



Features

- Coaxial single mode single fiber package with optional SC/FC/ST connector
- Wavelength Tx 1550 nm/Rx 1310 nm
- SONET OC-12 SDH STM-4 Compliant
- Single +5V/+3.3V Power Supply
- PECL/LVPECL Differential Inputs and Outputs
- Wave Solderable and Aqueous Washable
- Class 1 Laser Int. Safety Standard IEC 825 Compliant
- Uncooled Laser diode with MQW structure
- Complies with Telcordia (Bellcore) GR-468-CORE
- Optical Isolation > 30 dB
- Cross talk < -33 dB
- Optical Return Loss >14 dB
- RoHS compliance available

Table 1 – Absolute Maximum Rating

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Power Supply Voltage	V _{cc}	0	-	6	V	
Power Supply Voltage	V _{cc}	0	-	3.6	V	
Output Current	I _{out}	-	-	30	mA	
Soldering Temperature	-	-	-	260	°C	1
Storage Temperature	T _{stg}	-40	-	85	°C	

Note 1: 10 seconds on leads only

Table 2 – Recommended Operating Condition

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Power Supply Voltage	V _{cc}	4.75	5	5.25	V	
Power Supply Voltage	V _{cc}	3.1	3.3	3.5	V	
Operating Temperature (Case)	T _{opr}	0	-	70	°C	
Operating Temperature (Case)	T _{opr}	-40	-	85	°C	
Data Rate	DR	-	622	-	Mbps	

Table 3 – Transmitter Specifications (Optical)

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Optical Transmit Power	P_o	-3	-	+2	dBm	2
Output Center Wavelength	λ_c	1500	1550	1600	nm	
Output Spectrum Width	$\Delta \lambda$	-	-	2.5	nm	
Optical Rise/Fall Time	t_r/t_f	-	-	1.2	ns	3
Extinction Ratio	ER	8.2	-	-	dB	
Output Eye	Compliant with ITU-T recommendation G.957/STM-1					
Optical Isolation	-	30	-	-	dB	4
Optical Return Loss	-	14	-	-	dB	
Relative Intensity Noise	RIN	-	-	-120	dB/Hz	
Total Jitter	T_J	-	-	0.55	ns	5

Note 2: Output power is coupled into a 9/125 μ m single mode fiber

Note 3: 10% to 90% Values

Note 4: Tx: 1310 nm/ Rx: 1550 nm

Note 5: Measured with $2^{23}-1$ PRBS with 72 ones and 72 zeros.

Table 4 – Transmitter Specifications (Electrical)

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Power Supply Current	I_{CC}	-	-	180	mA	6
Data Input Current-Low	I_{IL}	-350	-	-	μ A	
Data Input Current-High	I_{IH}	-	-	350	μ A	
Differential Input Voltage	$V_{IH}-V_{IL}$	300	-	-	mV	
Data Input Voltage-Low	$V_{IL}-V_{CC}$	-2.0	-	-1.58	mV	
Data Input Voltage-High	$V_{IH}-V_{CC}$	-1.1	-	-0.74	mV	7

Note 6: Maximum current is specified at V_{CC} =Maximum @ maximum temperature

Note 7: These inputs are compatible with 10K, 10KH and 100K ECL and PECL inputs

Table 5 – Receiver Specifications (Optical)

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Sensitivity	-	-	-	-28	dBm	8
Maximum Input Power	P_{in}	-3	-	-	dBm	
Signal Detect-Asserted	P_a	-	-	-28	dBm	9
Signal Detect-Deasserted	P_d	-40	-	-	dBm	10
Signal Detect-Hysteresis	-	-	3.0	-	dB	
Cross Talk	-	-	-	-33	dB	
Wavelength of Operation		1290	-	1330	nm	

Note 8: Measured with $2^{23}-1$ PRBS with 72 ones and 72 zeros, (ITU-T recommendation G.958)

Note 9: Measured on transition: low to high,

Note 10: Measured on transition: high to low.

Table 6 – Receiver Specifications (Electrical)

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Power Supply Current	I_{CC}	-	-	100	mA	11
Data Output Voltage-Low	$V_{OL}-V_{CC}$	-1.9	-	-1.6	V	12
Data Output Voltage-High	$V_{OH}-V_{CC}$	-1.1	-	-0.8	V	
Signal Detect Output Voltage-Low	$V_{SDL}-V_{CC}$	-1.9	-	-1.6	V	
Signal Detect Output Voltage-High	$V_{SDH}-V_{CC}$	-1.1	-	-0.8	V	

Note 11: The current excludes the output load current

Note 12: These outputs are compatible with 10K, 10KH and 100KECL and LVPECL outputs.

Connection Diagram

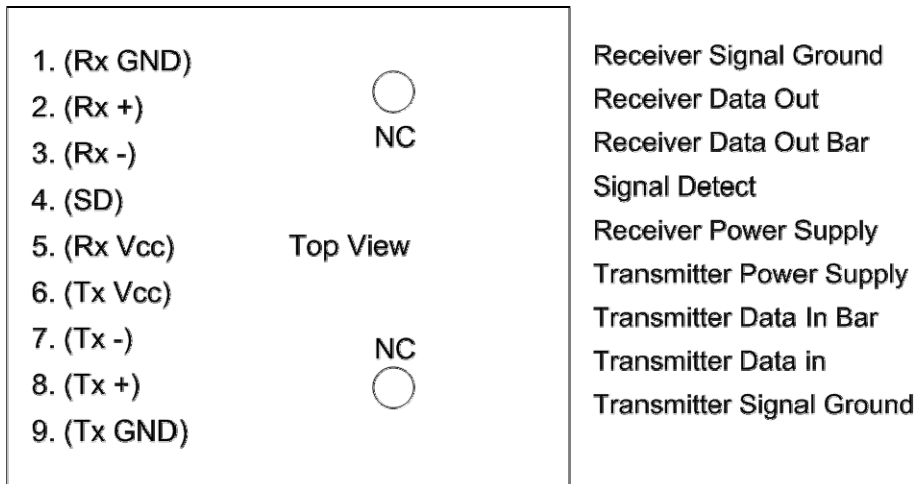
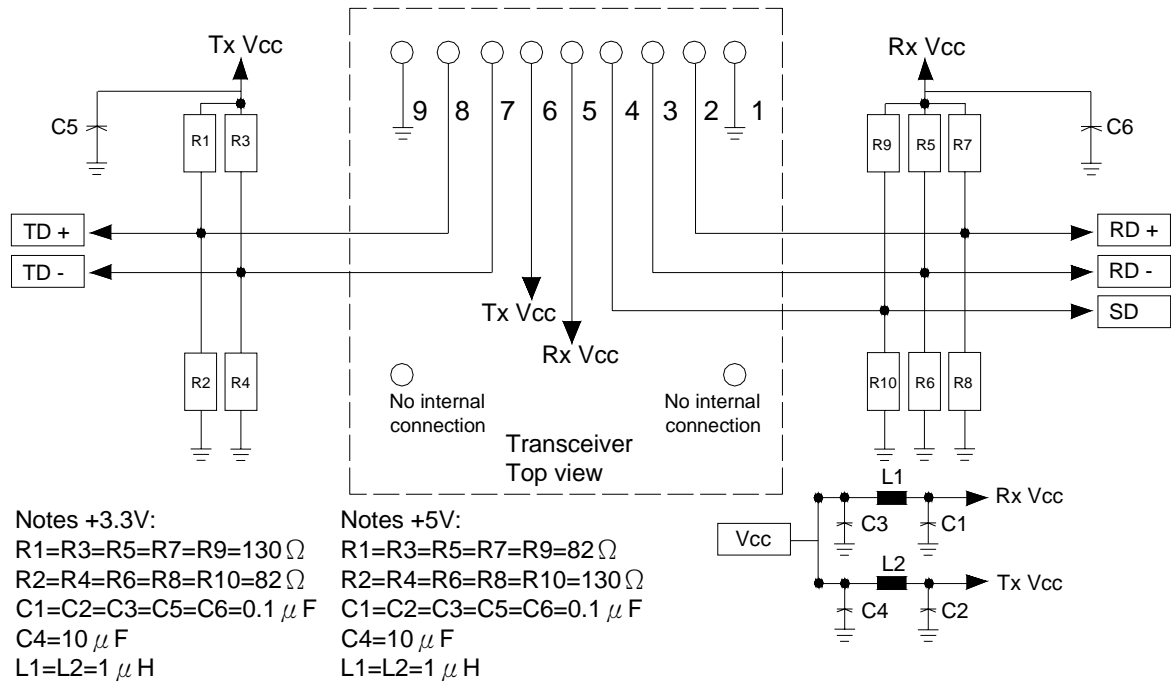


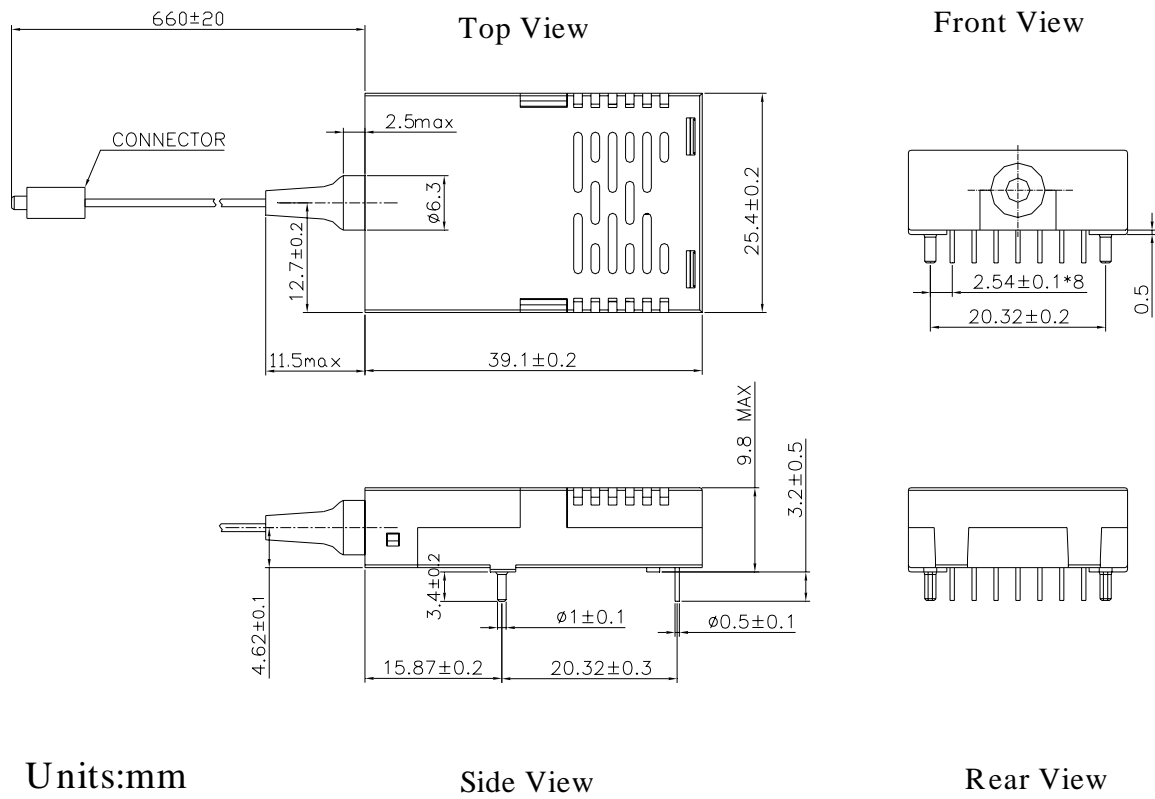
Table 7 – Pin Definitions

Pin	Unit	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	DC power for the receiver section
6	TxVcc	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

Recommended Circuit Schematic



Package Diagram



Units:mm

Side View

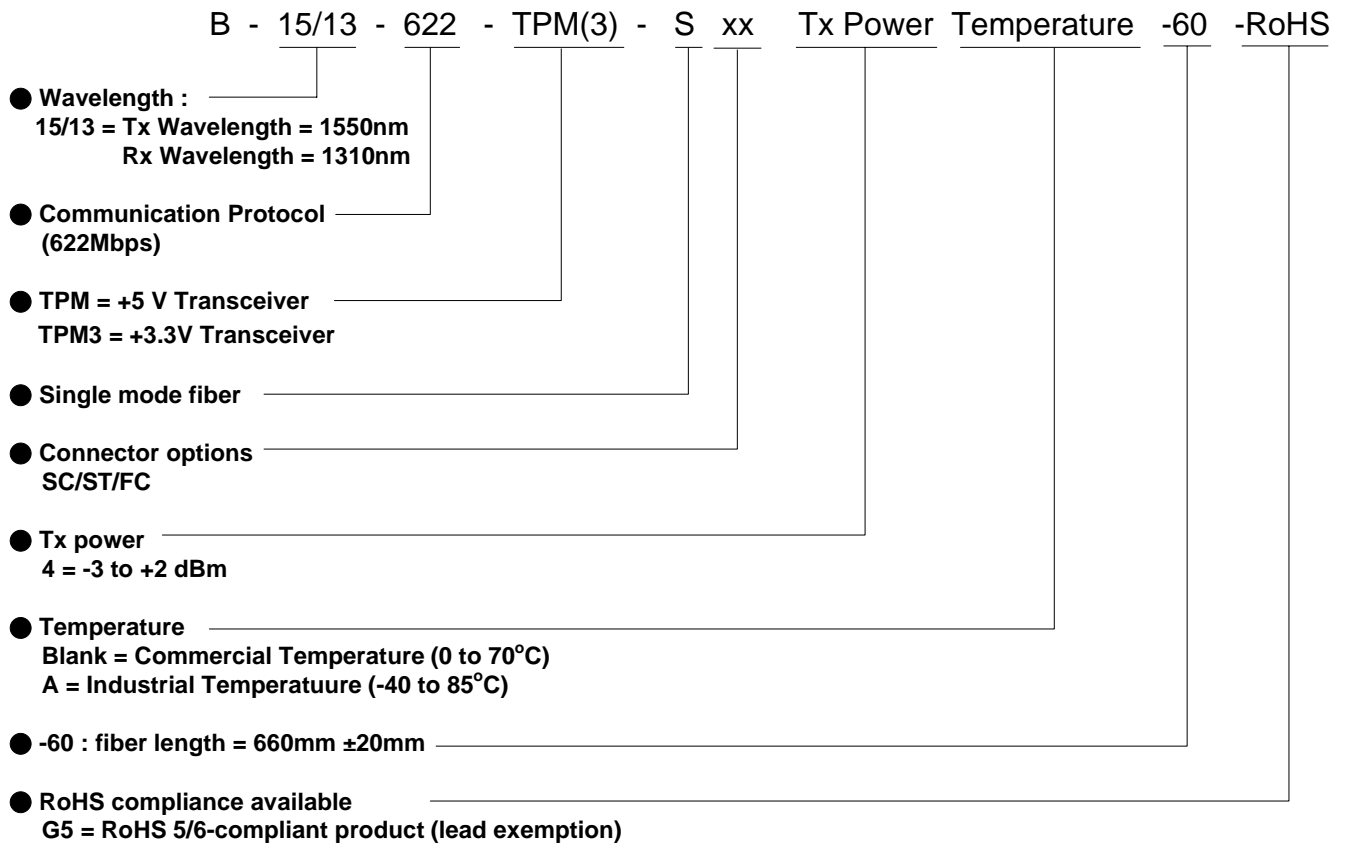
Rear View

Order Information

Table 8 – Order Information

Part No.	Part No.
B-15/13-622-TPM-SSC4-60-G5	B-15/13-622-TPM3-SSC4-60-G5
B-15/13-622-TPM-SST4-60-G5	B-15/13-622-TPM3-SST4-60-G5
B-15/13-622-TPM-SFC4-60-G5	B-15/13-622-TPM3-SFC4-60-G5
B-15/13-622-TPM-SSC4A-60-G5	B-15/13-622-TPM3-SSC4A-60-G5
B-15/13-622-TPM-SST4A-60-G5	B-15/13-622-TPM3-SST4A-60-G5
B-15/13-622-TPM-SFC4A-60-G5	B-15/13-622-TPM3-SFC4A-60-G5

Part Numbering Definition:



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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