

BTBP-3155192-LRC

10Gbps SFP+ BiDi Transceiver, 20Km Reach

1270nm TX / 1330 nm RX

Features

- Supports up to 10.7Gbps bit rates
- Hot-pluggable SFP+ footprint
- 1270nm DFB laser and PIN photodiode, Up to 20km for SMF transmission
- Compliant with SFP+ MSA and SFF-8472 with duplex LC receptacle
- Compatible with RoHS
- Single +3.3V power supply
- Real Time Digital Diagnostic Monitoring
- Operating case temperature:
 - Standard: 0 to +70°C
 - Industrial: -40 to +85°C

Applications

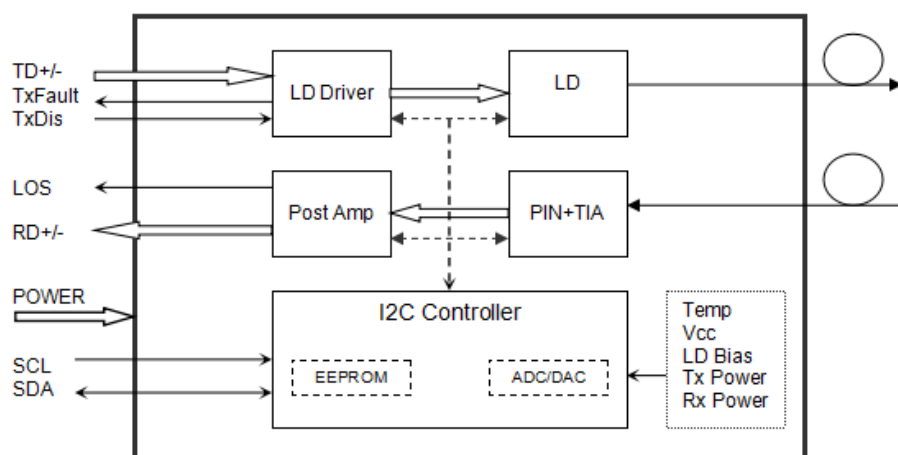
- 10Gbps Optical systems
- 10GBASE-LR at 10.3125Gbps
- 10GBASE-LW at 9.953Gbps
- LTE systems
- Other Optical links

Description

The SFP+ transceivers are high performance, cost effective modules supporting data rate of 10Gbps and 20km transmission distance with SMF.

The transceiver consists of three sections: a DFB laser transmitter, a PIN photodiode integrated with a trans-impedance preamplifier (TIA) and MCU control unit. All modules satisfy class I laser safety requirements.

The transceivers are compatible with SFP Multi-Source Agreement and SFF-8472 digital diagnostics functions.



Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	4.5	V
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	85	%

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Standard	0		+70	°C
	Extended	-20		+80	°C
	Industrial	-40		+85	°C
Power Supply Voltage	Vcc	3.135	3.30	3.465	V
Power Supply Current	Icc			350	mA
Data Rate		1.0	10.3	10.7	Gbps
Transmission Distance				20	km

Optical and Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter						
Centre Wavelength	λ_c	1260	1270	1280	nm	
Side-Mode Suppression Ratio	SMSR	30	-		dB	
Average Output Power	P _{out}	-5		+2	dBm	1
Extinction Ratio	ER	3.5			dB	
Data Input Swing Differential	V _{IN}	180		850	mV	2

Input Differential Impedance		Z_{IN}	90	100	110	Ω	
TX Disable	Disable		2.0		Vcc	V	
	Enable		0		0.8	V	
TX Fault	Fault		2.0		Vcc	V	
	Normal		0		0.8	V	
Receiver							
Centre Wavelength		λ_c	1320	1330	1340	nm	
Receiver Sensitivity					-14.4	dBm	3
Receiver Overload			0.5			dBm	3
LOS De-Assert		LOS _D			-17	dBm	
LOS Assert		LOS _A	-30			dBm	
LOS Hysteresis			0.5			dB	
Data Output Swing Differential		V _{out}	300		900	mV	4
LOS	High		2.0		Vcc	V	
	Low				0.8	V	

Notes:

1. The optical power is launched into SMF.
2. PECL input, internally AC-coupled and terminated.
3. Measured with a PRBS 2³¹-1 test pattern @10312Mbps, BER $\leq 1 \times 10^{-12}$.
4. Internally AC-coupled.

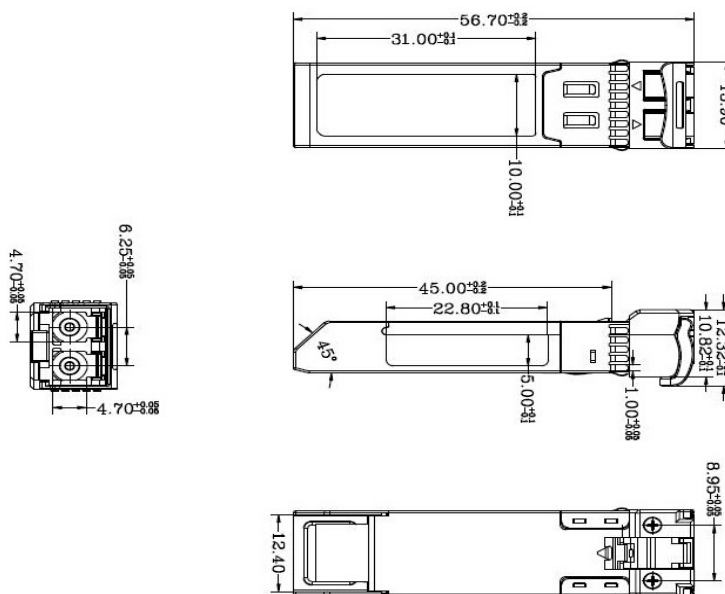
Timing and Electrical

Parameter	Symbol	Min	Typical	Max	Unit
Tx Disable Negate Time	t _{on}			1	ms
Tx Disable Assert Time	t _{off}			10	μ s
Time To Initialize, including Reset of Tx Fault	t _{init}			300	ms
Tx Fault Assert Time	t _{fault}			100	μ s
Tx Disable To Reset	t _{reset}	10			μ s
LOS Assert Time	t _{loss_on}			100	μ s
LOS De-assert Time	t _{loss_off}			100	μ s
Serial ID Clock Rate	f _{serial_clock}		100	400	KHz
MOD_DEF (0:2)-High	V _H	2		Vcc	V
MOD_DEF (0:2)-Low	V _L			0.8	V

1. Diagnostics

Parameter	Range	Unit	Accuracy	Calibration
Temperature	0 to +70	°C	±3°C	Internal
	-20 to +80			
	-40 to +85			
Voltage	3.0 to 3.6	V	±3%	Internal
Bias Current	0 to 100	mA	±10%	Internal
TX Power	-6.5 to +2	dBm	±3dB	Internal
RX Power	-17 to +1	dBm	±3dB	Internal

Mechanical parameters



Ordering information

Model No.	Product Description
BTBP-3155192-LRC	10Gbps, TX1270/RX1330, LC, 20km, 0°C~+70°C, with DDM
BTBP-3155192-LRT	10Gbps, TX1270/RX1330, LC, 20km, -40°C~+85°C, with DDM

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