

## B-15/13-1250-TDPM-Sxx-60



## **Features**

- Coaxial single mode single fiber package with optional SC/FC/ST/MU connector
- Wavelength Tx 1550 nm/ Rx 1310nm
- Compliant with IEEE 802.3z Gigabit Ethernet
- Single +5V Power Supply
- PECL Differential Inputs and Outputs
- Wave Solderable and Aqueous washable
- 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 Ratir	ng				
Parameter	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V <sub>cc</sub>	0	6	V	
Input Voltage		GND	V <sub>cc</sub>	V	
Output Current	l <sub>out</sub>	-	30	mA	
Soldering Temperature	-	-	260	°C	10 seconds on leads only
Operating Temperature	T <sub>opr</sub>	0	70	°C	
Storage Temperature	T <sub>stg</sub>	-40	85	°C	

Recommended Operating					
Parameter	Symbol	Min.	Тур.	Max.	Unit
Power Supply Voltage	V <sub>cc</sub>	4.75	5	5.25	V
Operating Temperature	T <sub>opr</sub>	0	-	70	°C
Data Rate	-	-	1250	-	Mbps

Transmitter Specifications, (	0°C <t<sub>opr&lt;70</t<sub>	°C, 4.75V<	V <sub>CC</sub> <5.25V)			
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical						
Optical Transmit Power	Po	-10	-	-4	dBm	Output power is coupled into a 9/125 µm single mode fiber
Output center Wavelength	λ	1500	1550	1600	nm	
Output Spectrum Width	Δλ	-	-	1	dB	-20dB width
Side Mode Suppression Ratio	Sr	30	35	1	dB	CW, P <sub>0</sub> =5mW
Extinction Ratio	ER	9	-	-	dB	
Output Eye		Compliant v	with IEEE 802.	3z		
Optical Rise Time	Tr	-	-	0.26	ns	20% to 80% Values
Optical Fall Time	Tf	-	-	0.26	ns	20% to 80% Values
Optical Isolation	-	30	-	-	dB	Tx:1550 nm/ Rx:1310 nm
Optical Return Loss	-	14	-	-	dB	
Relative Intensity Noise	RIN	-	-	-120	dB/Hz	
Total Jitter	TJ	-	-	0.27	ns	Measured with 2 <sup>7</sup> -1

# 1.25 Gbps Bi-directional Single Fiber Transceiver

## B-15/13-1250-TDPM-Sxx-60

Transmitter Specifications, (0°C <t<sub>opr&lt;70°C, 4.75V<v<sub>CC&lt;5.25V)</v<sub></t<sub>							
Parameter	Symbol	Min	Typical	Max	Unit	Notes	
Electrical							
Power Supply Current	I <sub>CC</sub>	-	-	160	mA	Maximum current is specified at Vcc= Maximum @ maximum temperature	
Data Input Current-Low	I <sub>IL</sub>	-350	-	-	μΑ		
Data Input Current-High	I <sub>IH</sub>	-	-	350	μΑ		
Differential Input Voltage	V <sub>IH</sub> -V <sub>IL</sub>	300	-	-	mV		
Data Input Voltage-Low	V <sub>IL</sub> -V <sub>CC</sub>	-2.0	-	-1.58	V	These inputs are compatible with 10K, 10KH and	
Data Input Voltage-High	V <sub>IH</sub> -V <sub>CC</sub>	-1.1	-	-0.74	V	100K ECL and PECL inputs	

Receiver Specifications, (0°C <t<sub>opr&lt;70°C, 4.75V<v<sub>CC&lt;5.25V)</v<sub></t<sub>							
Parameter	Symbol	Min	Typical	Max	Unit	Notes	
Optical							
Sensitivity	-	-	-	-22	dBm	Measured with 2 <sup>7</sup> -1 PRBS, BER=10 <sup>-12</sup>	
Maximum Input Power	P <sub>in</sub>	-3	-	-	dBm		
Signal Detect-Asserted	Pa	-	-	-22	dBm	Measured on transition: low to high	
Signal Detect-Deasserted	Pd	-35	-	-	dBm	Measured on transition: high to low	
Signal Detect-Hysteresis		-	3.0	-	dB		
Cross Talk	-	-	-	-33	dB		
Wavelength of Operation		1260	-	1360	nm		

Receiver Specifications, (0°C <t<sub>opr&lt;70°C, 4.75V<v<sub>CC&lt;5.25V)</v<sub></t<sub>							
Parameter	Symbol	Min	Typical	Max	Unit	Note	
Electrical							
Power Supply Current	I <sub>CC</sub>	-	-	100	mA	The current excludes the output load current	
Data Output Voltage-Low	$V_{OL}$ - $V_{cc}$	-1.9	-	-1.6	V		
Data Output Voltage-High	$V_{OH}$ $V_{CC}$	-1.1	-	-0.8	V	These outputs are compatible with 10K,	
Signal Detect Output Voltage-Low	$V_{SDL-Vcc}$	-1.9	-	-1.6	V	10KH and 100KECL and LVPECL outputs	
Signal Detect Output Voltage-High	$V_{SDH-}V_{cc}$	-1.1	-	-0.8	V		



## **1.25 Gbps Bi-directional Single Fiber Transceiver**

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## **Connection Diagram**

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

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	+5V 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

Vcc

Rx Vcc

- Tx Vcc

Notes:

C4=10µF L1=L2=1µH

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

 $R2=R4=R6=R8=R10=130\Omega$  $C1=C2=C3=C5=C6=0.1\mu$ F

**Recommended Circuit Schematic** 

## B-15/13-1250-TDPM-Sxx-60

#### Tx Vcc Rx Vcc 9 8 7 5 4 3 2 6 C6 R9 8 ₹ % R7 R3 R5 TD+ ► RD+ TD-► RD-Tx Vcc ► SD Rx Vcc R10 g No internal No internal connection connection R6 Transceiver Top view

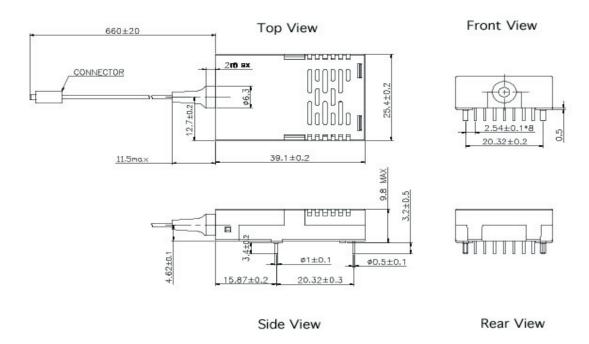
Ine spirt-loaded terminations for ECL signals need to be located at the input of devices receiving those ECL signals.

The power supply filtering is required for good EMI performance. Use short tracks from the inductor L1/L2 to the module Rx Vcc. A GND plane under the module is required for good EMI and sensitivity performance.

## B-15/13-1250-TDPM-Sxx-60

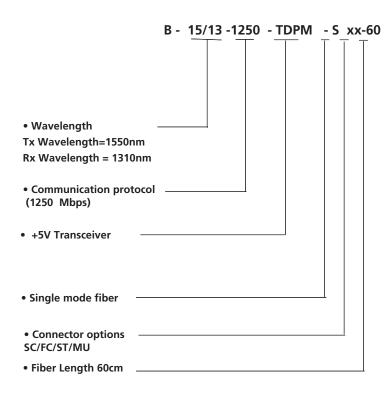
Package Diagram

## Diplexer Transceiver Assembly



## B-15/13-1250-TDPM-Sxx-60

## **Ordering Information**



## 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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