



Features:

- IEEE Compliant Operation for 10GBASE-BR10
- DFB Transmitter and PIN Receiver
- Typical Reach of 10km on OS2 9/125µm 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.



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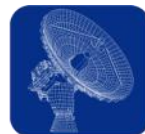
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General Specifications

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

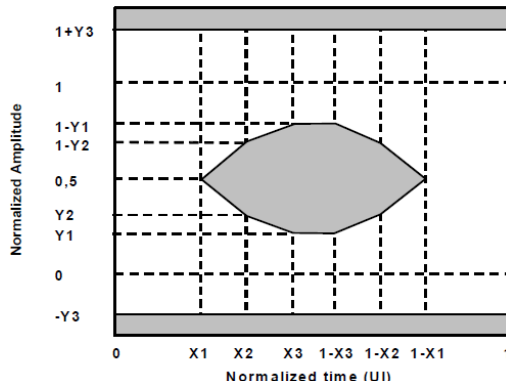
Parameter	Symbol	Min.	Max.	Unit	Notes
Maximum Supply Voltage	V _{CC}	-0.3	4.0	V	
Case Operating Temperature	T _{OP}	-40	85	°C	
Relative Humidity	RH	0	95	%	(1)(2)
Conformal Coating	-	0.8	1.2	mil	

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	-	{X1, X2, X3, Y1, Y2, Y3} = {0.235, 0.395, 0.45, 0.235, 0.265, 0.4}				
<div></div>						
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.						



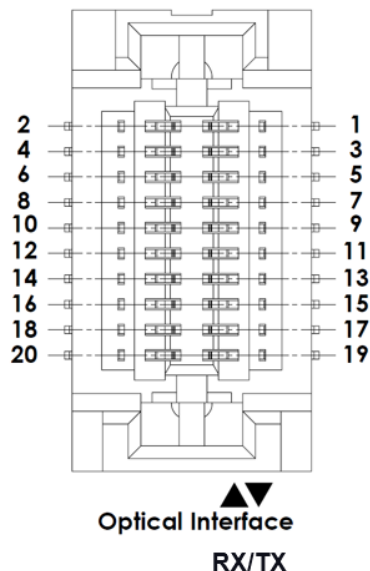
**Electrical Specifications** ($T_{OP} = -40$ to 85°C , $V_{CC} = 3.14$ to 3.47 Volts)

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	$RX_{\Delta TJ}$	-	-	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	-	$0.3 \cdot V_{CC}$	V	
Data, Clock Input High Voltage	V_{IH}	$0.7 \cdot V_{CC}$	-	$V_{CC} + 0.3$	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	LVTTL
10	LOS	Receiver Loss of Signal	LVTTL
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	LVTTL
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

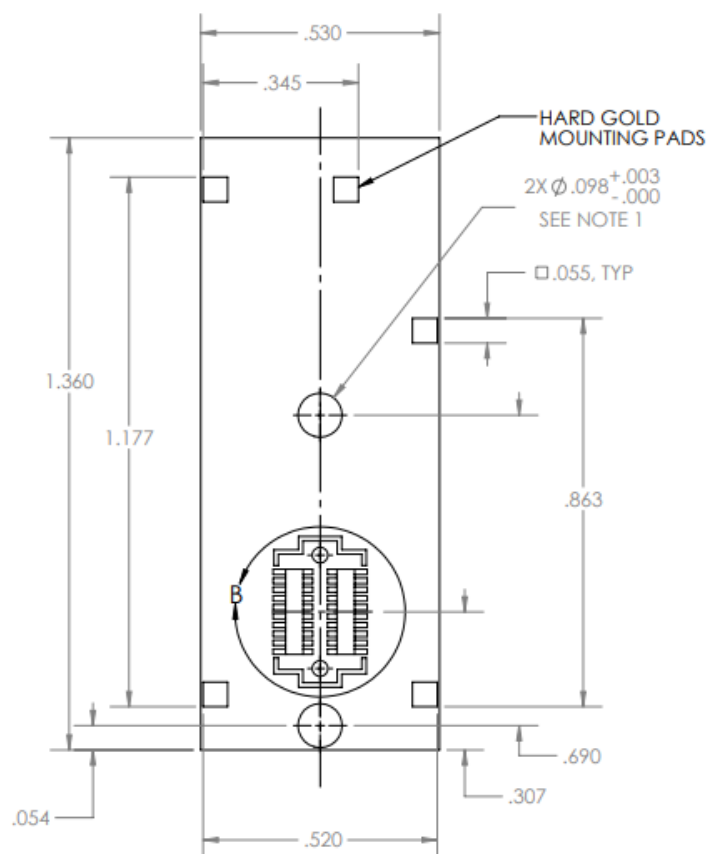
Notes:

- 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,
Ø.165 MIN SOLDER PAD FAR SIDE, IF
NOT USING PEMS, RECOMMEND Ø.070

Adequate solder and epoxy staking recommended on host board connector.





- ## Warnings:

Preliminary Rev04 Page 6 of 7



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

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

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