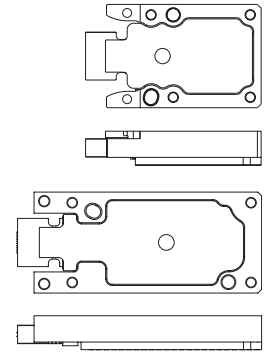
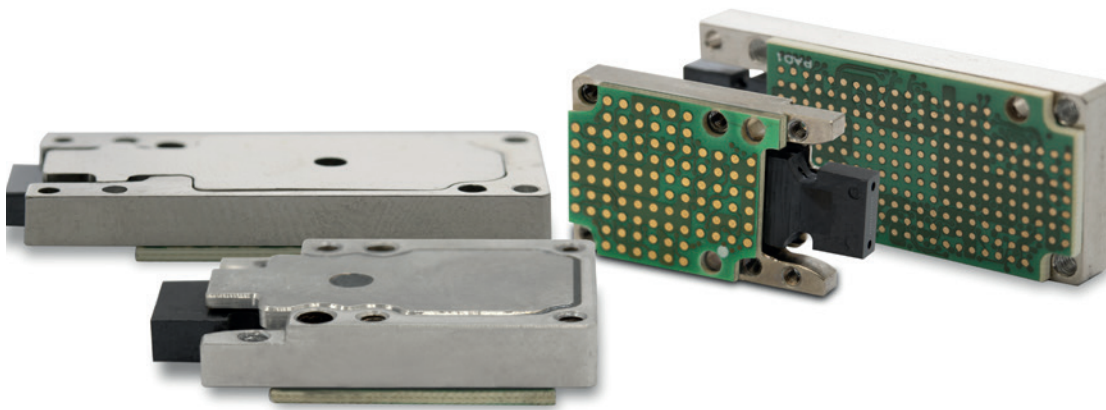


The most rugged high-performance embedded parallel optics.



## Radiation resistant



Real size for SpaceABLE SL 50G (full duplex) and SpaceABLE SL 150G (top) and SpaceABLE SL 150G (full duplex) and SpaceABLE SL 300G (bottom).

## SpaceABLE SL 50G, 150G, and 300G Radiation-resistant optical transceivers

The SpaceABLE® SL radiation resistant transceivers are engineered to withstand radiation doses  $>100$  krad (Si). The low profile SpaceABLE SL screw-in module mounts to the board via an LGA connector. It is offered as a (4+4)-lane transceiver, a 12-channel transmitter, or a 12-channel receiver, and a (12+12)-lane transceiver. All modules operate at 12.5 Gbps per channel from  $-40^{\circ}\text{C}$  to  $100^{\circ}\text{C}$  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.

### 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.
- **Cold start temperature:**  $-55^{\circ}\text{C}$ .
- **Performance:** up to 12.5 Gbps/channel from  $-40^{\circ}\text{C}$  to  $100^{\circ}\text{C}$
- **Sensitivity:**  $-9$  dBm for BER  $10^{-12}$
- **Low power consumption:** 85 mW/channel ( $<10$  pJ per bit)

### Configurations

- 4TRX (50G, full duplex)
- 12TX or 12RX (150G)
- 12TRX (150G, full duplex), in development
- 24TX or 24RX (300G), in development

### Applications

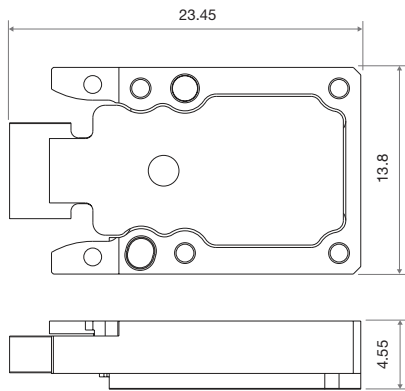
- High-throughput communication satellites
- LEO satellite constellations
- GEO satellites (with extended lifetime option)
- Board-to-board and payload-to-payload connections
- High I/O density, high BW communication links

# SpaceABLE SL 50G (full duplex), 150G, 150G (full duplex) and 300G features

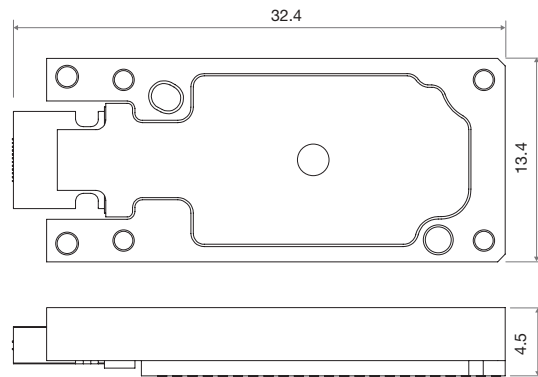
- 4 TRX (4+4)-lane per device (50G, full duplex)
- 12 TX or 12 RX channel per device (150G)
- 12 TRX (12+12)-lane per device (150G, full duplex)
- 24 TX or 24 RX channel per device (300G)
- Multimode 850 nm wavelength laser
- Over 100 m reach on OM3 ribbon fiber
- Standard MT parallel fiber connector
- RoHS
- Equalizer, pre-emphasis, adjustable output
- Monitoring: LOS, RSSI, temperature, etc.
- Available in extended industrial grade temperature range (−40°C to 100°C)

## Space qualification tests summary

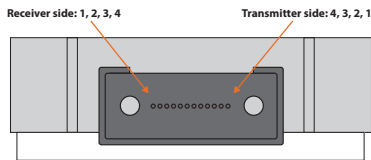
- **Proton testing:** Total Non-Ionizing Dose (TNID)
- **Heavy ion testing:** Single Event Effect & Latch-up (SEE and SEL)
- **Gamma Ray using Cobalt-60:** Total Ionizing Dose (TID)
- **Random vibration:** NASA GEVS, GSFC-STD-7000A
- **TVAC:** Vacuum < 5E-5 hPa
- **Outgassing:** ECSS-Q-ST-70-02C



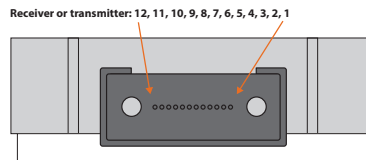
Drawing of SpaceABLE SL 50G (full duplex) and 150G.



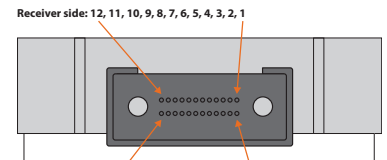
Drawing of SpaceABLE SL 150G (full duplex) and 300G.



Fiber assignment of SpaceABLE SL 50G (full duplex).



Fiber assignment of SpaceABLE SL 150G.



Fiber assignment of SpaceABLE SL 150G (full duplex) and 300G.

## SpaceABLE SL ordering information

Part Number	Product Description	Lanes	Bandwidth* (Gbps/channel)	Sensitivity (dBm)	Mounting	Operating Temperature (°C)
SLT12P918533001	SpaceABLE 12TX transmitter	12	12.5	n.a.	RoHS LGA	−40 to 100
SLR12P918530101	SpaceABLE 12RX receiver	12	12.5	−9	RoHS LGA	−40 to 100
SLX04P918532101	SpaceABLE 4TRX transmit/receive	4+4	12.5	−9	RoHS LGA	−40 to 100

\*: Operation over 10.3125 Gbps requires custom register settings in order to meet all the optical specifications.

[www.reflexphotonics.com](http://www.reflexphotonics.com)

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