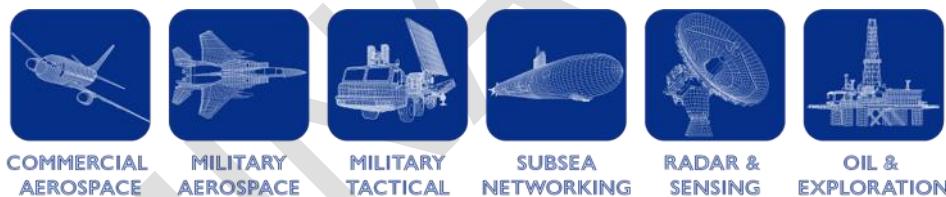


Features:

- IEEE Compliant Operation for 10GBASE-BR10
- DFB Transmitter and PIN Receiver
- Typical Reach of 10km on OS2 9/125 μ m SMF
- -40°C to +85°C Operating Temperature
 - Extended Temperature Range Available
- SFF-8472 Aligned Control and Diagnostics Monitor Interface
- Single ARINC 801 Receptacle
- Board to Board Pluggable Connector
 - Samtec SLH-010-1.50-G-D on ESL Module
 - Samtec TLH-010-0.50-G-D-A-TR for use on Host PCB

The rugged ESL-10G-BR10 is ideal for harsh environment connectivity because of its wide operating parameters.


General Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Rate	BR	6	-	10.3125	Gbps	
Average Output Optical Power	P _{OUT}	-8.2	-	0.5	dBm	
Receiver Sensitivity	RX _{SENS}	-	-	-14.4	dBm	

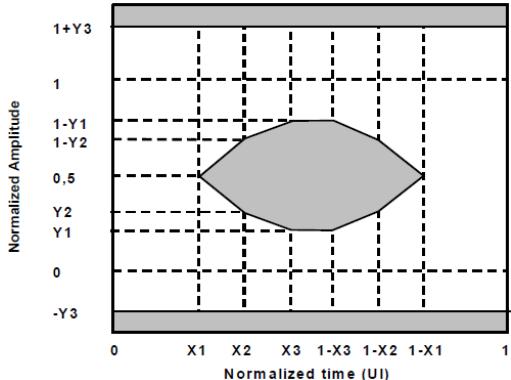
Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Notes
Maximum Supply Voltage	V _{CC}	-0.3	4.0	V	
Case Operating Temperature	T _{OP}	-40	85	°C	
Relative Humidity	RH	0	95	%	(1)(2)
Conformal Coating	-	0.8	1.2	mil	

Notes:

- 1) ESL transceivers may be water washed. The process must be followed by an 80°C bake for one hour to ensure the drying of any water inside the shell.
- 2) Based on conformal coating.

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

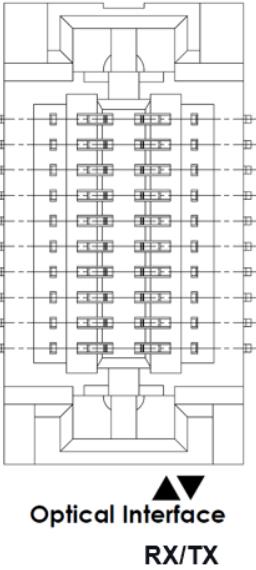
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes					
Transmitter											
Average Output Optical Power	P _{OUT}	-8.2	-	0.5	dBm	(1)					
Optical Modulation Amplitude	OMA	-5.2	-	-	dBm	(1)					
Optical Wavelength	λ ₂₃	1260	-	1280	nm	"23" Configuration					
Optical Wavelength	λ ₃₂	1320	-	1340	nm	"32" Configuration					
Spectral Width (RMS)	σ	-	-	1	nm						
Extinction ratio	ER	3.5	-	-	dB						
Transmitter and Dispersion Penalty	TDP	-	-	3.2	dB						
Return Loss	RL	-	-	12	dB						
TX Mask Compliance	-	{X ₁ , X ₂ , X ₃ , Y ₁ , Y ₂ , Y ₃ } = {0.235, 0.395, 0.45, 0.235, 0.265, 0.4}									
											
Receiver											
Receiver Sensitivity	RX _{SENS}	-	-	-14.4	dBm	(1)					
Unstressed Receiver OMA Sensitivity	RX _{US}	-	-	-12.6	dBm						
Stressed Receiver OMA Sensitivity	RX _{ST}	-	-	-10.3	dBm						
Receiver Saturation	RX _{SAT}	-	-	1	dBm						
Optical Center Wavelength	λ _{C23}	1320	-	1340	nm	"23" Configuration					
Optical Center Wavelength	λ _{C32}	1260	-	1280	nm	"32" Configuration					
Loss of Signal Assert	LOS _A	-30	-	-	dBm						
Loss of Signal De-Assert	LOS _D	-	-	-19	dBm						
Loss of Signal Hysteresis	LOS _{DH}	-	0.5	-	dBm						
Notes:											
1) Measured with a 2-5 meter patch cord consisting of laser optimized OS2 fiber.											

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}	-	0.75	1.4	W	
Transmitter						
Supply Current	I _{CC}	-	-	270	mA	
Input Differential Impedance	R _{IN}	90	100	110	Ω	
TX Single-Ended Input Voltage Swing	V _{DTX}	100	-	400	mV	
TX Disable Input Voltage	V _D	2	-	-	V	
TX Enable Input Voltage	V _{EN}	-	-	0.8	V	
Receiver						
Supply Current	I _{CC}	-	-	130	mA	
Rx Single-Ended Output Voltage Swing	V _{DRX}	250	-	450	mV	
Data Output Rise Time	t _r	-	-	45	ps	(1)
Data Output Fall Time	t _f	-	-	45	ps	(1)
Total Contributed Jitter	RXΔTJ	-	-	0.44	UI	
Loss of Signal Assert	LOS _{NORM}	2.4	-	-	V	
Loss of Signal De-Assert	LOS _{FAULT}	-	-	0.4	V	
Loss of Signal De-Assert Time	t _d	2.5	-	80	μs	
Loss of Signal Assert Time	t _a	2.5	-	80	μs	
Serial Bus						
Data, Clock Input Low Voltage	V _{IL}	-0.3	-	0.3*V _{CC}	V	
Data, Clock Input High Voltage	V _{IH}	0.7*V _{CC}	-	V _{CC} +0.3	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) 20% to 80%.						



Pin Configuration



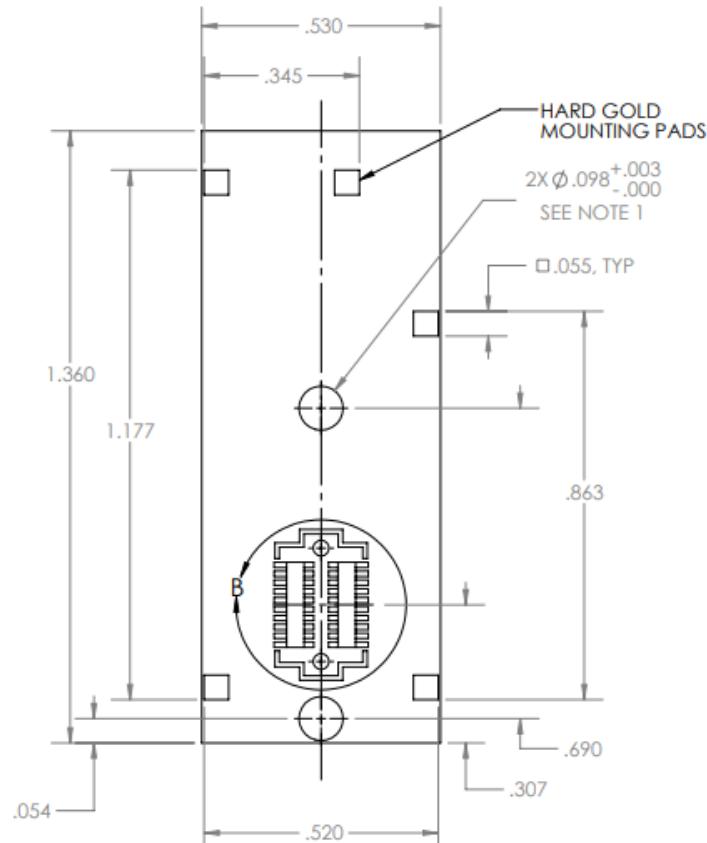
PIN #	Symbol	Description	Notes
1	GND	Transmitter Signal Ground	0V
2	GND	Receiver Signal Ground	0V
3	D1+	Transmitter Data In +	CML
4	D2-	Receiver Data Out -	CML
5	D1-	Transmitter Data In -	CML
6	D2+	Receiver Data Out +	CML
7	GND	Transmitter Signal Ground	0V
8	GND	Receiver Signal Ground	0V
9	FLT1	Transmitter Fault	LV TTL
10	LOS	Receiver Loss of Signal	LV TTL
11	GND	Control Ground	0V
12	GND	Control Ground	0V
13	SCL	2-Wire Interface Clock	I2C
14	GND	Control Ground	0V
15	SDA	2-Wire Interface Data	I2C
16	EN1	Transmit Enable Optical Output	LV TTL
17	/RST	Controller Reset	See application Schematic
18	3V3_2	Receiver Power Supply	3.3V
19	N/C	Do not connect internal use only	No Connect
20	3V3_1	Transmitter Power Supply	3.3V

Notes:

- 1) Pin configuration shown is of the module as viewed from the bottom of the module. For host application pinout, see **PCB Design Guidelines** on Page 5.
- 2) Connector shown is a Samtec SLH-010-1.50-G-D. For mating connector, see **PCB Design Guidelines** on Page 5.

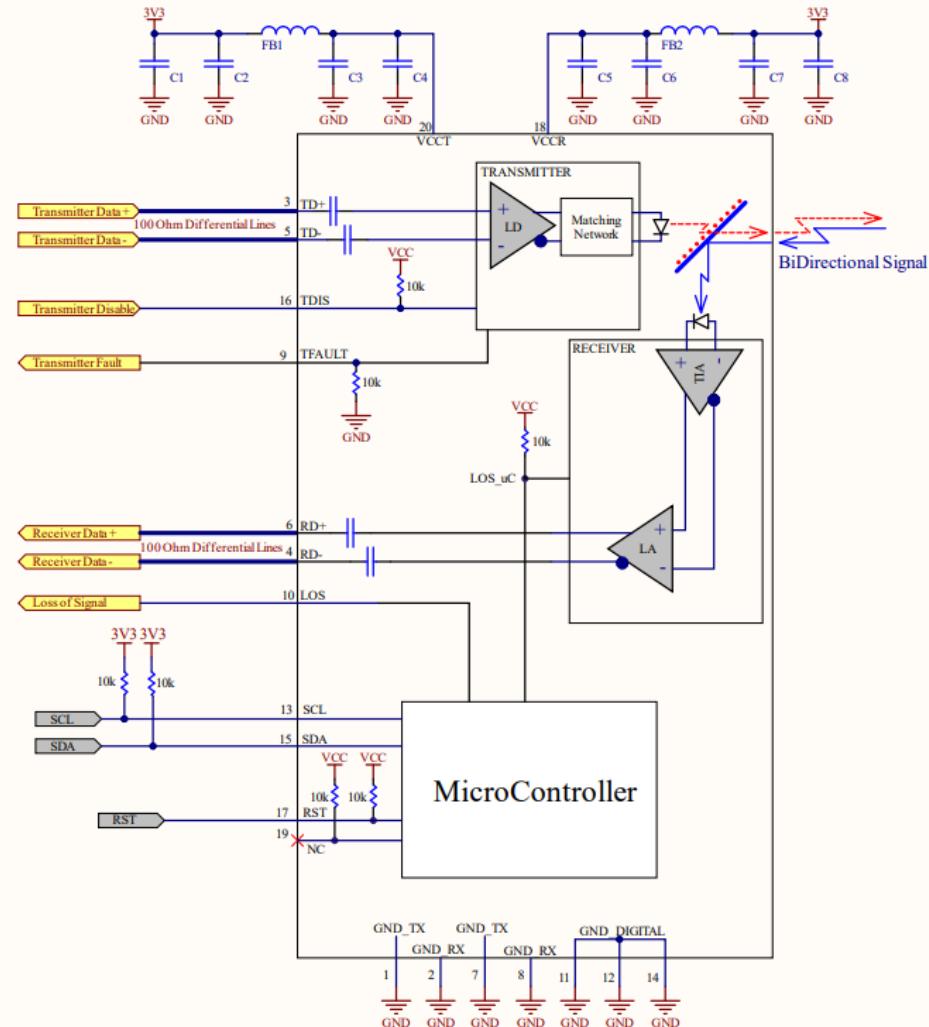


PCB Design Guidelines


NOTE:

1. DIAMETER FOR SOLDER MOUNT PEM,
 ϕ .165 MIN SOLDER PAD FAR SIDE, IF
 NOT USING PEMS, RECOMMEND ϕ .070

Adequate solder and epoxy staking recommended on host board connector.

Application Schematic


Ruggedization Notes

- Parylene Type C coating can be used for conformal coating with a $1.0\text{ mil} \pm 0.2\text{ mil}$ 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.

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.

ESL-10G-BR10	-XX	-X	-X	-X	-X
ESL Form Factor	Wavelength	Ruggedized Coating	Operating Temp Range	RoHS Level	Mounting
10.3125 Gbps Max Data Rate	23: 1270Tx/1330Rx	(): Non-Coated	A: -40 to 85C	(): Lvl 5	I: Imperial Captive Screws
Bi-directional Single Fiber	32: 1330Tx/1270Rx	R: Parylene	M: -40 to 95C	6: Lvl 6	U: Metric Captive Screws
10km Reach			Z: -55 to 95C		N: Unthreaded

Contact COTSWORKS for mechanical dimensional information, lead times and other configuration options.

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