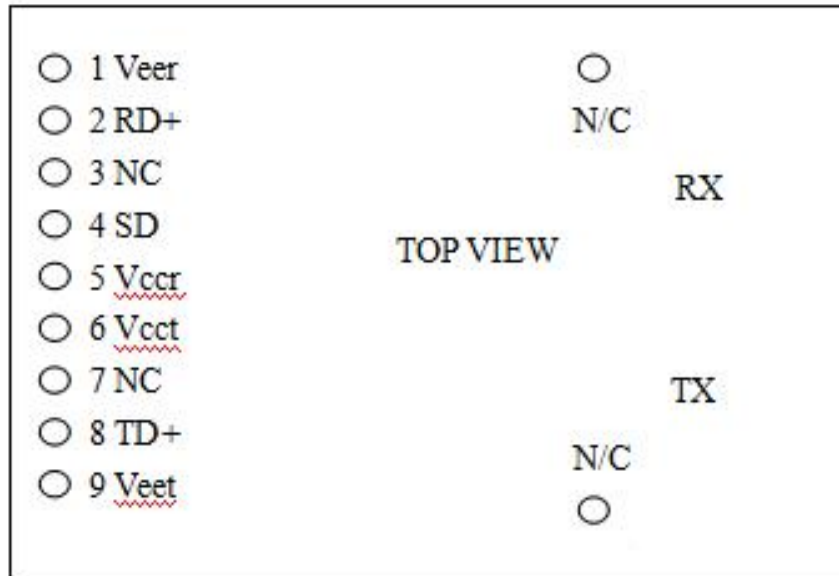
ETU-Link's series 1310nm 20km single mode

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|--------------------------|-----------------------|------|---------|------|-------|
| Transmitter | | | | | |
| Centre Wavelength | λ_c | 1260 | 1310 | 1360 | nm |
| Spectral Width(RMS) | $\Delta\lambda$ | | | 4 | nm |
| Average Output Power | P _{out} | -12 | | -6 | dBm |
| Extinction Ratio | ER | 9 | | | dB |
| Relative Intensity Noise | RIN | | | -117 | dB/Hz |
| Input High Voltage | V _H | 2 | | VCC | V |
| Input Low Voltage | V _L | 0 | | 0.8 | V |
| Eye Diagram | ITU-T G.957 Compliant | | | | |
| Data Input | TTL | | | | |
| Receiver | | | | | |
| Input center wavelength | C | 1260 | | 1620 | nm |
| Receiver Sensitivity | P _{min} | | | -23 | dBm |
| Receiver Overload | P _{max} | -13 | | | dBm |
| SD Assert | SD _A | | | -25 | dBm |



| | | | | | |
|---------------------|-----------------|-----|--|-----------------|-----|
| SD De-Assert | SD _b | -36 | | | dBm |
| Output High Voltage | VH | 2.4 | | V _{cc} | V |
| Output Low Voltage | VL | 0 | | 0.4 | V |
| Data Output | TTL | | | | |

Pin Assignment



Pin Function Definitions

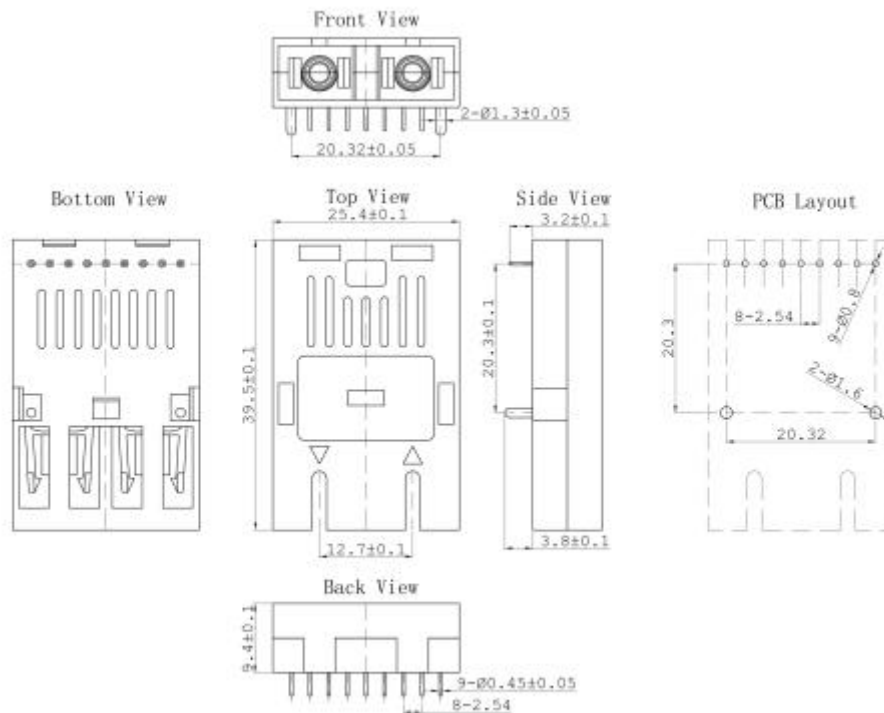
| No. | Name | SD Level | Description |
|-----|------------------|-----------|-------------------|
| 1 | GNDR | | RX ground |
| 2 | RD | TTL/LVTTL | RX data output |
| 3 | NC | | No connect |
| 4 | SD | TTL/LVTTL | RX no light alarm |
| 5 | V _{ccR} | | RX power positive |
| 6 | V _{ccT} | | TX power positive |
| 7 | NC | | No connect |
| 8 | TD | TTL/LVTTL | TX data input |
| 9 | GNDT | | TX ground |



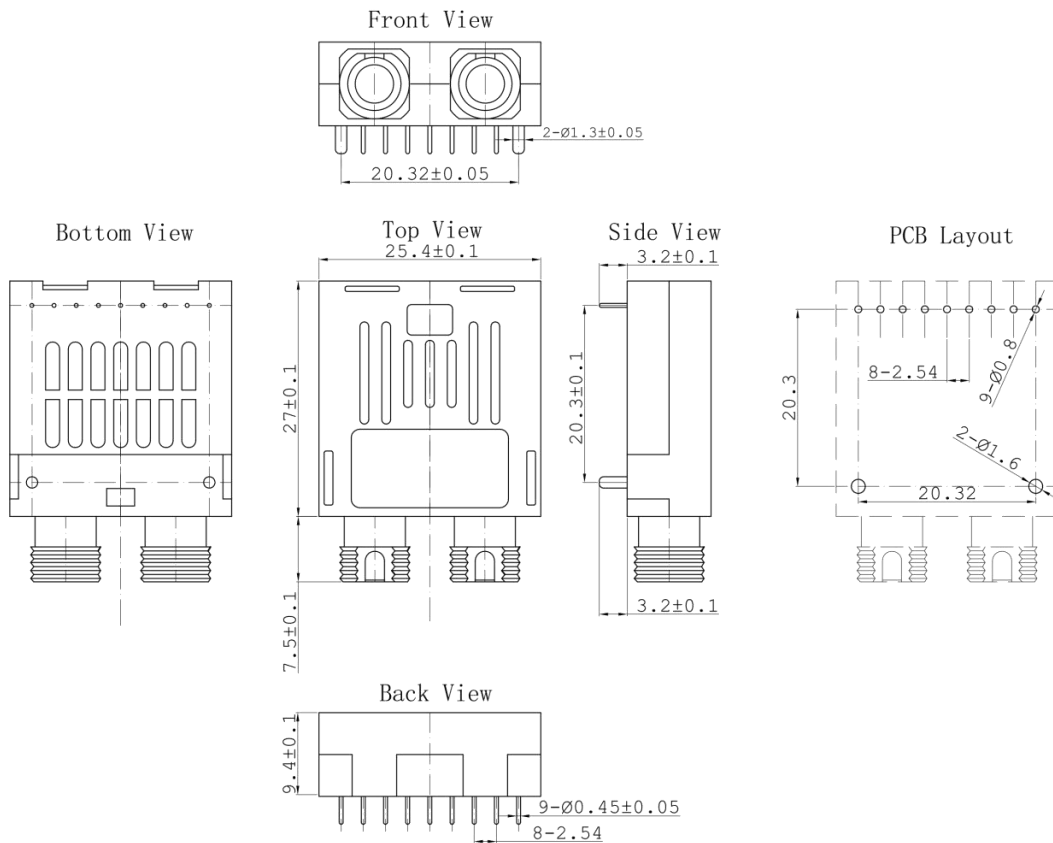
Regulatory Compliance

| | | |
|-----------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------|
| Electrostatic Discharge (ESD) to the Electrical Pins | MIL-STD-883E Method 3015.7 | Class 1(>1000 V) |
| Electrostatic Discharge (ESD) to the Single LC Receptacle | IEC 61000-4-2 GR-1089-CORE | Compatible with standards |
| Electromagnetic Interference (EMI) | FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B | Compatible with standards |
| Laser Eye Safety | FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2 | Compatible with Class 1 laser product. |

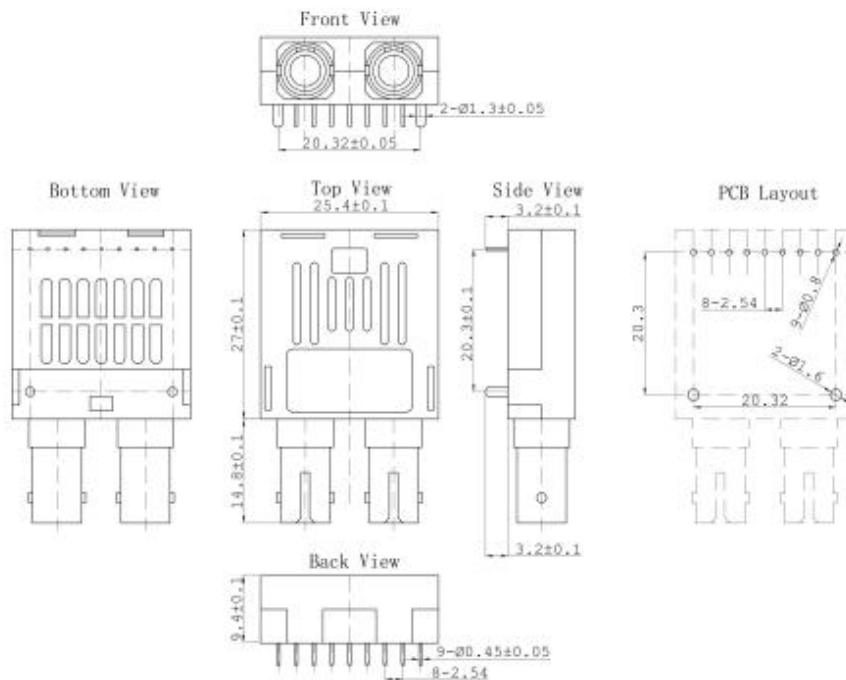
Mechanical Dimensions



Duplex SC



Duplex FC



Duplex ST