



Features

- Coaxial single mode single fiber package with optional SC/FC/ST/MU connector
- Wavelength Tx 1550nm/ Rx 1310nm
- SONET OC-3 SDH STM-1 Compliant
- Single +5V Power Supply
- PECL Differential Inputs and Outputs
- Wave Solderable and Aqueous washable
- LED Multisourced 1x9 Transceiver Interchangeable
- Class 1 Laser Int. Safety Standad IEC 825 Compliant
- Uncooled laser diode with MQW structure
- Complies with Telcordia (Bellcore) GR-468-CORE
- Temperature Range: 0 to 70°C
- Optical Isolation >30 dB
- Cross Talk < -33 dB
- Optical Return Loss > 14dB

Absolute Maximum Rating

Parameter	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V_{CC}	0	6	V	
Input Voltage	-	GND	V_{CC}	V	
Output Current	I_{out}	0	30	mA	
Soldering Temperature	-	-	260	°C	10 seconds on leads only
Operating Temperature	T_{opr}	0	70	°C	
Storage Temperature	T_{stg}	-40	85	°C	

Recommended Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	V_{CC}	4.75	5	5.25	V
Operating Temperature	T_{opr}	0	-	70	°C
Data Rate	-	-	155	-	Mbps

Transmitter Specifications, (0°C< T_{opr} <70°C, 4.75V< V_{CC} <5.25V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Optical Transmit Power	P_o	-15	-	-8	dBm	Output power is coupled into a 9/125 μ m single mode fiber
Output center Wavelength	λ	1500	1550	1600	nm	
Output Spectrum Width	$\Delta\lambda$	-	-	3	nm	RMS (σ)
Extinction Ratio	ER	8.2	-	-	dB	
Output Pulse Mask		Compliant with FDDI SMF-PMD1				
Output Eye		Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957				
Optical Rise Time	t_r	-	-	2	ns	10% to 90% Values
Optical Fall Time	t_f	-	-	2	ns	10% to 90% Values
Optical Isolation	-	30	-	-	dB	Tx:1550 nm/ Rx:1310 nm
Optical Return Loss	-	14	-	-	dB	
Relative Intensity Noise	RIN	-	-	-116	dB/Hz	
Total Jitter	TJ	-	-	1.2	ns	Measured with 2 ²³ -1 PRBS with 72 ones and 72 zeros.

B-15/13-155-TPM-Sxx3-60

Transmitter Specifications, (0°C<T_{opr}<70°C, 4.75V<V_{CC}<5.25V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Electrical						
Power Supply Current	I _{CC}	-	-	140	mA	Maximum current is specified at V _{CC} = Maximum @ maximum temperature
Data Input Current-Low	I _{IL}	-350	-	-	μA	
Data Input Current-High	I _{IH}	-	-	350	μA	
Differential Input Voltage	V _{IH} -V _{IL}	300	-	-	mV	
Data Input Voltage-Low	V _{IL} -V _{CC}	-2.0	-	-1.58	V	These inputs are compatible with 10K, 10KH and 100K ECL and PECL inputs
Data Input Voltage-High	V _{IH} -V _{CC}	-1.1	-	-0.74	V	

Receiver Specifications, (0°C<T_{opr}<70°C, 4.75V<V_{CC}<5.25V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Sensitivity	-	-	-	-33	dBm	Measured with 2 ²³ -1 PRBS with 72 ones and 72 zeros (ITU-T recommendation G.958)
Maximum Input Power	P _{in}	-3	-	-	dBm	
Signal Detect-Asserted	P _a	-	-	-33	dBm	Measured on transition: low to high
Signal Detect-Deasserted	P _d	-45	-	-	dBm	Measured on transition: high to low
Signal Detect-Hysteresis		1.0	-	4.0	dB	
Cross Talk	-	-	-	-33	dB	
Wavelength of Operation		1260	-	1360	nm	

Receiver Specifications, (0°C<T_{opr}<70°C, 4.75V<V_{CC}<5.25V)

Parameter	Symbol	Min	Typical	Max	Unit	Note
Electrical						
Power Supply Current	I _{CC}	-	-	100	mA	The current excludes the output load current
Data Output Voltage-Low	V _{OL} -V _{CC}	-2	-	-1.58	V	These outputs are compatible with 10K, 10KH and 100KECL and LVPECL outputs
Data Output Voltage-High	V _{OH} -V _{CC}	-1.1	-	-0.74	V	
Signal Detect Output Voltage-Low	V _{SDL} -V _{CC}	-2	-	-1.58	V	
Signal Detect Output Voltage-High	V _{SDH} -V _{CC}	-1.1	-	-0.74	V	

Connection Diagram

1. (Rx GND)
2. (Rx +)
3. (Rx-)
4. (SD)
5. (Rx Vcc)
6. (Tx Vcc)
7. (TX-)
8. (TX+)
9. (Tx GND)

Top View

○
NC

NC
○

- Receiver Signal Ground
- Receiver Data Out
- Receiver Data Out Bar
- Signal Detect
- Receiver Power Supply
- Transmitter Power Supply
- Transmitter Data In Bar
- Transmitter Data in
- Transmitter Signal Ground

PIN	Symbol	Notes
1	RxGND	Directly connect this pin to the receiver ground plane
2	RD+	See recommended circuit schematic
3	RD-	See recommended circuit schematic
4	SD	Active high on this indicates a received optical signal
5	RxVcc	+5V dc power for the receiver section
6	TxVcc	+5 V dc power for the transmitter section
7	TD-	See recommended circuit schematic
8	TD+	See recommended circuit schematic
9	TxGND	Directly connect this pin to the transmitter ground plane

Notes:

$R1=R3=R5=R7=R9=82\Omega$

$R2=R4=R6=R8=R10=130\Omega$

$C1=C2=C3=C5=C6=0.1\mu F$

$C4=10\mu F$

$L1=L2=1\mu H$

Package Diagram

Units in mm (inch)

Top View

660±20

CONNECTOR

20 max

12.7±0.2

φ6.3

25.4±0.2

11.5max

39.1±0.2

Front View

2.54±0.1*8

20.32±0.2

0.5

Side View

4.82±0.1

3.4±0.2

15.87±0.2

20.32±0.3

φ1±0.1

φ0.5±0.1

9.8 MAX

3.2±0.5

Rear View

Ordering Information

B - 15/13 -155 - TPM - S xx3-60

- Wavelength
Tx Wavelength=1550nm
Rx Wavelength = 1310nm

- Communication protocol
(155 Mbps)

- +5 V Transceiver

- Single mode fiber

- Connector options

Warnings

Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

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