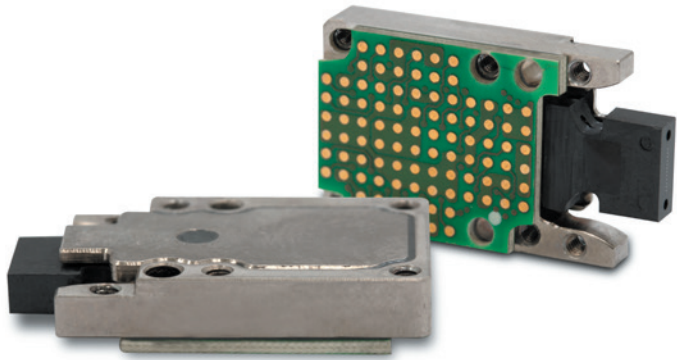


# SpaceABLE 10G SL Series

Radiation-resistant Optical Transceivers



## Radiation resistant

The SpaceABLE 10G SL Series radiation-resistant onboard embedded optical transmitter and receiver modules offer radiation hardness, robustness, longevity, and high I/O density.

The SpaceABLE® line of products with their intrinsic radiation resistance, are well suited to provide optical interconnect within space vehicles. These devices are extremely rugged and deliver bandwidth in excess of 120 Gbps in a chip size part.

The SpaceABLE 10G SL Series radiation resistant transceivers are engineered to withstand radiation doses >100 krad (Si). The low profile SpaceABLE 10G SL Series screw-in module mounts to the board via an LGA connector (interposer). It is offered as a (4+4)-lane transceiver, a 12-channel transmitter, or a 12-channel receiver. All modules operate at 10.3125 Gbps per channel over a recommended operating temperature range of -40 °C to 85 °C at ultra-low bit error rates of  $10^{-12}$ .

The optical module includes equalizers and pre-emphasis to compensate long traces; these features can be turned off for short traces (less than 10 cm) to reduce power consumption.

Radiation-resistant,  
low-SWaP,  
multichannel optical  
transceivers for space  
applications

### Key advantages

- **Small:** Less than 6 mm high (module and interposer)
- **Rugged:** withstand radiation doses >100 krad (Si) and qualified per MIL-STD 883 shock and vibration.
- **Expected life:** up to 20 years.
- **Performance:** up to 10.3125 Gbps/channel over a recommended operating temperature range of -40 °C to 85 °C
- **Sensitivity:** -9 dBm for BER  $10^{-12}$
- **Low power consumption:** 115 mW/channel (<10 pJ per bit)

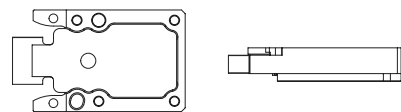
### Configurations

- 4TRX (40G, full duplex)
- 12TX or 12RX (120G, half duplex)

### Applications

- High-throughput communication satellites
- LEO satellite constellations
- GEO satellites (with extended lifetime option)
- Board-to-board and payload-to-payload connections
- High I/O density, high BW communication links

#### Real size illustration



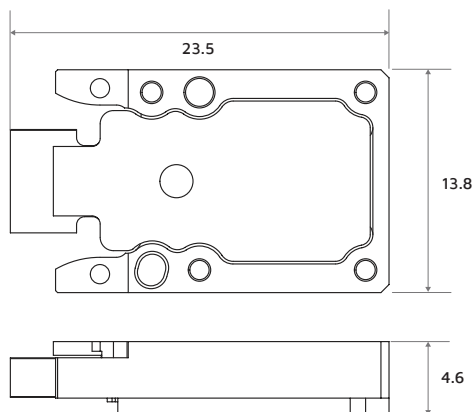
Real size for SpaceABLE 10G SL  
4TRX, 12TX, and 12RX.

## SpaceABLE 10G SL Series features

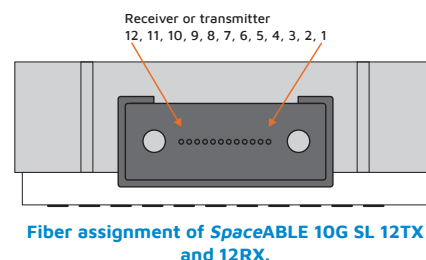
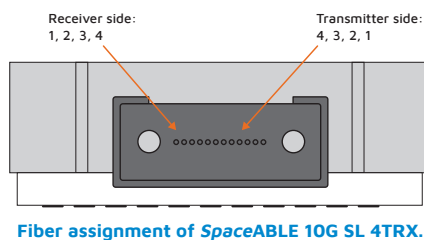
- 4 TRX (4+4)-lane per device (40G, full duplex)
- 12 TX or 12 RX channel per device (120G, half duplex)
- Multimode 850 nm wavelength laser
- Over 100 m reach on OM3 ribbon fiber
- Standard MT parallel fiber connector
- RoHS
- Equalizer, pre-emphasis, adjustable output
- Monitoring: LOS, RSSI, temperature, etc.
- Industrial grade temperature range (-40°C to 85°C)
- Attaches to system board with 1 mm LGA interposer.

## Space qualification tests summary

- **Proton testing:** Total Non-Ionizing Dose (TNID)
- **Heavy ion testing:** Single Event Effect & Latch-up (SEE and SEL)
- **Gamma Ray using Cobalt-60:** Total Ionizing Dose (TID)
- **Random vibration:** NASA GEVS, GSFC-STD-7000A
- **TVAC:** Vacuum < 5E-5 hPa
- **Outgassing:** ECSS-Q-ST-70-02C



Drawing of SpaceABLE 10G SL 4TRX, 12TX, and 12RX (measurements given in mm).



Note: Attached to PCB with 1.55 mm interposer.

## SpaceABLE 10G SL Series ordering information

Part Number	Product Description	Channels or Lanes	Bandwidth* (Gbps/ch.)	Sensitivity (dBm)	Mounting	Operating Temp. (°C)
SLT12P918533001	SpaceABLE 12TX transmitter	12	10.3125	n.a.	RoHS LGA	-40 to 85
SLR12P918530101	SpaceABLE 12RX receiver	12	10.3125	-9	RoHS LGA	
SLX04P918532101	SpaceABLE 4TRX transmit/receive	4+4	10.3125	-9	RoHS LGA	

### Accessories

415-00018	1 mm 96-positions interposer kit (Interposer + screws)
-----------	--

more > [smithsinterconnect.com](http://smithsinterconnect.com)   