STX / SRX
SONET/SDH Transmitters & Receivers



Features

- ☑ *Fully compliant with SONET/SDH OC-1 to OC-24 (52 Mb/s, 156 Mb/s, 622 Mb/s & 1.25 Gb/s) specifications*
- ☑ *Long Reach 1310 nm (40 km distance), Long Reach 1550 nm (80 km distance) as well as Intermediate Reach (15 km)*
- ☑ *Eye Safe (Class I Laser Safety)*
- ☑ *- 40°C to +85°C Operating Temperature (option "A")*
- ☑ *Multi-sourced 20-pin DIP metal package*
- ☑ *FC, ST, LC, MU, SC-connectorized fiber pigtails or Integral FC , SC or ST connector receptacle*

Description

The STX and SRX modules are laser transmitters and receivers designed to meet or exceed the SONET/SDH optical interface requirements at OC-1 (52 Mb/s), OC-3/STM-1 (155 Mb/s), OC-12/STM-4 (622 Mb/s), and OC-24 (1.25 Gb/s) data rates. Many performance versions are available which are fully compliant with Intermediate Reach and Long Reach specifications at 1300 nm or 1550 nm wavelength. All modules satisfy Class I Laser Safety requirements in accordance with the US FDA/CDRH and international IEC-825 standards.

The transmitter features an Automatic Power Control (APC) circuit to maintain the optical output power at a constant level against variations in ambient temperature and device aging. A Laser Disable control input is also provided. The laser bias current and back-facet light output can also be monitored. The receiver features a low noise GaAs transimpedance IC with AGC capability to provide an extremely wide dynamic range. A Signal Detect function which indicates loss of optical input is also provided.

The transmitter can be operated with a single supply, either +5 V or - 5 V. The receiver can be operated with dual +5 V and - 5 V supply, or single +5 V supply, or single - 5 V supply. The electrical interface signals are differential ECL or PECL. If TTL interfaces for SIGNAL DETECT outputs are required, the SRX-12-L receivers can be used (please refer to the SRX-12-L data sheet).

Both modules operate over an operating temperature range of 0°C to +70°C ("B" option) or -40°C to +85°C ("A" option). They are housed in a 20-pin dual-in-line metal package with integral ST, FC or SC connector receptacle or fiber pigtail (single mode fiber for the transmitter and 50 μm multimode fiber for the receiver). The fiber pigtail is terminated with ST, FC, LC, MU or SC connector.

Absolute Maximum Ratings

Parameter		Symbol	Minimum	Maximum	Units
Storage Temperature		T_{st}	- 40	+ 85	°C
Operating Temperature	"A" option	T_{op}	- 40	+ 85	°C
	"B" option		0	+ 70	
Operating & Storage Humidity		-	-	85	%
Supply Voltage		V_{CC} - V_{EE}	0	+ 6.0	V
Input Voltage (to Transmitter)		V_{in}	V_{EE}	V_{CC}	V
Lead Soldering Temperature & Time		-	-	260°C, 10 sec	

OC-1 Transmitter & Receiver: STX-01 & SRX-01

Transmitter Performance Characteristics (over Operating Case Temperature)

Parameter		Symbol	Minimum	Typical	Maximum	Units
Data Rate		B	5	52	100	Mb/s
Average Optical Output Power (coupled into single mode fiber), 50% duty cycle	HP	P_o	- 3.0	0	+2.0	dBm
	L0		- 5.0	- 3.0	0	
	L1		- 8.0	- 5.0	- 2.0	
	L2		- 12.0	- 8.0	- 5.0	
	L3		- 15.0	- 11.0	- 8.0	
Extinction Ratio		P_{hi} / P_{lo}	10	-	-	dB
Center Wavelength	IR (Intermediate Reach)	λ_c	1261	1310	1360	nm
	LR1 (Long Reach 1310 nm)		1280	1310	1335	
	LR2 (Long Reach 1550 nm)		1480	1550	1580	
Spectral Width (RMS)	LR1 (0°C to 70°C) & IR	$\Delta\lambda_{RMS}$	-	-	4	nm
Spectral Width (-20 dB)	LR1 (-40°C to 85°C) & LR2	$\Delta\lambda_{20}$	-	-	1	
Side Mode Suppression Ratio	LR1 (-40°C to 85°C) & LR2	$SMSR$	30	-	-	dB
Optical Rise and Fall Time (10% to 90%)		t_r, t_f	-	2	4	ns
Optical Output Eye	compliant with Bellcore TR-NWT-000253 and ITU-T Recommendation G.957					

Receiver Performance Characteristics (over Operating Case Temperature)

Parameter		Symbol	Minimum	Typical	Maximum	Units
Data Rate		B	5	52	100	Mb/s
Receiver Sensitivity (10^{-10} BER) [1]		P_{min}	- 40.0	- 42.0	-	dBm
Maximum Input Optical Power (10^{-10} BER) [1]	Dual supply	P_{max}	- 3.0	0	-	dBm
	Single supply		- 6.0	0	-	
Signal Detect Thresholds	Increasing Light Input	P_{sd+}	-	-	- 40.0	dBm
	Decreasing Light Input	P_{sd-}	- 50.0	-	-	
Signal Detect Hysteresis		-	0.5	1.5	-	dB
Wavelength of Operation		λ	1100	-	1600	nm

[1] Specified in Average Optical Input Power and measured at 52 Mb/s and 1300 nm wavelength with 2^{23}-1 PRBS.

Ordering Information

SXX - 01 - *YYY* -T- *Ln* - *DR*

Model
STX: Transmitter
SRX: Receiver

Package style
PFC: pigtailed with FC
PSC: pigtailed with SC
PST: pigtailed with ST
PLC: pigtailed with LC
PMU: pigtailed with MU
FC : FC Receptacle
ST : ST Receptacle
SC : SC Receptacle

Temperature Range
A: - 40°C to +85°C
B: 0°C to +70°C

Light Output (TX only)
HP: 0 dBm (typ.)
L0: - 3 dBm (typ.)
L1: - 5 dBm (typ.)
L2: - 8 dBm (typ.)
L3: - 11 dBm (typ.)

Distance Option (TX only)
specifies the range for Center Wavelength & Spectral Width to be compliant with SONET/SDH standard
"Blank" : Intermediate Reach
LR1 : Long Reach 1310 nm
LR2 : Long Reach 1550 nm

NOTES

1. For full compliance with OC-1 Intermediate Reach standard, the STX-01-*YYY*-A-L3 & STX-01-*YYY*-B-L3 are recommended.
2. For full compliance with OC-1 Long Reach 1310 nm standard, the STX-01-*YYY*-A-L0-LR1 & STX-01-*YYY*-B-L0-LR1 are recommended. The STX-01-*YYY*-A-L0-LR1 uses a DFB laser to satisfy the - 40°C to +85°C requirement for Center Wavelength.
3. For full compliance with OC-1 Long Reach 1550 nm standard, the STX-01-*YYY*-A-L0-LR2 & STX-01-*YYY*-B-L0-LR2 are recommended. Both modules use DFB lasers.
   However, the STX-01-*YYY*-A-L0-LR2 module is specified only over - 25°C to +70°C temperature range.
4. The LR1 (-40°C to +85°C) and LR2 options are only available with DFB lasers and L0 or HP optical power levels.

OC-3/STM-1 Transmitter & Receiver: STX-03 & SRX-03

Transmitter Performance Characteristics (over Operating Case Temperature)

Parameter		Symbol	Minimum	Typical	Maximum	Units
Data Rate		B	50	156	300	Mb/s
Average Optical Output Power (coupled into single mode fiber), 50% duty cycle	HP	P_o	- 3.0	0	+2.0	dBm
	L0		- 5.0	- 3.0	0	
	L1		- 8.0	- 5.0	- 2.0	
	L2		- 12.0	- 8.0	- 5.0	
	L3		- 15.0	- 11.0	- 8.0	
Extinction Ratio		P_{hi} / P_{lo}	10	-	-	dB
Center Wavelength	IR (Intermediate Reach)	λ_c	1261	1310	1360	nm
	LR1 (Long Reach 1310 nm)		1280	1310	1335	
	LR2 (Long Reach 1550 nm)		1480	1550	1580	
Spectral Width (RMS)	LR1 (0°C to 70°C) & IR	$\Delta\lambda_{RMS}$	-	-	4	nm
Spectral Width (-20 dB)	LR1 (-40°C to 85°C) & LR2	$\Delta\lambda_{20}$	-	-	1	
Side Mode Suppression Ratio	LR1 (-40°C to 85°C) & LR2	$SMSR$	30	-	-	dB
Optical Rise and Fall Time (10% to 90%)		t_r, t_f	-	1	2	ns
Optical Output Eye	compliant with Bellcore TR-NWT-000253 and ITU-T Recommendation G.957					

Receiver Performance Characteristics (over Operating Case Temperature)

Parameter		Symbol	Minimum	Typical	Maximum	Units
Data Rate		B	50	156	200	Mb/s
Receiver Sensitivity (10^{-10} BER) [1]		P_{min}	- 35.0	- 38.0	-	dBm
Maximum Input Optical Power (10^{-10} BER) [1]	Dual supply	P_{max}	- 3.0	0	-	dBm
	Single supply		- 6.0	0	-	
Signal Detect Thresholds	Increasing Light Input	P_{sd+}	-	-	- 35.0	dBm
	Decreasing Light Input	P_{sd-}	- 45.0	-	-	
Signal Detect Hysteresis		-	0.5	1.5	-	dB
Wavelength of Operation		λ	1100	-	1600	nm

[1] Specified in Average Optical Input Power and measured at 156 Mb/s and 1300 nm wavelength with 2^{23}-1 PRBS.

Ordering Information

SXX - 03 - YYY -T- Ln - DR

Model
STX: Transmitter
SRX: Receiver

Package style
PFC: pigtailed with FC
PSC: pigtailed with SC
PST: pigtailed with ST
PLC: pigtailed with LC
PMU: pigtailed with MU
FC : FC Receptacle
ST : ST Receptacle
SC : SC Receptacle

Temperature Range
A: - 40°C to +85°C
B: 0°C to +70°C

Light Output (TX only)
HP: 0 dBm (typ.)
L0: - 3 dBm (typ.)
L1: - 5 dBm (typ.)
L2: - 8 dBm (typ.)
L3: - 11 dBm (typ.)

Distance Option (TX only)
specifies the range for Center Wavelength & Spectral Width to be compliant with SONET/SDH standard
"Blank" : Intermediate Reach / S-1.1
LR1 : Long Reach 1310 nm / L-1.1
LR2 : Long Reach 1550 nm / L-1.2

NOTES

1. For full compliance with OC-3/STM-1 Intermediate Reach/S-1.1 standard, the STX-03-*YYY*-*T*-L3 modules are recommended.
2. For full compliance with OC-3/STM-1 Long Reach 1310 nm/L-1.1 standard, the STX-03-*YYY*-A-L0-LR1 & STX-03-*YYY*-B-L0-LR1 are recommended. The STX-01-*YYY*-A-L0-LR1 uses a DFB laser to satisfy the Center Wavelength requirement.
3. For full compliance with OC-3/STM-1 Long Reach 1550 nm/L-1.2 standard, the STX-03-*YYY*-A-L0-LR2 & STX-03-*YYY*-B-L0-LR2 are recommended. Both modules use DFB lasers. However, the STX-03-*YYY*-A-L0-LR2 module is specified only over - 25°C to +70°C temperature range. Please consult OCP Sales for the - 40°C to +70°C pigtailed option.
4. The LR1 (-40°C to +85°C) and LR2 options are only available with DFB lasers and L0 or HP optical power levels.

OC-12/STM-4 Transmitter & Receiver: STX-12 & SRX-12

Transmitter Performance Characteristics (over Operating Case Temperature)

Parameter		Symbol	Minimum	Typical	Maximum	Units
Data Rate		B	50	622	700	Mb/s
Average Optical Output Power (coupled into single mode fiber), 50% duty cycle	HP	P_o	- 3.0	0	+2.0	dBm
	L0		- 5.0	- 3.0	0	
	L1		- 8.0	- 5.0	- 2.0	
	L2		- 12.0	- 8.0	- 5.0	
	L3		- 15.0	- 11.0	- 8.0	
Extinction Ratio	SR & IR	P_{hi} / P_{lo}	8.2	-	-	dB
	LR1 & LR2		10	-	-	
Center Wavelength [1]	SR (Short Reach)	λ_c	1261	1310	1360	nm
	IR (Intermediate Reach)		1274	1310	1356	
			1293	1310	1334	
	LR1 (Long Reach 1310 nm)		1280	1310	1335	
	LR2 (Long Reach 1550 nm)		1480	1550	1580	
Spectral Width (RMS) [1]	SR (Short Reach)	$\Delta\lambda_{RMS}$	-	-	4.0	nm
	IR (Intermediate Reach)		-	-	2.5	
			-	-	4.0	
Spectral Width (-20 dB)	LR1 & LR2	$\Delta\lambda_{20}$	-	-	1.0	
Side Mode Suppression Ratio	LR1 & LR2	$SMSR$	30	-	-	dB
Optical Rise and Fall Time (10% to 90%)		t_r, t_f	-	0.5	1.0	ns
Optical Output Eye	compliant with Bellcore TR-NWT-000253 and ITU-T Recommendation G.957					

[1] For Intermediate Reach version, the Center Wavelength is either 1274 nm $\leq \lambda_c \leq$ 1356 nm for $\Delta\lambda_{RMS} \leq$ 2.5 nm
or 1293 nm $\leq \lambda_c \leq$ 1334 nm for $\Delta\lambda_{RMS} \leq$ 4.0 nm.

Receiver Performance Characteristics (over Operating Case Temperature)

Parameter		Symbol	Minimum	Typical	Maximum	Units
Data Rate		B	50	622	700	Mb/s
Receiver Sensitivity (10^{-10} BER) [1]		P_{min}	- 29.0	- 31.0	-	dBm
Maximum Input Optical Power (10^{-10} BER) [1]	Dual supply	P_{max}	- 3.0	0	-	dBm
	Single supply		- 6.0	0	-	
Signal Detect Thresholds	Increasing Light Input	P_{sd+}	-	-	- 29.0	dBm
	Decreasing Light Input	P_{sd-}	- 40.0	-	-	
Signal Detect Hysteresis		-	0.5	1.5	-	dB
Wavelength of Operation		λ	1100	-	1600	nm

[1] Specified in Average Optical Input Power and measured at 622 Mb/s and 1300 nm wavelength with 2^{23}-1 PRBS.

Ordering Information

SXX - 12 - YYY -T- Ln - DR

Model
STX: Transmitter
SRX: Receiver

Package style
PFC: pigtailed with FC
PSC: pigtailed with SC
PST: pigtailed with ST
PLC: pigtailed with LC
PMU: pigtailed with MU
FC : FC Receptacle
ST : ST Receptacle
SC : SC Receptacle

Temperature Range
A: - 40°C to +85°C
B: 0°C to +70°C

Light Output (TX only)
HP: 0 dBm (typ.)
L0: - 3 dBm (typ.)
L1: - 5 dBm (typ.)
L2: - 8 dBm (typ.)
L3: - 11 dBm (typ.)

Distance Option (TX only)
specifies the range for Center Wavelength & Spectral Width to be compliant with SONET/SDH standard
"Blank": Short Reach (SR)
IR :Intermediate Reach / S-4.1
LR1 : Long Reach 1310 nm / L-4.1
LR2 : Long Reach 1550 nm / L-4.2

NOTES

1. For full compliance with OC-12/STM-4 Intermediate Reach/S-4.1 standard, the STX-12-*YYY*-*T*-L3-IR modules are recommended.
2. For full compliance with OC-12/STM-4 Long Reach 1310 nm/L-4.1 standard, the STX-12-*YYY*-*T*-HP-LR1 modules are recommended. They use DFB lasers to satisfy the Center Wavelength and Spectral Width requirement.
3. For full compliance with OC-12/STM-4 Long Reach 1550 nm/L-4.2 standard, the STX-12-*YYY*-*T*-HP-LR2 modules are recommended. Both modules use DFB lasers. However, the STX-12-*YYY*-A-HP-LR2 module is specified only over - 25°C to +70°C temperature range. Please consult OCP Sales for the - 40°C to +70°C pigtailed option.
4. The LR1 and LR2 options are only available with DFB lasers and L0 or HP optical power levels.

OC-24 Transmitter & Receiver: STX-24 & SRX-24

Transmitter Performance Characteristics (over Operating Case Temperature)

Parameter		Symbol	Minimum	Typical	Maximum	Units
Data Rate		B	50	1250	1500	Mb/s
Average Optical Output Power (coupled into single mode fiber), 50% duty cycle	HP	P_o	- 3.0	0	+2.0	dBm
	L0 [1]		- 5.0	- 3.0	0	
	L1		- 8.0	- 5.0	- 2.0	
	L2		- 12.0	- 8.0	- 5.0	
	L3		- 15.0	- 11.0	- 8.0	
Extinction Ratio	SR & IR	P_{hi} / P_{lo}	8.2	-	-	dB
	LR1 & LR2		10	-	-	
Center Wavelength [2]	SR (Short Reach) & IR (Intermediate Reach)	λ_c	1261	1310	1360	nm
	LR1 (Long Reach 1310 nm)		1280	1310	1335	
	LR2 (Long Reach 1550 nm)		1480	1550	1580	
Spectral Width (RMS) [2]	SR (Short Reach)	$\Delta\lambda_{RMS}$	-	-	4.0	nm
Spectral Width (-20 dB)	IR (Intermediate Reach)	$\Delta\lambda_{20}$	-	-	1.0	
	LR1 & LR2		-	-	1.0	
Side Mode Suppression Ratio	LR1 & LR2	$SMSR$	30	-	-	dB
Optical Rise and Fall Time (10% to 90%)		t_r, t_f	-	0.3	0.5	ns
Optical Output Eye	compliant with Bellcore TR-NWT-000253					

[1] The power specifications for the L0 version for LR2 is - 4.0 dBm min. and +1 dBm. max.

Receiver Performance Characteristics (over Operating Case Temperature)

Parameter		Symbol	Minimum	Typical	Maximum	Units
Data Rate		B	5	1250	1500	Mb/s
Receiver Sensitivity (10^{-10} BER) [1]		P_{min}	- 22.0	- 26.0	-	dBm
Maximum Input Optical Power (10^{-10} BER) [1]	Dual supply	P_{max}	0	+2	-	dBm
	Single supply		- 5.0	0	-	
Signal Detect Thresholds	Increasing Light Input	P_{sd+}	-	-	- 22.0	dBm
	Decreasing Light Input	P_{sd-}	- 35.0	-	-	
Signal Detect Hysteresis		-	0.5	1.5	-	dB
Wavelength of Operation		λ	1100	-	1600	nm

[1] Specified in Average Optical Input Power and measured at 1250 Mb/s and 1300 nm wavelength with 2^{23}-1 PRBS.

Ordering Information

SXX - 24 - YYY -T- Ln - DR

Model
STX: Transmitter
SRX: Receiver

Package style
PFC: pigtailed with FC
PSC: pigtailed with SC
PST: pigtailed with ST
PLC: pigtailed with LC
PMU: pigtailed with MU
FC : FC Receptacle
ST : ST Receptacle
SC : SC Receptacle

Temperature Range
A: - 40°C to +85°C
B: 0°C to +70°C

Light Output (TX only)
HP: 0 dBm (typ.)
L0: - 3 dBm (typ.)
L1: - 5 dBm (typ.)
L2: - 8 dBm (typ.)
L3: - 11 dBm (typ.)

Distance Option (TX only)
specifies the range for Center Wavelength & Spectral Width to be compliant with SONET/SDH standard
"Blank": Short Reach (SR)
IR :Intermediate Reach
LR1 : Long Reach 1310 nm
LR2 : Long Reach 1550 nm

NOTES

1. The STX-24-*YYY*-A-L2 & STX-24-*YYY*-B-L2 are fully compliant with OC-24 Short Reach standard.
2. The STX-24-*YYY*-A-L0-IR & STX-24-*YYY*-B-L0-IR are fully compliant with OC-24 Intermediate Reach standard.
   The STX-24-*YYY*-A-L0-LR1 & STX-24-*YYY*-B-L0-LR1 are fully compliant with OC-24 Long Reach 1310 nm standard.
   The STX-24-*YYY*-A-L0-LR2 & STX-24-*YYY*-B-L0-LR2 are fully compliant with OC-24 Long Reach 1550 nm standard.
   They all use DFB lasers. In addition, the STX-24-*YYY*-A-L0-LR2 module is specified only over - 25°C to +70°C temperature range.
3. The IR option is available only with DFB lasers and L0 or HP optical power levels.
4. The LR1 and LR2 options are available only with DFB lasers and L0 or HP optical power levels.
5. The SRX-24 receiver is only specified for the Short Reach & Intermediate Reach standard. The Long Reach version is not available yet.

Transmitter Electrical Interface

Parameter		Symbol	Minimum	Typical	Maximum	Units
Supply Voltage [1]		V_{CC} - V_{EE}	4.75	5.0	5.5	V
Supply Current	receptacled-DFB	I	-	90	150	mA
	all others		-	70	130	
Input HIGH Voltage		V_{IH}	V_{CC} - 1.165	-	V_{CC} - 0.880	V
Input LOW Voltage		V_{IL}	V_{CC} - 1.810	-	V_{CC} - 1.475	V
Transmitter Disable Voltage		V_{DIS}	V_{CC} - 2.0	-	V_{CC}	V
Transmitter Enable Voltage		V_{EN}	V_{EE}	-	V_{EE} + 0.8	V
Differential Bias Monitor Voltage	at 25°C	$V_{BM,DIF}$	-	80	120	mV
	at 85°C		-	280	500	
Differential Back Facet Monitor Voltage		$V_{FM,DIF}$	20	100	200	mV

[1] For - 5V single supply, connect V_{CC} to 0V (circuit ground) and V_{EE} to - 5V.
For +5V single supply, connect V_{CC} to +5V and V_{EE} to 0V (circuit ground).
CASE is always connected to circuit ground.

Receiver Electrical Interface

Parameter	Symbol	Minimum	Typical	Maximum	Units
Supply Voltage [1]	V_{CC} - V_{EE}	4.75	5.0	5.5	V
	V_{PD}	- 10.0	- 5.0	- 2.0	V
Supply Current	I	-	85	120	mA
Output HIGH Voltage	V_{OH}	V_{CC} - 1.06	-	V_{CC} - 0.85	V
Output LOW Voltage	V_{OL}	V_{CC} - 1.86	-	V_{CC} - 1.59	V

[1] For +5V & - 5V dual supply: V_{CC} = +5V, V_{EE} = CASE = 0V (circuit ground) and V_{PD} = - 5V.
For +5V single supply : V_{CC} = +5V and V_{EE} = V_{PD} = CASE = 0V (circuit ground).
For - 5V single supply : V_{CC} = CASE = 0V (circuit ground) and V_{EE} = V_{PD} = - 5V.
CASE is always connected to circuit ground.

Application Notes

Transmitter: When the DATA+ input is at logic HIGH and DATA- input is at logic LOW, the LD is ON; and vice versa. In single-ended applications, the unused input pin should be biased to V_{CC} - 1.29 V. The transmitter is normally enabled (i.e. when the DISABLE control input is not connected). When the DISABLE control input voltage is higher than V_{CC} - 2 V, the laser is disabled (less than -30dBm output power) independent of the input data.

Receiver: Both differential DATA+ and DATA- outputs are PECL/ECL levels requiring termination (50 ohms to V_{CC} - 2 volts or 510 ohms to V_{EE} is recommended). For optimum performance, both outputs should be terminated in the same manner, even if only one is used.

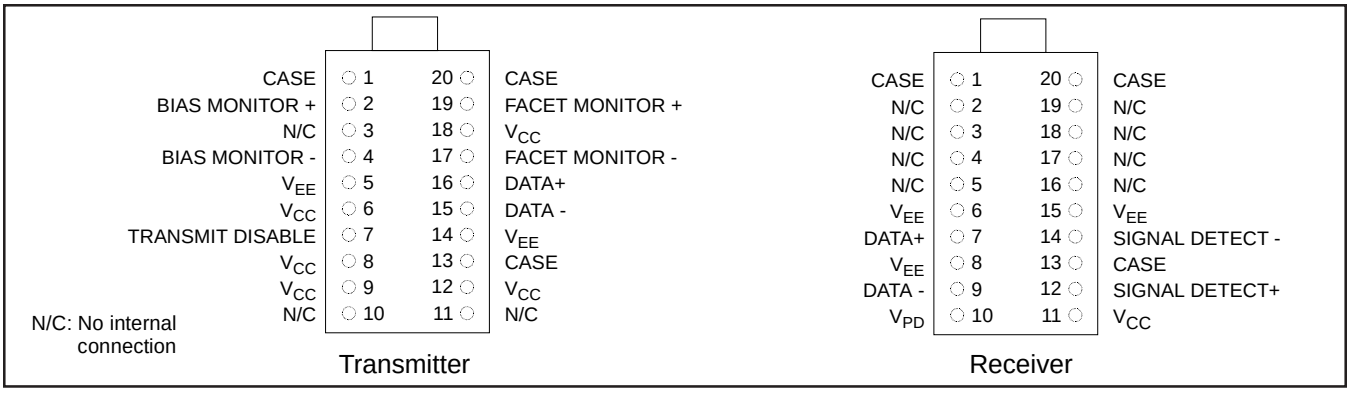
The Signal Detect circuit monitors the level of the incoming optical signal and generates a logic LOW signal when insufficient photocurrent is produced. The SIGNAL DETECT outputs are PECL/ECL level requiring termination (510 ohms to V_{EE} is recommended). If TTL interfaces for SIGNAL DETECT outputs are required, the SRX-12-L receivers can be used.

Laser Safety: All transmitters are Class I Laser products per FDA/CDRH and IEC-825 standards. They must be operated under specified operating conditions.

Optical Communication Products, Inc.
DATE OF MANUFACTURE:

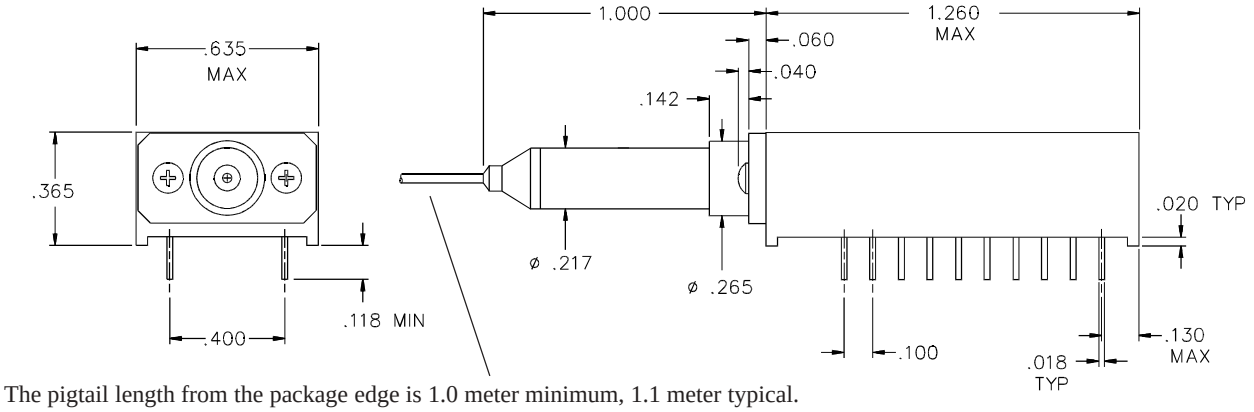
MANUFACTURED IN THE USA
This product complies with
21 CFR 1040.10 and 1040.11
Meets Class I Laser Safety Requirements

Pin Assignments (Top View)

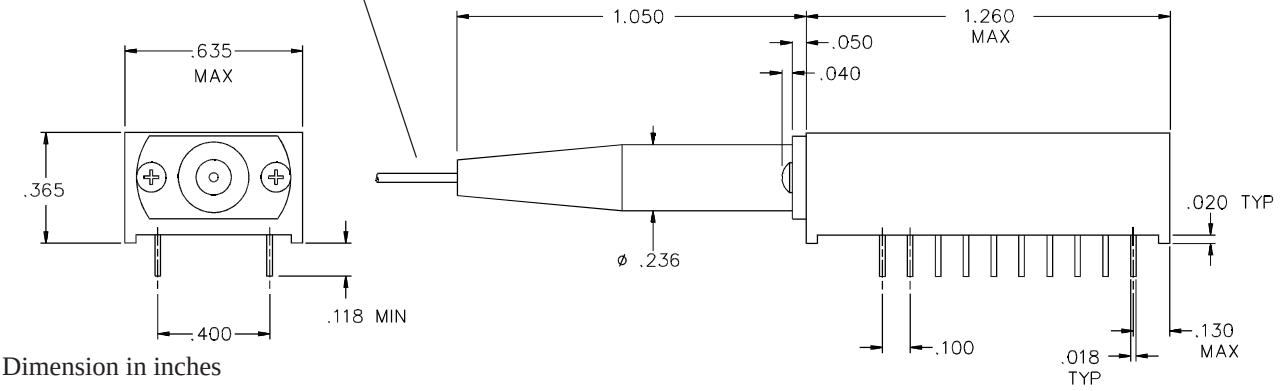


Pigtailed Transmitter Package

For Fabry-Perot laser transmitters, only the top configuration is applicable.
For DFB laser transmitters, both configurations are applicable.

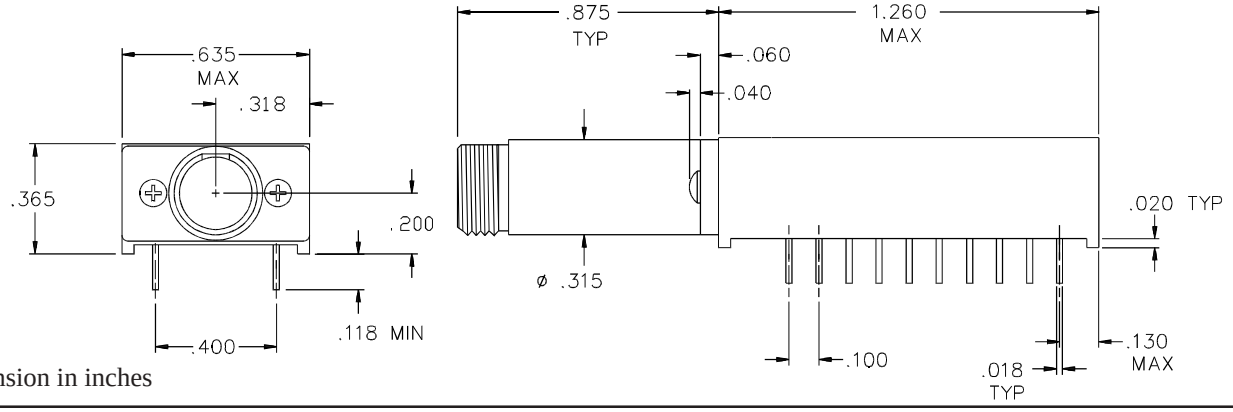


The pigtail length from the package edge is 1.0 meter minimum, 1.1 meter typical.



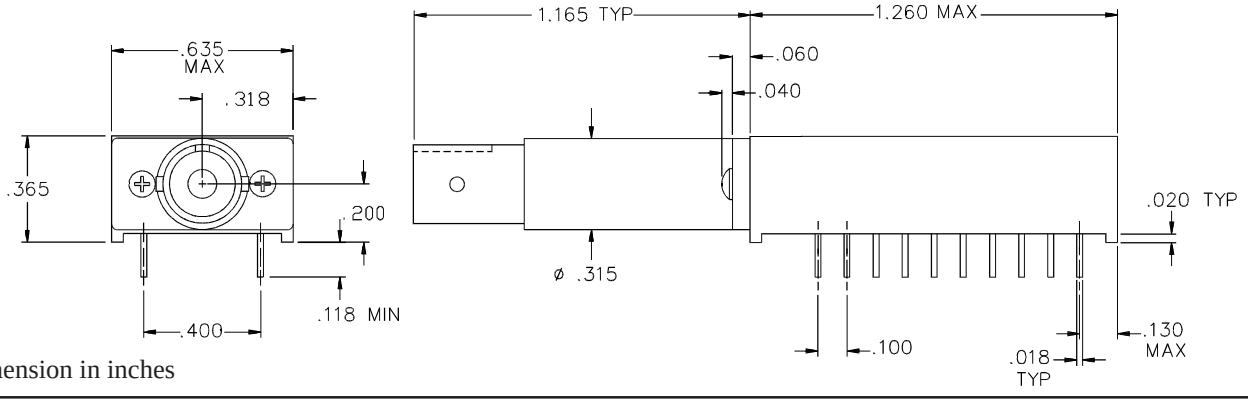
Dimension in inches

FC Receptacled Transmitter Package



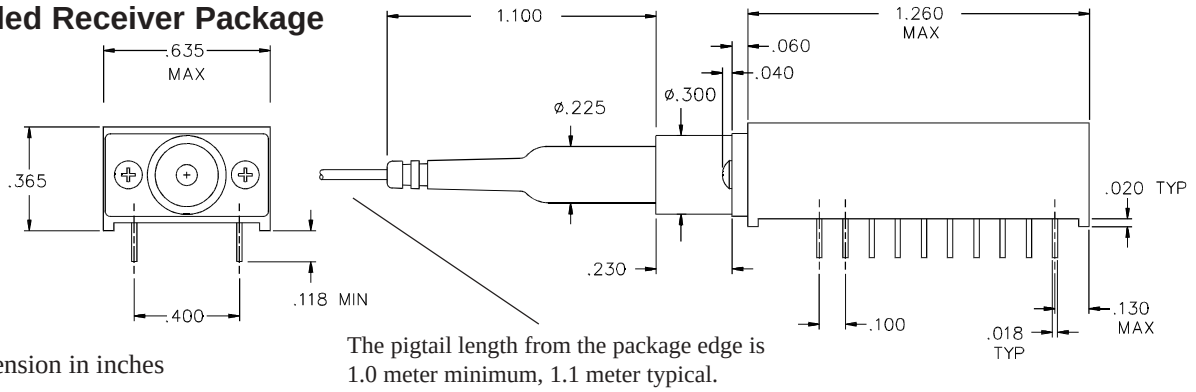
Dimension in inches

ST Receptacled Transmitter Package



Dimension in inches

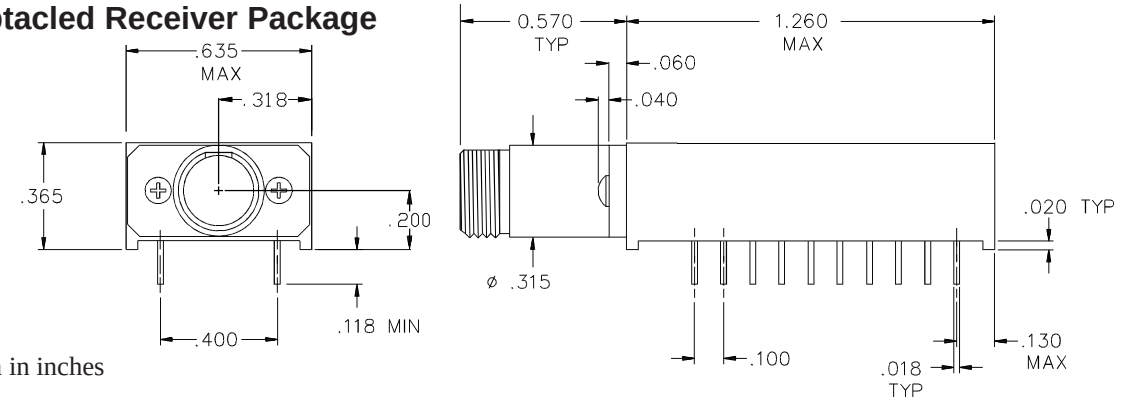
Pigtailed Receiver Package



Dimension in inches

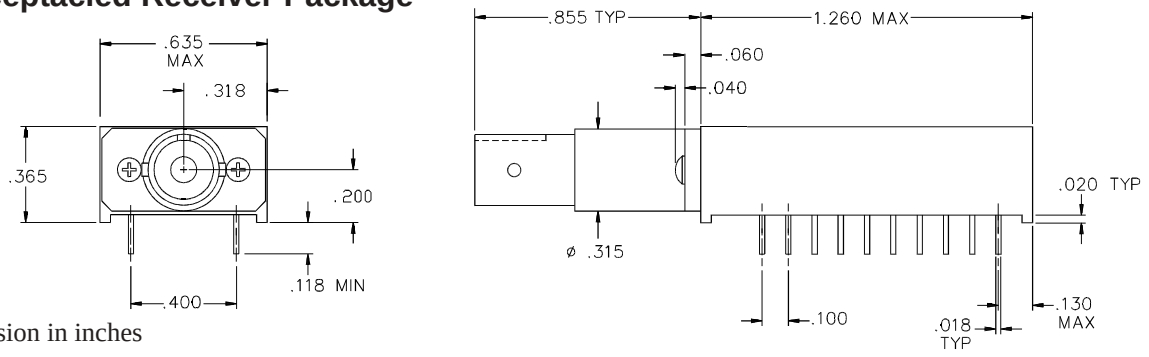
The pigtail length from the package edge is 1.0 meter minimum, 1.1 meter typical.

FC Receptacled Receiver Package



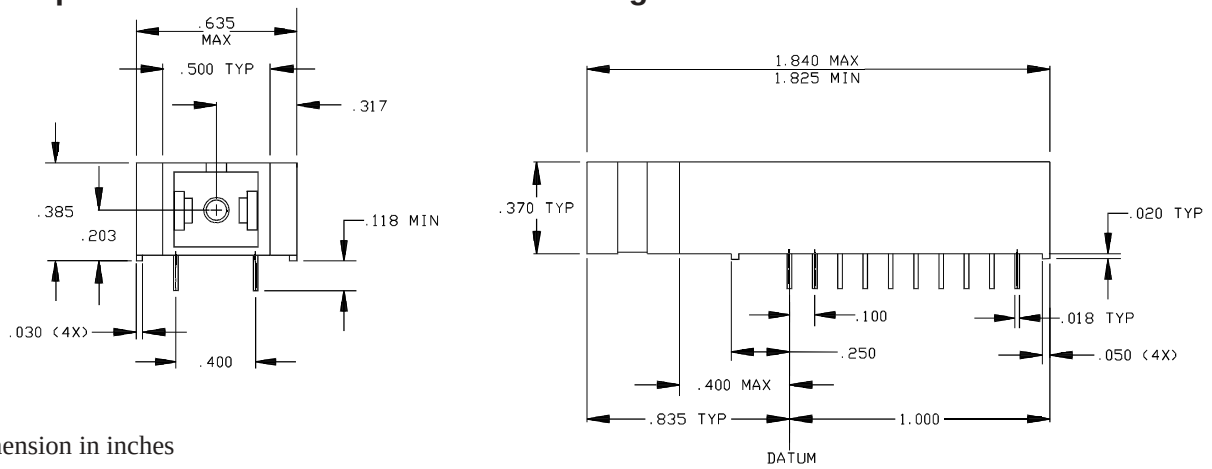
Dimension in inches

ST Receptacled Receiver Package



Dimension in inches

SC Receptacled Transmitter & Receiver Package



Dimension in inches

Optical Communication Products, Inc.

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