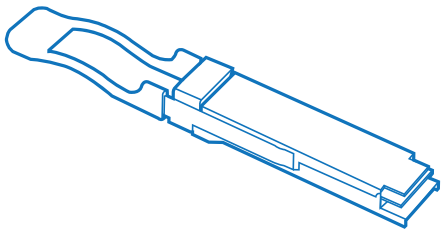
100G GREEN

100% Performance. 30% Less power consumption.

Introduction

Power consumption is a major concern in the design of Data Centres. Sizing a power source and direct consumable operating expenses is one aspect. The other, is that greater heat dissipation requires an increase in cooling of the room to maintain an efficient operating temperature.

As demand for cloud access steadily increases, requirements for more processing, storage and transport bandwidth create continued challenges in keeping Data Centres cool.



ProLabs
Unlock your connectivity

We're continually striving to develop solutions for connectivity challenges.

The battle for greater power efficiency

To make a transfer within the Data Centre more efficient, many circuits are aggregated over a common transport, the spine, to the server or storage devices referred to as the leaf.
As the number of circuits increase the data rates of the spine traffic increase from 10G to 100G. For the fibre optic transceivers that drive the signal across the fibre medium, as we increase from 10G to 100G on a short range (SR) optic, typical power consumption on the transceiver will rise from 1W to greater than 3.5W maximum power consumption.
While the efficiency per Gbps is impressive, the greater than 3x increase per link in power consumption is stressing Data Centre cooling designs.

Traditionally a fibre transceiver consists of digital transceiver to laser driver connected to the laser (TOSA/ROSA) which within the TOSA a lens is used to couple the laser to the fibre medium. This architecture results in a signal path assembly comprising of the laser, coupling lens and physical guides to connect the digital optical signal to the fibre medium.

Silicon Photonic solutions are being introduced into the market and bring integration of the optical engine and laser promising great benefits to manufacture as well as optical path efficiencies leading to less power consumption.

The immediate challenge with Silicon Photonics however is handling the heat dissipation of the chip along with placement and alignment of the fibre and photonic components.

One solution is a hybrid approach. Referred to as Silicon Optical Bench or SiOB. SiOB is a free-space optical interconnect technology utilising a silicon-based 45° micro-reflector to align the laser to the fibre medium. This deconstructs the TOSA and ROSA eliminating the need for the optical lens and a shorter optical path.

The optical path reduces to less than 200 µm versus the conventional approach which is greater than 500 µm.

This is a 60% reduction in the optical path resulting in lower power consumption and resulting less heat dissipation.

In a QSFP28-100G-SR4, the power consumption with the SiOB approach is 2.5W maximum versus a conventional transceiver consuming 3.5W maximum.

In typical operations, we find the SiOB solution to consume under 2.0W. This results in more than 30% reduction in power consumption that translates into a reduction in power consumed (kwh/y) by the transceivers and the cooling systems required by Data Centres.

Higher reliability

In addition to power consumption advantages, the lower power consumption enables a 40% wider operating range enabling reliable operation from +85°C to -10°C. This provides great flexibility when used within Data Center and closets that have extreme high temperatures while providing alternatives for outdoor cabinets and network interface devices. Overall, the lower heat dissipation results in higher reliability and longevity.

Why buy from ProLabs?

The line of Green transceivers from ProLabs offer greater than 30% reduction in power consumption.
Full compatibility with leading switching and transport platforms.
Delivery, quality and support that come standard with ProLabs products

Visit www.prolabs.com for more connectivity solutions.

SIOB free - space optical interconnect concept diagram