

1.25Gb/s SFP 1550nm 40km Transceiver

TS551AE-EN Product Specification

FEATURES

- Typical data rate 1.25Gbps
- 1550nm DFB Laser and PIN photo detector
- Duplex LC connector
- Single +3.3V power supply
- Hot-pluggable
- International Class1 laser safety certified
- Operating temperature range: -20 ~ +85°C
- RoHS Compliant
- Support Digital Diagnostic Monitoring interface
- Max reach 40km over SMF

APPLICATIONS

- Point-to-Point networking
- SONET OC-24
- Optical Links

ORDERING INFORMATION

Part Number	Form Factor	Data Rate	Media	Distance (km)	Wavelength (nm)	Temperature (°C)
TS551AE-EN	SFP	1.25Gbps	SMF	40	1550	-20~85

ABSOLUTE MAXIMUM RATINGS

Exceeding the limits below may damage the transceiver permanently.

Parameter	Symbol	Min	Typ	Max	Unit.	Note
Storage Temperature	TSTG	-40	-	85	°C	
Operating Relative Humidity	RH	5	-	95	%	
Supply Voltage	VCC	-0.5	-	4	V	

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit.	Note
Operating Case Temperature	Tc	-20	-	85	°C	
Supply Voltage	VCC3	3.13	3.3	3.47	V	
Supply Current	ICC3	-	-	300	mA	+3.3V Supply
Data Rate	DR	-	1.25	-	Gbps	

ELECTRICAL and OPTICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit.	Note
Transmitter@1.25Gbps						
Tx Differential Input Amplitude	Vin p-p	200	-	2400	mV	
Input Differential Impedance	Zin	-	100	-	Ω	
Output Optical Power	PO	-5	-	0	dBm	
Extinction Ratio	ER	9	-	-	dB	
Center Wavelength Range	λc	1520	1550	1580	nm	
Spectrum Width(-20dB)	Δλ	-	-	1	nm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Optical Return Loss Tolerance	RL	12	-	-	dB	
Output Optical Eye	Compliant with G.957					
Tx Disable Voltage	VOH	2	-	VCC	V	LVTTTL
	VOL	0	-	0.8	V	LVTTTL
Optical Power at Tx Disable	Ptxdis	-	-	-45	dBm	
Receiver@1.25Gbps						
Rx Differential Output Amplitude	Vout p-p	300	-	800	mV	
Receiver Optical Wavelength	λc	1270	-	1580	nm	
Receiver Sensitivity	Sen	-	-	-24	dBm	Note 1
Receiver Overload	OL	-3	-	-	dBm	
LOS Voltage	Normal	2	-	Vcc+0.3	V	LVTTTL
	Fault	0	-	0.8	V	LVTTTL
LOS Assert Level	LOSA	-38	-	-	dBm	
LOS De-Assert Level	LOSD	-	-	-26	dBm	
LOS Hysteresis	LOSH	0.5	-	6	dB	

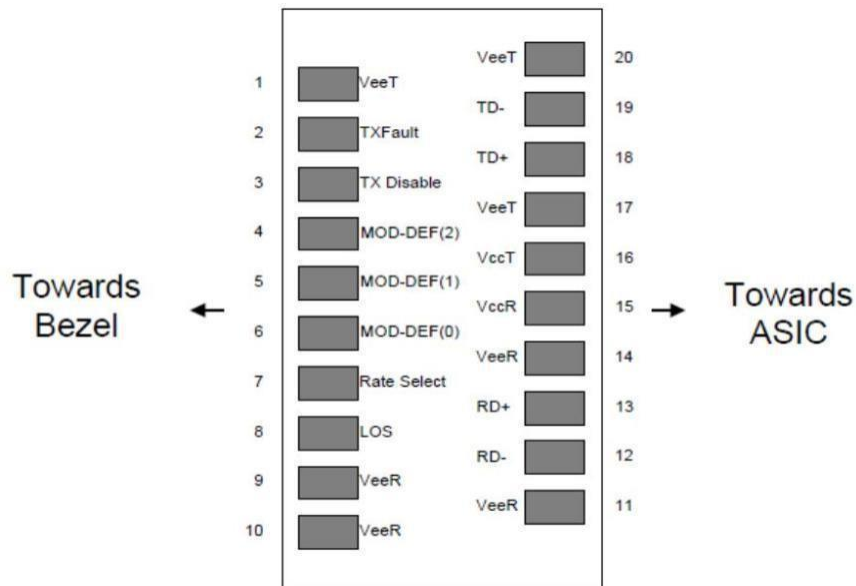
Notes:

1.Measured with 2⁷-1 NRZ Pattern. BER≤1E-12@1.25Gpbs, ER=9dB

Digital Diagnostic Functions

Parameter	Symbol	Min.	Max.	Unit	Repeatability	Notes
Temperature	DDMI_Temp	-3	3	°C	± 1°C	1LSB=1/256°C
Supply Voltage	DDMI_VCC	-3%	3%	V	± 1 %	1LSB=0.1mV
Bias Current	DDMI_Ibias	-10%	10%	mA	± 5 %	1LSB=2uA
TX Optical Power	DDMI_TX	-3	+3	dB	± 0.5 dB	1LSB=0.1uW
RX Optical Power	DDMI_RX	-3	+3	dB	± 1.5 dB	1LSB=0.1uW

PIN DIAGRAM



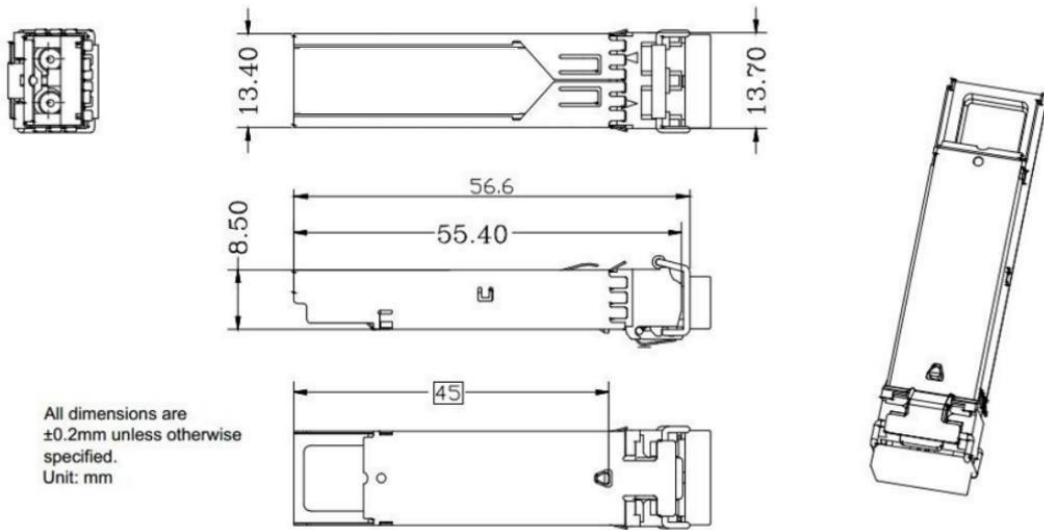
PIN DESCRIPTIONS

Pin	Symbol	Description	Notes
1	Vcc"	"íá→smittcí Gíou→d (Commo→i witm Rccivcí Gíou→d)	5
2	":_Fault	"íá→smittcí Fault, Low: →oímal; Hiom: ab→oímal	1
3	":_Disabl	"íá→smittcí Disabl Hiom: "íá→smittcí off Low: "íá→smittcí on	2
4	MOD_DEF(2)	Modulc Dcfi→itio→i 2. Data li→c foí Scíal ID.	3
5	MOD_DEF(1)	Modulc Dcfi→itio→i 1. Clock li→c foí Scíal ID.	3
6	MOD_DEF(0)	Modulc Dcfi→itio→i 0. Gíou→dcd witm→i tmc modulc.	
7	Ratc Sclcct	No co→i→cctio→i ícquícd	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	VEER	Rccivcí Gíou→d(Commo→i witm "íá→smittcí Gíou→d)	5
10	VEER	Rccivcí Gíou→d(Commo→i witm "íá→smittcí Gíou→d)	5
11	VEER	Rccivcí Gíou→d(Commo→i witm "íá→smittcí Gíou→d)	5
12	RD-	Rccivcí I→vctcd D6"6 out. 6C Couplcd. CML-O	ó
13	RD+	Rccivcí No→i→i→vctcd D6"6 out. 6C Couplcd. CML-O	ó
14	VccR	Rccivcí Gíou→d	5
15	VccR	Rccivcí Powcí SupplQ	
16	Vcc"	"íá→smittcí Powcí SupplQ	
17	Vcc"	"íá→smittcí Gíou→d	5
18	"D+	"íá→smittcí No→i→i→vctcd D6"6 i→i. 6C Couplcd. CML-I	7
19	"D-	"íá→smittcí I→vctcd D6"6 i→i. 6C Couplcd. CML-I	7
20	Vcc"	"íá→smittcí Gíou→d (Commo→i witm Rccivcí Gíou→d)	5

Notes:

1. "":_Fault is a→i opc→i collcctóí/díai→i output, wmicm smould bc pulld up witm a 4.7K-10K2 ícsistoí o→i tmc most boaid. Pull up voltaoc bctwcc→i 2.0V a→id Vcc"/R+0.3V. Wmc→i miom, output i→dicatcs a lascí fault of somc ki→d. Low i→dicatcs →oímal opcíatio→i. I→i tmc low statc, tmc output will bc pulld to < 0.oV.
2. "":_Disabl is a→i i→put tmat is uscd to smut dow→i tmc tíá→smittcí optical output. It is pulld up witm→i tmc modulc witm a 4.7-10 K2 ícsistoí.
3. SD6 a→id SCL smould bc pulld up witm a 4.7K- 10K2 ícsistoí o→i tmc most boaid.
4. LOS (Loss of Sio→ial) is a→i opc→i collcctóí/díai→i output, wmicm smould bc pulld up witm a 4.7K - 10K2 ícsistoí. Pull up voltaoc bctwcc→i 2.0V a→id Vcc"/R+0.3V. Wmc→i miom, tmis output i→dicatcs tmc íccvcd optical powcí is bclow tmc woíst-casc íccvci sc→isitivitQ (as dcfi→icd bQ tmc sta→idaíd i→i usc). Low i→dicatcs →oímal opcíatio→i. I→i tmc low statc, tmc output will bc pulld to <0.oV
5. "mc modulc sio→ial oíou→d co→i→tacts, VccR a→id Vcc", smould bc isolatcd fíom tmc modulc casc
6. RD-/+: "mcsc aíc tmc diffcíc→ítial íccvci outputs. "mcQ aíc 6C couplcd 1002 diffcíc→ítial li→ics wmicm smould bc tcími→atcd witm 1002 (diffcíc→ítial) at tmc uscí SERDES. "mc 6C coupli→io is do→ic i→sidc tmc modulc a→id is tmus →ot ícquícd o→i tmc most boaid.
7. "D-/+: "mcsc aíc tmc diffcíc→ítial tíá→smittcí i→i→i. "mcQ aíc 6C-couplcd, diffcíc→ítial li→ics witm 1002 diffcíc→ítial tcími→atio→i i→sidc tmc modulc. "mc 6C coupli→io is do→ic i→sidc tmc modulc a→id is tmus →ot ícquícd o→i tmc most boaid.

MECHANICAL SPECIFICATION



LABEL DIAGRAM



TS551AE-EN

SFP 1.25G Duplex 1550nm 40km LC

Class 1 Laser
MADE IN CHINA



X.XX.XX.XXX