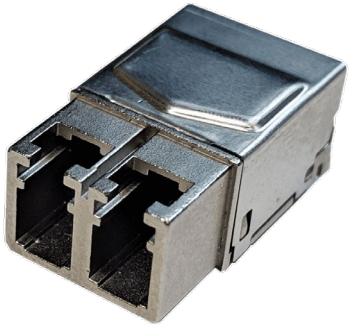
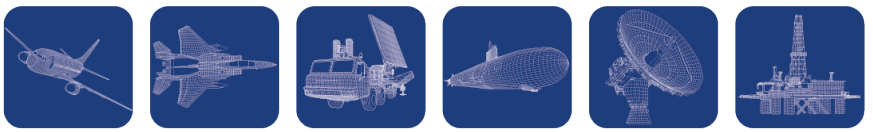
Features:

- Dual 850nm VCSEL transmitters
- Compliant to IEC-60825-1, Class 1 laser eye safe
- Solder-down 1x10 electrical interface
- Dual transmitters for SMPTE 3G-SDI video
- Screw posts for securing module to host
- -40ºC to +85°C operating temperature
- -40°C to 95°C operating temperature option
- Parylene conformal coating option
- Option for RoHS 6(6)



The RJ-3G-SDI-TX2 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	Note
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		2.97		Gbps	3G-SDI

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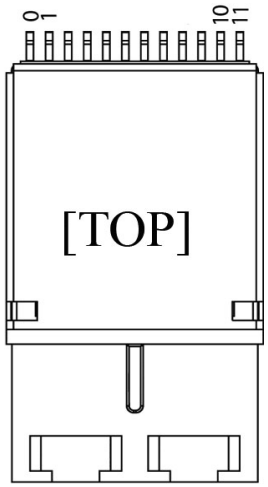
Electrical Specifications (T_{OP} = -40 to 85°C, V_{CC} = 3.14 to 3.47 Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Total Module Power Dissipation	P_{DISS}			1	W	
Transmitter						
Supply Current	I_{CC}			120	mA	Per Channel
Input Differential Impedance	R_{in}	90	100	110	Ω	
TX Single-Ended Input Voltage Swing	V_{in}	250		1200	mV	
TX Disable Input Voltage	V_{DIS}	2.0			V	LVTTL
TX Enable Input Voltage	V_{EN}			0.8	V	LVTTL

RJ-3G-SDI-TX2 Host Pin Assignment



Pin	Symbol	Description	Logic/Protocol
0	SCL	I2C Clock (Removed)	I2C
1	TD1+	Transmitter 1 DATA In +	CML
2	GND	Ground	0V
3	TD1-	Transmitter 1 DATA In -	CML
4	V_{CC1}	Transmitter 1 Power Supply	3.3V
5	T_{DIS1}	Transmit 1 Disable Input	LVTTL
6	T_{DIS2}	Transmit 2 Disable Input	LVTTL
7	TD2+	Transmitter 1 DATA In +	CML
8	V_{CC2}	Transmitter 2 Supply	3.3V
9	TD2-	Transmitter 1 DATA In -	CML
10	GND	Ground	0V
11	SDA	I2C Data (Removed)	I2C

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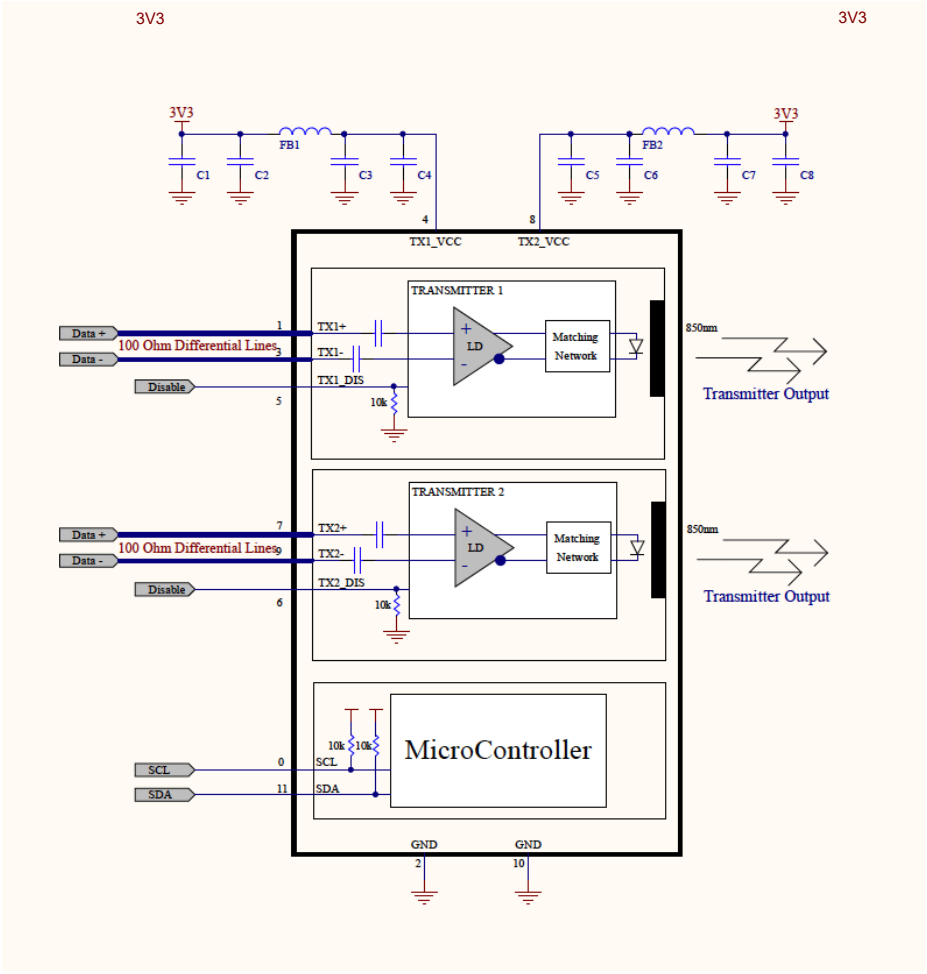
Optical Characteristics (T_{OP} = -40 to 85°C, V_{CC} = 3.14 to 3.47 Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Optical Power	P_{OUT}	-5		-1	dBm	(1,2)
Optical Wavelength	λ		850		nm	
Rise Time	t_r			120	ps	(3)
Fall Time	t_f			120	ps	(3)
Total Jitter	J_{TX}			85	Ps	(3)
Extinction ratio	ER	6			dB	
Pathological Test Pattern	PT			0	Errors	Able to Pass the Pathological Test Pattern Error Free

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 2^7-1 pattern

Application Schematics



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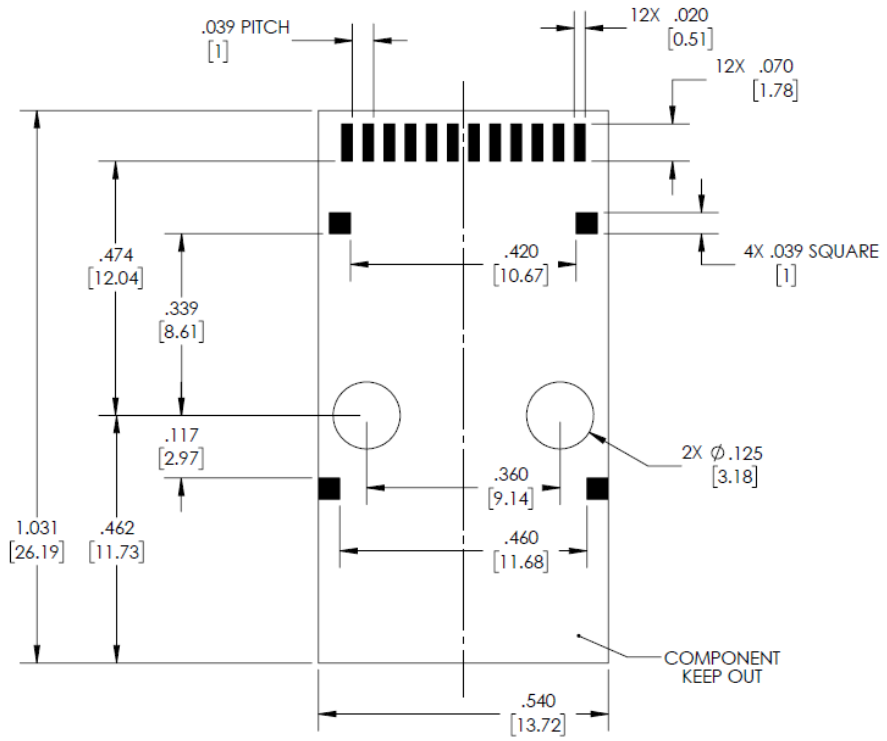
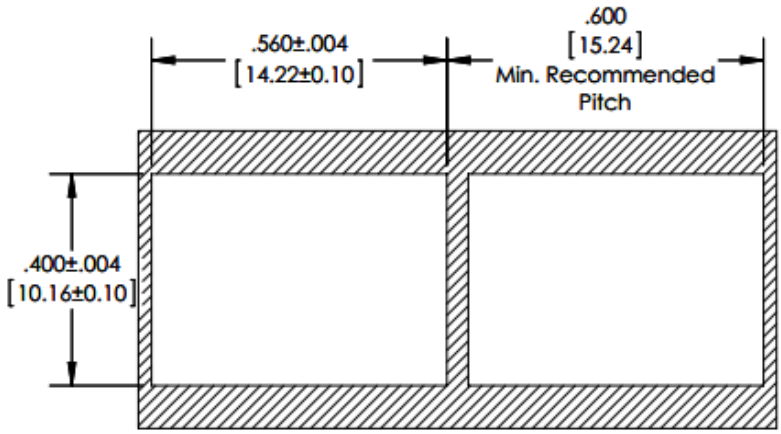
PCB Design Guidelines



Notes:
1) Pads 0 and 11 are optional pins that are only required for the digital diagnostics option.
2) Pads 1-10 need to be designed in for every COTSWORKS RJ transceiver.

Panel Cutout



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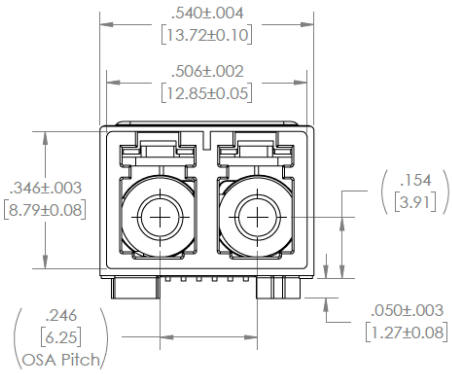
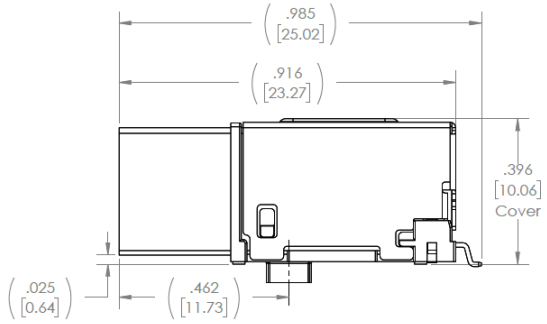
Standard Mechanical Dimensions

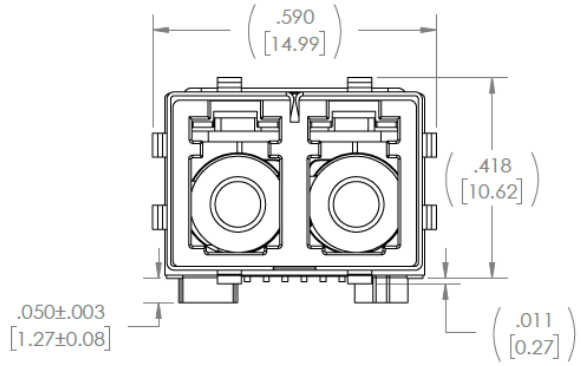


Front View, dimensions in inches [mm]

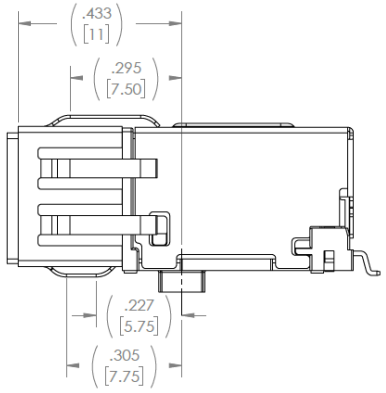


Side View, dimensions in inches [mm]

Mechanical Dimensions with EMI Shield

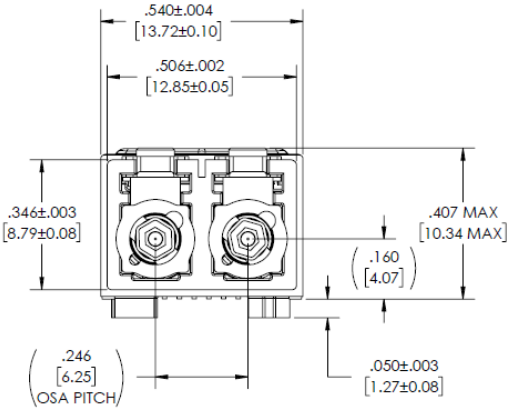


Front View, dimensions in inches [mm]

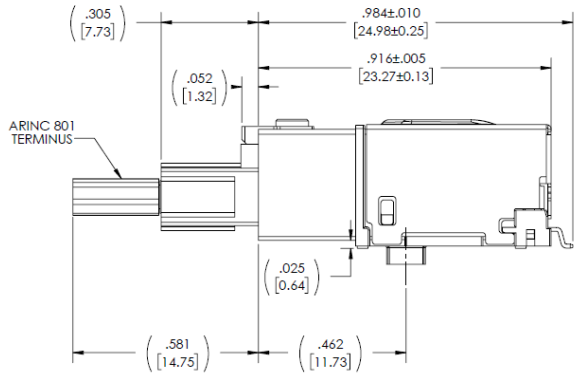


Side View, dimensions in inches [mm]

ARINC-801 Connector [Screw Post] Mechanical Dimensions



Front View, dimensions in inches [mm]



Side View, dimensions in inches [mm]

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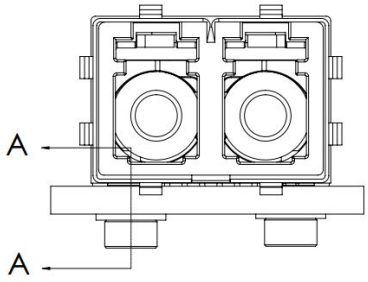
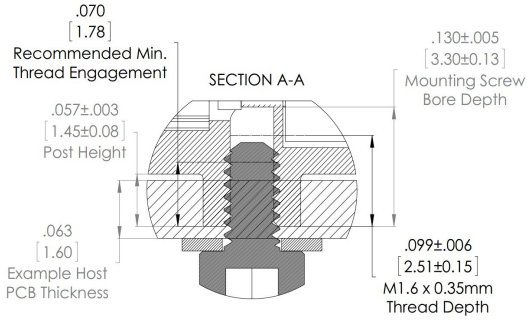
Mounting Hardware Guidelines





Notes:

1) An example illustrating a possible hardware combination to secure RJ 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 1.0 mil ± 0.2 mil thickness through a deposition process.
- Parylene Type C has a 5600 VPM 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 as a result of 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-3G-SDI-TX2	-xx-	x	-x-	x	-x-	x
RJ Form Factor **3Gbps Max Data Rate** **Dual Transmitters** **Short Reach (MMF)**	**Connector Type** LC: *Standard LC* LX: *ARINC-801*	**Ruggedized Coating** (): *Non-coated* R: *Parylene*	**Operating Temp Range** A: -40 to 85ºC M: *-40 to 95ºC*	**EMI Shield** (): *No Shield* E: *Shield*	**RoHS Level** (): *Lvl 5* 6: *Lvl 6*	**Mounting** (): *Imperial Screw* U: *Metric Screw* P: *Solder Post*

Example part number: RJ-3G-SDI-TX2-LC-R-A
[RJ**,** 3 Gbps, 850nm, Dual Transmitter, LC connectors,
Parylene-coated, Industrial operating temperature range, no EMI shield, RoHS 5(6), imperial mounting screws**]**

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