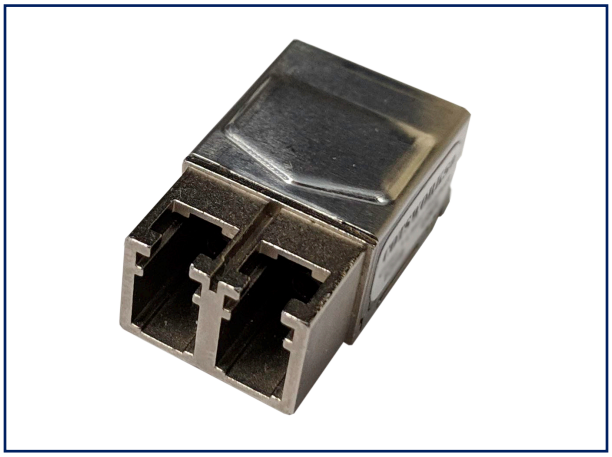
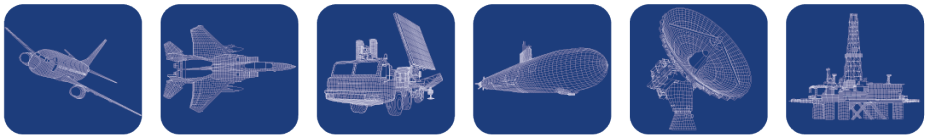
Features:

- Dual Transmitter module
- Supports data rates of 6Gbps to 10.3125Gbps
- 850nm VCSEL transmitters
- Typical reach of 82m on OM2, 300m on OM3 and 400m on OM4
- Compliant to IEC-60825-1, Class 1 laser eye safe
- Solder-down 1x12 electrical interface
- Screw posts for securing module to host
- Enhanced status and diagnostics monitor interface
- –40ºC to +85°C operating temperature
- –55°C to 95°C operating temperature option
- –55ºC to +100°C storage temperature
- Parylene conformal coating option
- Option for RoHS 6(6)



The RJ-10G-SX-TX is ideal for harsh environment connectivity because of its low cost, availability, and wide operating parameters.



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Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Notes
Maximum Supply Voltage	V_{CC}	–0.3	4.0	V	
Electrostatic Discharge, Data I/O pins	ESD		500	V	(1)
Storage Temperature	T_{sto}	–55	100	°C	
Operating Temperature	T_{op}	–55	95	°C	–40°C to +85°C standard
Relative Humidity	RH	0	95	%	(2)
Hot Bar Soldering Temperature			260	°C	10 seconds, leads only (3)
Hand Lead Soldering Temperature			260	°C	10 seconds, leads only (3)
Conformal Coating		0.8	1.2	mil	See ruggedization notes

Notes:

1) Proper ESD conditions should be employed while attaching RJ to the host board
2) Non-condensing based on conformal coating
3) The components should not undergo Reflow Soldering under any circumstances.

General Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	V_{CC}	3.14	3.3	3.47	V	+/– 5%
Data Rate	BR	6		10.3125	Gbps	Balanced NRZ data protocols

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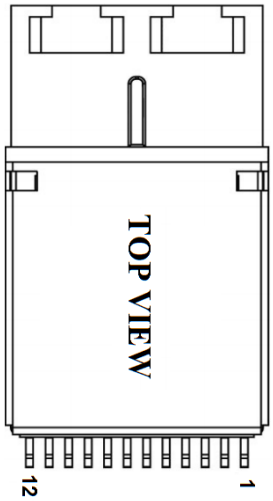
Electrical Specifications (T_{OP} = –40 to 85˚C, V_{CC} = 3.14 to 3.47 Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Total Module Power Dissipation	P_{DISS}			0.70	W	0°C to +85°C
Total Module Power Dissipation	P_{DISS}			1.74	W	–40°C to 0°C (1)
Transmitter						
Supply Current	I_{CC}			100	mA	0°C to +85°C
Supply Current	I_{CC}			250	mA	–40°C to 0°C
Input Differential Impedance	R_{in}	90	100	110	Ω	
TX Single-Ended Input Voltage Swing	V_{in}	50		600	mV	
TX Disable Input Voltage	V_{DIS}	2.4			V	LVTTL
TX Enable Input Voltage	V_{EN}			0.4	V	LVTTL
Serial Bus						
Data, Clock Input Low Voltage	V_{IL}	–0.5		0.8	V	
Data, Clock Input High Voltage	V_{IH}	2.1		V_{CC}	V	
Data, Clock Output Low Voltage	V_{OL}			0.4	V	
Data, Clock Output High Voltage	V_{OH}	V_{CC}-0.4			V	

Notes:
1) Heater used for transmitter optical sub-assembly (TOSA), resulting in additional current draw.

RJ-10G-SX-TX Host Pin Assignment



Pin	Symbol	Description	Logic/Protocol
1	TX1–	Transmitter 1 Data Input, Negative	See Electrical Specifications
2	TX1+	Transmitter 1 Data Input, Positive	See Electrical Specifications
3	GND	Ground	0V
4	TX1_VCC	Transmitter 1 Supply	3.3V
5	TX1_DIS	Transmitter 1 Disable	LVTTL
6	SCL	I2C Clock	I2C
7	SDA	I2C Data	I2C
8	TX2_DIS	Transmitter 2 Disable	LVTTL
9	TX2_VCC	Transmitter 2 Supply	3.3V
10	GND	Ground	0V
11	TX2+	Transmitter 2 Data Input, Positive	See Electrical Specifications
12	TX2–	Transmitter 2 Data Input, Negative	See Electrical Specifications

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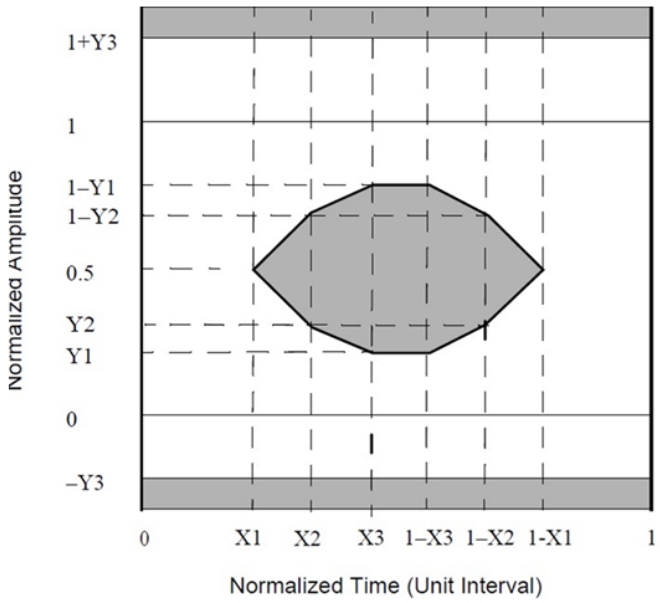
Optical Characteristics (T_{OP} = –40 to 85˚C, V_{CC} = 3.14 to 3.47 Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Optical Power	P_{OUT}	–5		–0.8	dBm	(1,2)
Optical Wavelength	λ		850		nm	
Extinction ratio	ER	3			dB	
Relative Intensity Noise	RIN			–130	dB/Hz	
TX Mask Compliance	See TX Compliance Mask					(3)

Notes:
1) Class 1 Laser Safety per IEC-60825-1 regulations
2) Measured with 2–5 meter patch cord consisting of laser optimized OM3 or OM4 fiber
3) Measured using PRBS 2^{31}-1 pattern



TX Compliance Mask

Coordinate	Value
X1	0.25
X2	0.40
X3	0.45
Y1	0.25
Y2	0.28
Y3	0.40

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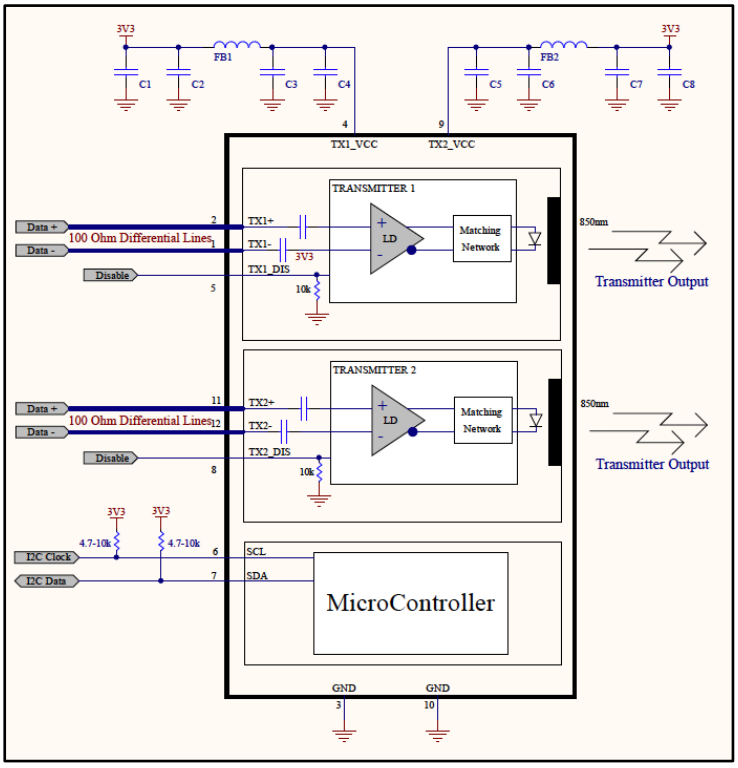
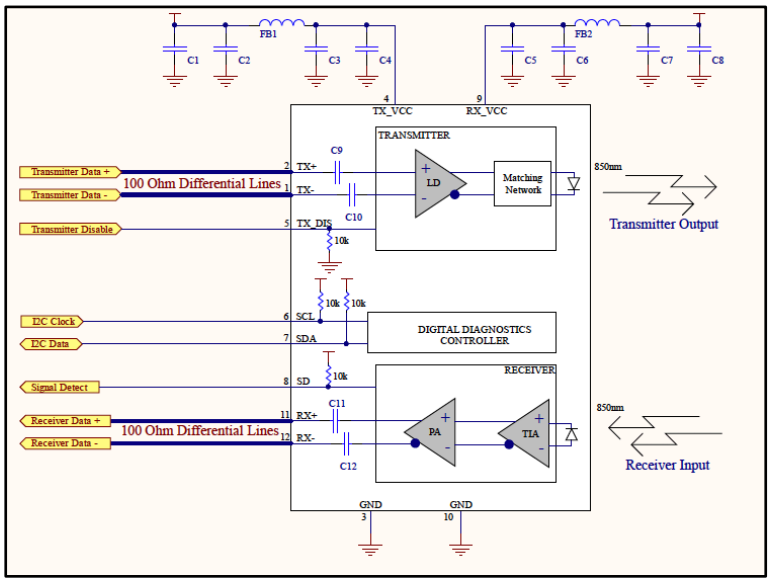
Application Schematics





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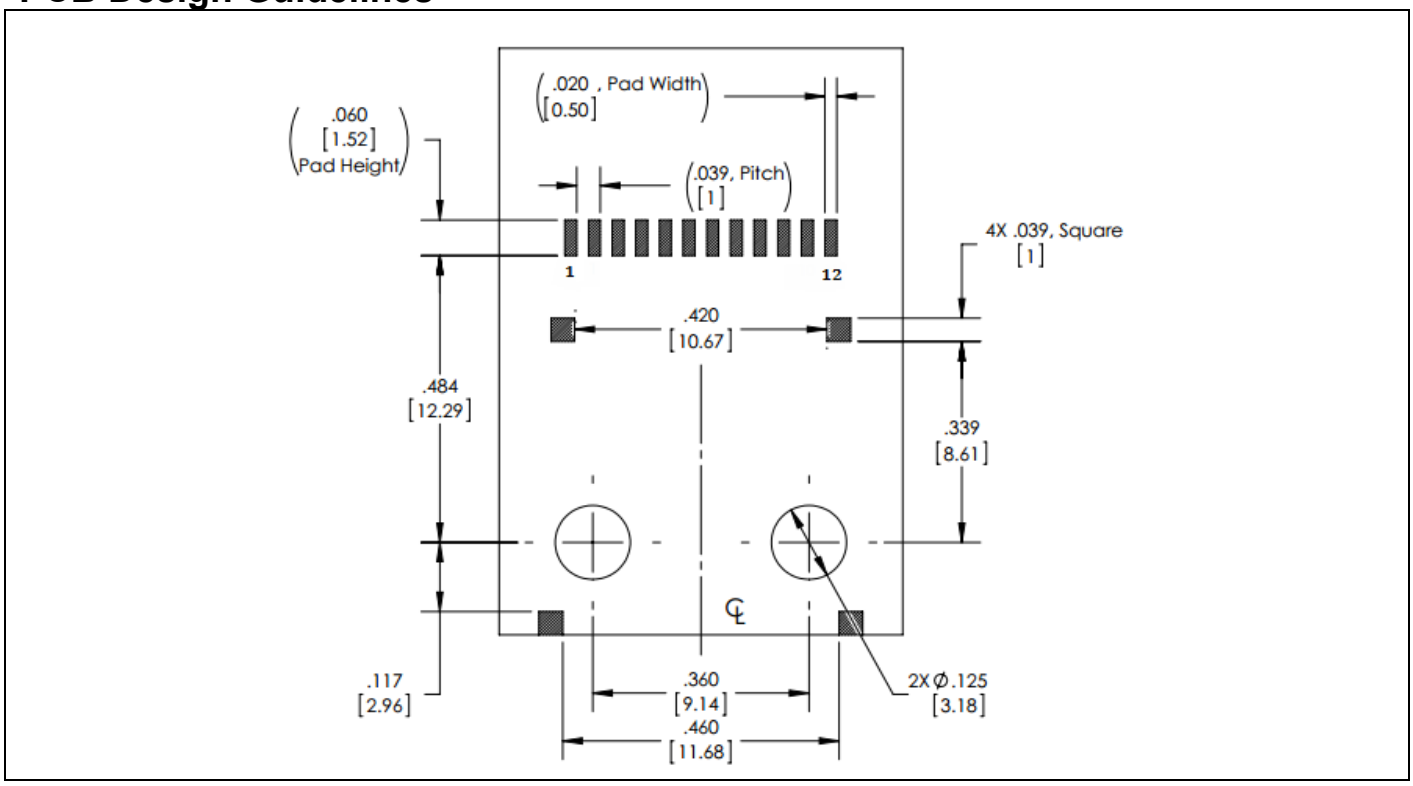
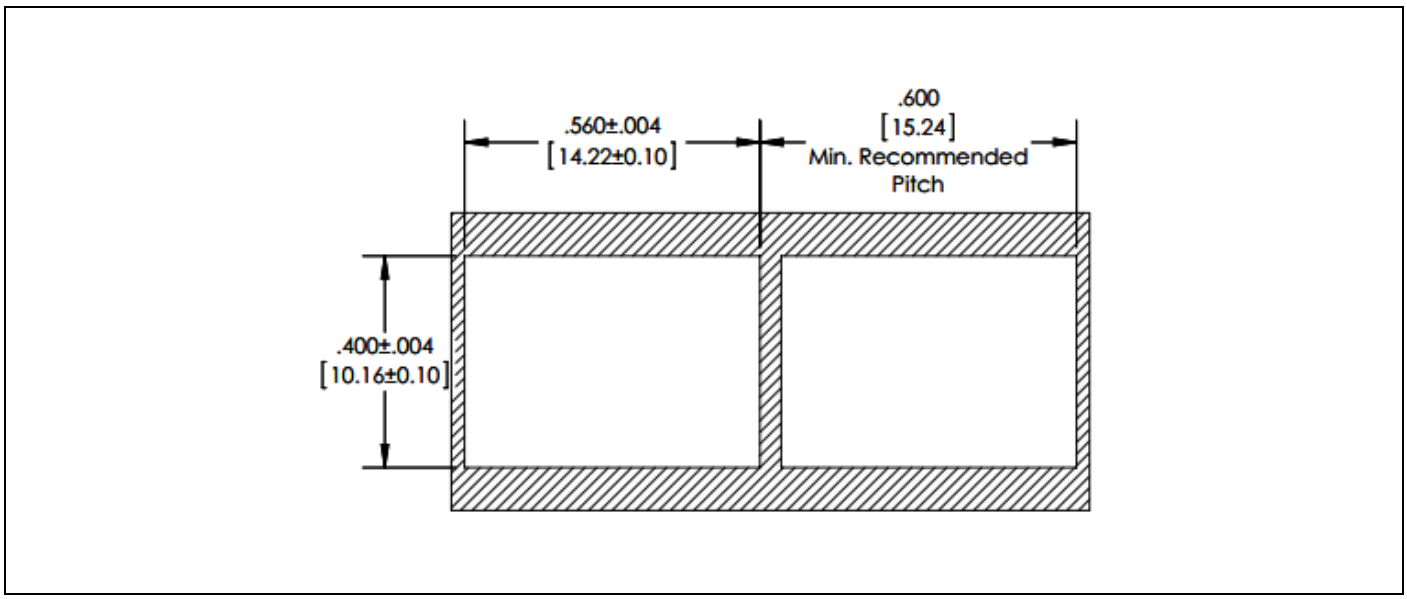
PCB Design Guidelines



Panel Cutout



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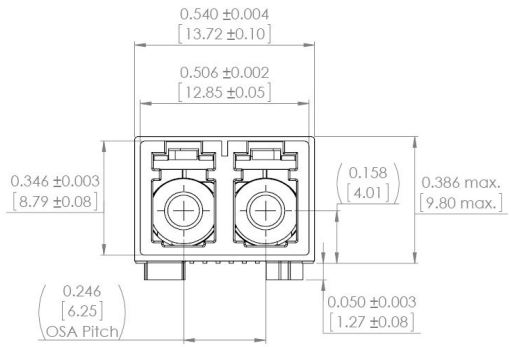
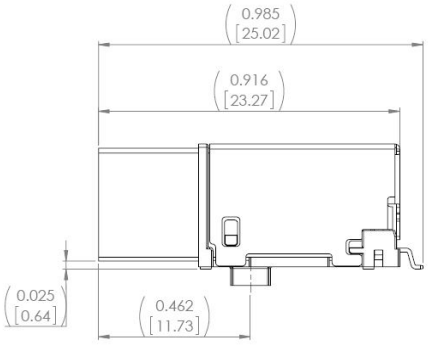
Standard Mechanical Dimensions

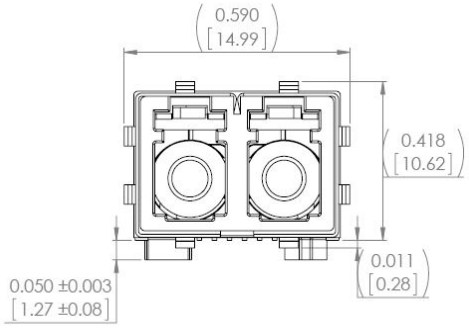


Front View, dimensions in inches [mm]

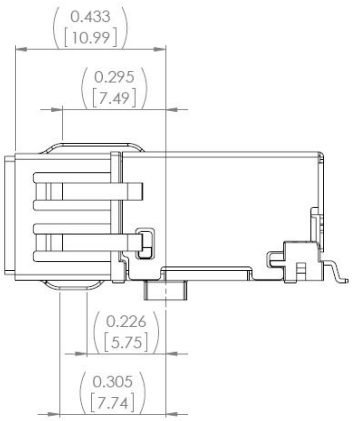


Side View, dimensions in inches [mm]

Mechanical Dimensions with EMI Shield

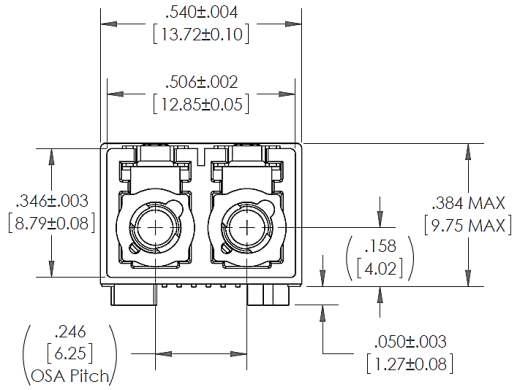


Front View, dimensions in inches [mm]

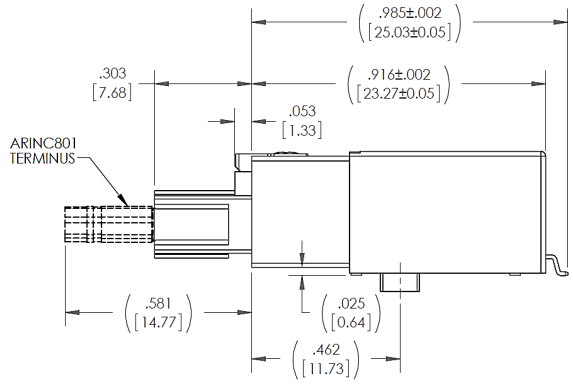


Side View, dimensions in inches [mm]

ARINC-801 Connector [Screw Post] Mechanical Dimensions



Front View, dimensions in inches [mm]



Side View, dimensions in inches [mm]

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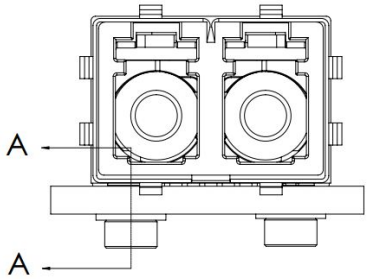
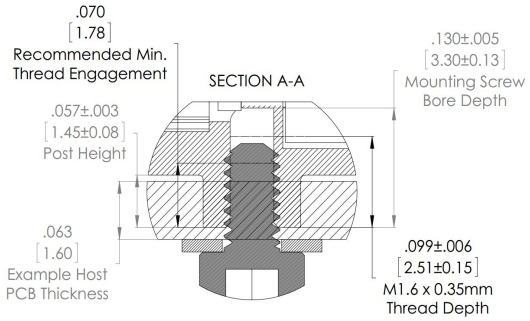
Mounting Hardware Guidelines





Notes:

1) An example illustrating a possible hardware combination to secure RJ-10G to host PCB
2) Default case configuration: Imperial-threaded Posts, #0-80 thread size
3) For further mounting hardware options and support contact COTSWORKS Application Engineering
4) When installing the RJ module
   i. Install the washers and partially tighten the screws
   ii. Solder the leads
   iii. Tighten the screws to 12 in.-oz

Ruggedization Notes

- Parylene C coating can be used for conformal coating with a 1.0mil ± 0.2mil thickness through a deposition process.
- Parylene Type C has a 5600VPM rating, withstands high temperatures, and is extremely resistant to oil/dirt, and object impact.
- Contact COTSWORKS for all MSDS and case composition information.

Reference Information

1) IEEE Standard 802.3-2008, Section 6

Regulatory Compliance

- COTSWORKS transceivers are Class 1 Laser Products and comply with US FDA regulations.
- These products are designed to comply with the Class 1 eye safety requirements of EN (IEC) 60825 and the electrical safety requirements of EN (IEC) 60950.
- This part has an option for compliance with Directive 2011/65/EU covering restriction on certain hazardous substances (RoHS)
- Contact COTSWORKS support for a product compliance matrix

Warnings:

Handling Precautions: This device is susceptible to damage from electrostatic discharge (ESD). A static free environment is highly recommended.

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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Ordering Information

RJ-10G-SX-TX	-xx-	x	-x-	x	-x-	x
RJ Form Factor **10Gbps Max Data Rate** **Dual Transmitters** **Short Reach (MMF)**	**Connector Type** (): *Standard LC* LX: *ARINC-801*	**Ruggedized Coating** (): *Non-coated* R: *Parylene*	**Operating Temp Range** A: *–40 to 85°C* M: *–40 to 95°C* Z: *–55 to 95°C*	**EMI Shield** (): *No Shield* E: *Shield*	**RoHS Level** (): *Lvl 5* 6: *Lvl 6*	**Mounting** (): *Imperial Screw* U: *Metric Screw*

Example part number: RJ-10G-SX-TX-R-A
[RJ, 10Gbps, 850nm, Dual Transmitter, LC connectors,
Parylene-coated, Industrial operating temperature range, no EMI shield, RoHS 5(6), imperial mounting screws]

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