# WTXP-B4955(5549)-100D(I)

10Gb/s SFP+ BIDI Single-mode 100km DDM Transceiver / PRODUCT FEATURES

**Reach 100**




## 1. Product Overview

### Features

- Support data rate up to 11.3Gb/s
- Hot-Pluggable SFP Footprint and Single LC Connector
- Up to 100km reach for G.652 SMF
- 1490nm EML laser and APD receiver for WTXP-B4955-100D(I)
- 1550nm EML laser and APD receiver for WTXP-B5549-100D(I)
- Temperature Range:
- Commercial:0°C ~+70°C
- Industrial:-40°C ~+85°C
- Compliant with SFP-8431
- Compliant with SFP-8432
- Compliant with SFP-8472
- Compliant with IEEE802.3ae

### Applications

- 10G Ethernet
- OTU2/2e
- Other Optical Links

## 2. Ordering Information

| Package | Product part NO. | Data Rate(Gbps) | Media | Transmission Distance(km) | Temperature Range（℃） | Temperature Range（℃） | Wavelength (nm) | Power Dissipation（W） |
|---|---|---|---|---|---|---|---|---|
| SFP+ | WTXP-B4955-100D | 10.3125 | SMF | 100 | 0~70 | Commercial | 1490 TX/1550 RX | ＜1.5 |
| SFP+ | WTXP-B4955-100DI | 10.3125 | SMF | 100 | -40-85 | Industrial | 1490 TX/1550 RX | ＜1.8 |
| SFP+ | WTXP-B5549-100D | 10.3125 | SMF | 100 | 0~70 | Commercial | 1550 TX/1490 RX | ＜1.5 |
| SFP+ | WTXP-B5549-100DI | 10.3125 | SMF | 100 | -40-85 | Industrial | 1550 TX/1490 RX | ＜1.8 |

## 3. Absolute Maximum Ratings

| Parameter | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| Storage Temperature | TS | -40 | +85 | °C |
| Maximum Supply Voltage | VCC | -0.5 | 3.6 | V |

| Parameter | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| Operating Relative Humidity | RH | | 95 | % |

## 4. Recommended Operating Conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|---|---|---|---|---|---|---|
| Case Operating Temperature | Top | 0 | - | 70 | ºC | Commercial |
| Case Operating Temperature | Top | -40 | | 85 | ºC | Industrial |
| Power Supply Voltage | VCC | 3.13 | 3.3 | 3.47 | V | |
| Data Rate | BR | | 10.3125 | 11.3 | Gbps | |
| Transmission Distance | TD | | | 100 | km | |
| Coupled fiber | Single mode fiber | Single mode fiber | Single mode fiber | Single mode fiber | Single mode fiber | 9/125um SMF |

## 5. Electrical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit | Note |
|---|---|---|---|---|---|---|
| Supply Voltage | Vcc | 3.135 | | 3.465 | V | |
| Supply Current （Commercial） | Icc | | | 450 | mA | |
| Supply Current （Industrial） | Icc | | | 540 | mA | |
| Power Consumption （Commercial） | P | | | 1.5 | W | |
| Power Consumption （Industrial） | P | | | 1.8 | W | |
| Transmitter Section | Transmitter Section | Transmitter Section | Transmitter Section | Transmitter Section | Transmitter Section | Transmitter Section |
| CML Inputs(Differential) | Vin | 150 | | 1200 | mVpp | 1 |
| Input Impedance(Differential) | Zin | 85 | 100 | 115 | ohm | |
| TX_DIS Disable | | 2 | | Vcc+0.3 | V | |
| TX_DIS Enable | | 0 | | 0.8 | V | |
| TX_FAULT Fault | | 2 | | Vcc+0.3 | V | |
| TX_FAULT Normal | | 0 | | 0.5 | V | |
| Receiver Section | Receiver Section | Receiver Section | Receiver Section | Receiver Section | Receiver Section | Receiver Section |
| CML Outputs (Differential) | Vout | 350 | | 700 | mVpp | 1 |
| Output Impedance (Differential) | Zout | 85 | 100 | 115 | Ohm | |
| RX_LOS LOS | | 2 | | Vcc+0.3 | V | 2 |
| RX_LOS Normal | | 0 | | 0.8 | V | 2 |
| MOD_DEF ( 0:2 ) VoH | | 2.5 | | | V | With Serial ID |

| Parameter | Symbol | Min. | Typical | Max. | Unit | Note |
|---|---|---|---|---|---|---|
| MOD_DEF ( 0:2 ) VoL | | 0 | | 0.5 | V | With Serial ID |

## 6. Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | NOTE |
|---|---|---|---|---|---|---|
| Data Rate | | | 10.3125 | 11.3 | Gbps | |
| Transmitter | Transmitter | Transmitter | Transmitter | Transmitter | Transmitter | Transmitter |
| Center Wavelength | λ | 1480 | 1490 | 1500 | nm | WTXP-B4955-100D（I） |
| Center Wavelength | λ | 1540 | 1550 | 1560 | nm | WTXP-B5549-100D（I） |
| Spectral Width (-20dB) | Δλ | | | 1 | nm | |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB | |
| Average Output Power | Pout | 0 | | 5 | dBm | 1 |
| Extinction Ratio | ER | 8.2 | | | dB | |
| Average Power of OFF Transmitter | Poff | | | -30 | dBm | |
| Relative Intensity Noise | RIN | | | -128 | dB/Hz | 2 |
| Receiver | Receiver | Receiver | Receiver | Receiver | Receiver | Receiver |
| Wavelength Range | λC | 1540 | 1550 | 1560 | nm | WTXP-B4955-100D（I） |
| Wavelength Range | λC | 1480 | 1490 | 1500 | nm | WTXP-B5549-100D（I） |
| Receiver Sensitivity | Pmin | | | -24.5 | dBm | 3 |
| Receiver Overload | Pmax | -6 | | | dBm | |
| LOS De-Assert | LOSD | | | -24 | dBm | |
| LOS Assert | LOSA | -38 | | | dBm | |
| LOS-Hysteresis | Phys | 0.5 | | 6 | dB | |

## 7. Pin Descriptions

| PIN # | Name | Function | Notes |
|---|---|---|---|
| 1 | VeeT | Module transmitter ground | 1 |
| 2 | Tx Fault | Module transmitter fault | 2 |
| 3 | Tx Disable | Transmitter Disable; Turns off transmitter laser output | 3 |
| 4 | SDL | 2 wire serial interface data input/output (SDA) | 4 |
| 5 | SCL | 2 wire serial interface clock input (SCL) | 4 |
| 6 | MOD-ABS | Module Absent, connect to VeeR or VeeT in the module | 4 |

| PIN # | Name | Function | Notes |
|---|---|---|---|
| 7 | RS0 | Rate select0, optionally control SFP+ receiver. When high, input data rate >4.5Gb/ s; when low, input data rate <=4.5Gb/s | 5 |
| 8 | LOS | Receiver Loss of Signal Indication | 6 |
| 9 | RS1 | Rate select0, optionally control SFP+ transmitter. When high, input data rate >4.5Gb/s; when low, input data rate <=4.5Gb/s | 1 |
| 10 | VeeR | Module receiver ground | 1 |
| 11 | VeeR | Module receiver ground | 1 |
| 12 | RD- | Receiver inverted data out put | |
| 13 | RD+ | Receiver non-inverted data out put | |
| 14 | VeeR | Module receiver ground | 1 |
| 15 | VccR | Module receiver 3.3V supply | |
| 16 | VccT | Module transmitter 3.3V supply | |
| 17 | VeeT | Module transmitter ground | 1 |
| 18 | TD+ | Transmitter inverted data out put | |
| 19 | TD- | Transmitter non-inverted data out put | |
| 20 | VeeT | Module transmitter ground | 1 |

# 8. Additional Specifications

| Parameter | Range | Unit | Accuracy | Calibration |
|---|---|---|---|---|
| Commercial Temperature | 0 to +70 | °C | ±3°C | Internal / External |
| Industrial Temperature | -40 to +85 | °C | ±3°C | Internal / External |
| Voltage | 3.0 to 3.6 | V | ±3% | Internal / External |
| Bias Current | 30 to 100 | mA | ±10% | Internal / External |
| TX Power | -1 to +4 | dBm | ±3dB | Internal / External |
| RX Power | -23 to -6 | dBm | ±3dB | Internal / External |

# 9. Timing Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|---|---|---|---|---|---|
| TX_Disable Assert Time | t_off | | | 100 | us |
| TX_Disable Negate Time | t_on | | | 2 | ms |
| Time to Initialize Include Reset of TX_FAULT | t_int | | | 300 | ms |
| TX_FAULT from Fault to Assertion | t_fault | | | 100 | us |
| TX_Disable Time to Start Reset | t_reset | 10 | | | us |

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|---|---|---|---|---|---|
| Receiver Loss of Signal Assert Time | TA,RX_LOS | | | 100 | us |
| Receiver Loss of Signal Deassert Time | Td,RX_LOS | | | 100 | us |
| Rate-Select Chage Time | t_ratesel | | | 10 | us |
| Serial ID Clock Time | t_serial-clock | | | 100 | kHz |

## 10. EEPROM Memory Map

| Data Address | Length (Byte) | Name of Length | Description and Contents |
|---|---|---|---|
| Base ID Fields | Base ID Fields | Base ID Fields | Base ID Fields |
| 0 | 1 | Identifier | Type of Serial transceiver (03h=SFP) |
| 1 | 1 | Reserved | Extended identifier of type serial transceiver (04h) |
| 2 | 1 | Connector | Code of optical connector type (07=LC) |
| 3-10 | 8 | Transceiver | 10G Base-ER |
| 11 | 1 | Encoding | 64B/66B |
| 12 | 1 | BR, Nominal | Nominal baud rate, unit of 100Mbps |
| 13-14 | 2 | Reserved | (0000h) |
| 15 | 1 | Length(9um) | Link length supported for 9/125um fiber, units of 100m |
| 16 | 1 | Length(50um) | Link length supported for 50/125um fiber, units of 10m |
| 17 | 1 | Length(62.5um) | Link length supported for 62.5/125um fiber, units of 10m |
| 18 | 1 | Length(Copper) | Link length supported for copper, units of meters |
| 19 | 1 | Reserved | |
| 20-35 | 16 | Vendor Name | SFP vendor name: WincoTek |
| 36 | 1 | Reserved | |
| 37-39 | 3 | Vendor OUI | Order-specific registered OUI |
| 40-55 | 16 | Vendor PN | Part Number: “WTXP-BXXXX” (ASCII) |
| 56-59 | 4 | Vendor rev | Revision level for part number |
| 60-62 | 3 | Reserved | |
| 63 | 1 | CCID | Least significant byte of sum of data in address 0-62 |
| Extended ID Fields | Extended ID Fields | Extended ID Fields | Extended ID Fields |
| 64-65 | 2 | Option | Indicates which optical SFP signals are implemented (001Ah = LOS, TX_FAULT, TX_DISABLE all supported) |
| 66 | 1 | BR, max | Upper bit rate margin, units of % |

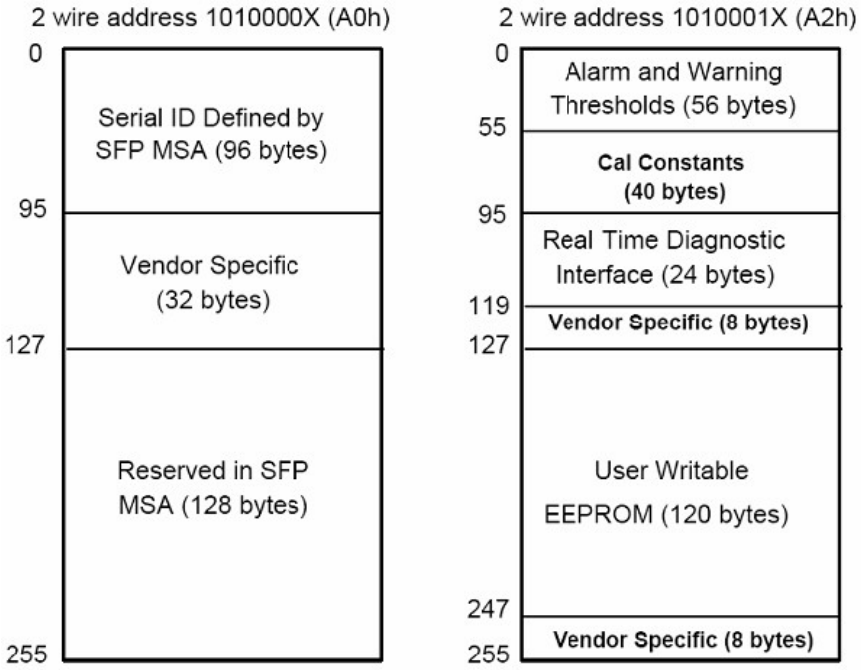
| Data Address | Length (Byte) | Name of Length | Description and Contents |
|---|---|---|---|
| 67 | 1 | BR, min | Lower bit rate margin, units of % |
| 68-83 | 16 | Vendor SN | Serial number (ASCII) |
| 84-91 | 8 | Date code | WincoTek's Manufacturing date code |
| 92-94 | 3 | Reserved | |
| 95 | 1 | CCEX | Check code for the extended ID Fields (addresses 64 to 94) |
| Vendor Specific ID Fields | Vendor Specific ID Fields | Vendor Specific ID Fields | Vendor Specific ID Fields |
| 96-127 | 32 | Readable | WincoTek specific date, read only |
| 128-255 | 128 | Reserved | Reserved for SFF-8079 |

# 11. EEPROM Memory Map

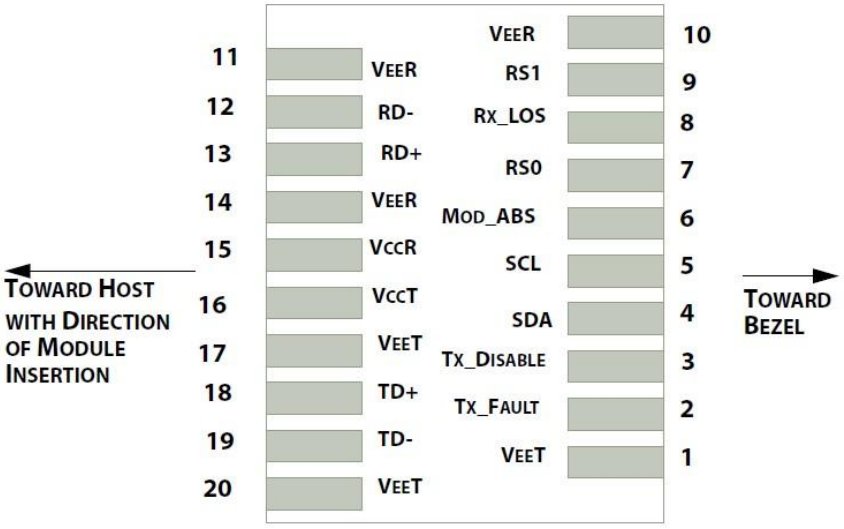
| Data Address | Length (Byte) | Name of Length | Description and Contents |
|---|---|---|---|
| Base ID Fields | Base ID Fields | Base ID Fields | Base ID Fields |
| 00-01 | 2 | Temp High Alarm | MSB at low address |
| 02-03 | 2 | Temp Low Alarm | MSB at low address |
| 04-05 | 2 | Temp High Warning | MSB at low address |
| 06-07 | 2 | Temp Low Warning | MSB at low address |
| 08-09 | 2 | Voltage High Alarm | MSB at low address |
| 10-11 | 2 | Voltage Low Alarm | MSB at low address |
| 12-13 | 2 | Voltage High Warning | MSB at low address |
| 14-15 | 2 | Voltage Low Warning | MSB at low address |
| 16-17 | 2 | Bias High Alarm | MSB at low address |
| 18-19 | 2 | Bias Low Alarm | MSB at low address |
| 20-21 | 2 | Bias High Warning | MSB at low address |
| 22-23 | 2 | Bias Low Warning | MSB at low address |
| 24-25 | 2 | TX Power High Alarm | MSB at low address |
| 26-27 | 2 | TX Power Low Alarm | MSB at low address |
| 28-29 | 2 | TX Power High Warning | MSB at low address |
| 30-31 | 2 | TX Power Low Warning | MSB at low address |
| 32-33 | 2 | RX Power High Alarm | MSB at low address |
| 34-35 | 2 | RX Power Low Alarm | MSB at low address |
| 36-37 | 2 | RX Power High Warning | MSB at low address |
| 38-39 | 2 | RX Power Low Warning | MSB at low address |
| 40-41 | 2 | Optional Laser Temp High Alarm | MSB at low address |
| 42-43 | 2 | Optional Laser Temp Low Alarm | MSB at low address |
| 44-45 | 2 | Optional Laser Temp High Warning | MSB at low address |
| 46-47 | 2 | Optional Laser Temp Low Warning | MSB at low address |
| 48-49 | 2 | Optional TEC Current High Alarm | MSB at low address |
| 50-51 | 2 | Optional TEC Current Low Alarm | MSB at low address |

| Data Address | Length (Byte) | Name of Length | Description and Contents |
|---|---|---|---|
| 52-53 | 2 | Optional TEC Current High Warning | MSB at low address |
| 54-55 | 3 | Optional TEC Current Low Warning | MSB at low address |
| Calibration Constants for External Calibration Option | Calibration Constants for External Calibration Option | Calibration Constants for External Calibration Option | Calibration Constants for External Calibration Option |
| 56-91 | 36 | Calibration Constants for External Calibration Option | Refer to the SFP 8472 Rev12.4 |
| 92-94 | 3 | Reserved | |
| 95 | 1 | Checksum | Byte 95 contains the low order 8 bits of the sum of bytes 0-94 |
| Real Time Diagnostic and Control Registers | Real Time Diagnostic and Control Registers | Real Time Diagnostic and Control Registers | Real Time Diagnostic and Control Registers |
| 96-110 | 15 | A/D Values and Status Bits | Refer to the SFP 8472 Rev12.4 |
| 111 | 1 | Reserved | Reserved (was assigned to SFF-8079). |
| Alarm and Warning Flag Bits | Alarm and Warning Flag Bits | Alarm and Warning Flag Bits | Alarm and Warning Flag Bits |
| 112-117 | 6 | Optional Alarm and Warning Flag Bits | Refer to the SFP 8472 Rev12.4 |
| Extended Module Control/Status Bytes | Extended Module Control/Status Bytes | Extended Module Control/Status Bytes | Extended Module Control/Status Bytes |
| 118-119 | 2 | Extended Module Control/Status Bytes | Refer to the SFP 8472 Rev12.4 |
| Optional Page Select Byte | Optional Page Select Byte | Optional Page Select Byte | Optional Page Select Byte |
| 120-126 | 7 | Vendor Specific | Vendor specific memory addresses |
| 127 | 1 | Optional Page Select | Defines the page number for subsequent reads and writes to locations A2h |
| User Accessible EEPROM Locations | User Accessible EEPROM Locations | User Accessible EEPROM Locations | User Accessible EEPROM Locations |
| 128-247 | 120 | User EEPROM | User writable EEPROM |
| Vendor Specific Control Function Locations | Vendor Specific Control Function Locations | Vendor Specific Control Function Locations | Vendor Specific Control Function Locations |
| 248-255 | 8 | Vendor Specific | Vendor specific control functions |

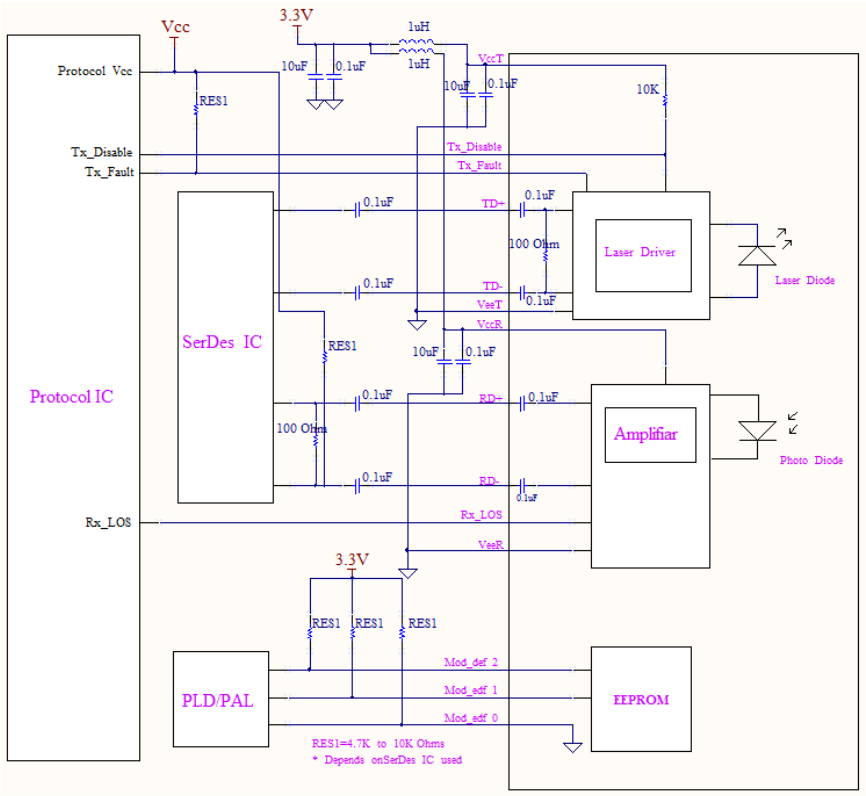
## 12. Digital Diagnostics Memory Map



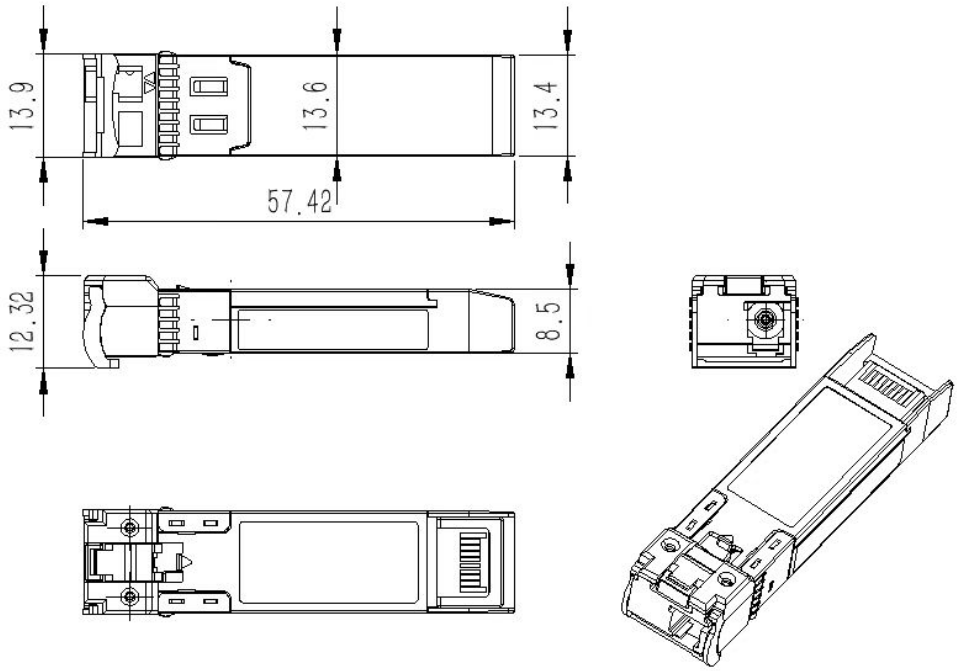

## 13. Pin Assignment



## 14. Electrical Interface




## 15. Mechanical Specifications



## 16. Revision History

| Version | Date | Description | Prepared by |
|---|---|---|---|
| V6 | 2025 | Unified WincoTek datasheet format | WincoTek |
| V6.1 | 2026-10-23 | Engineering and format review | WincoTek |