

GIGALIGHT Marketing Report Special Issue on Silicon Photonics & 400G

2022 Q3 Vol.6

New Products

400G Silicon Photonics

The award ceremony of China Fiber Connect Forum ended successfully in Nanjing Huashan Hotel on July 7th, 2022. GIGALIGHT once again won the annual innovation product award with its 400G QSFP-DD DR4 silicon photonics.

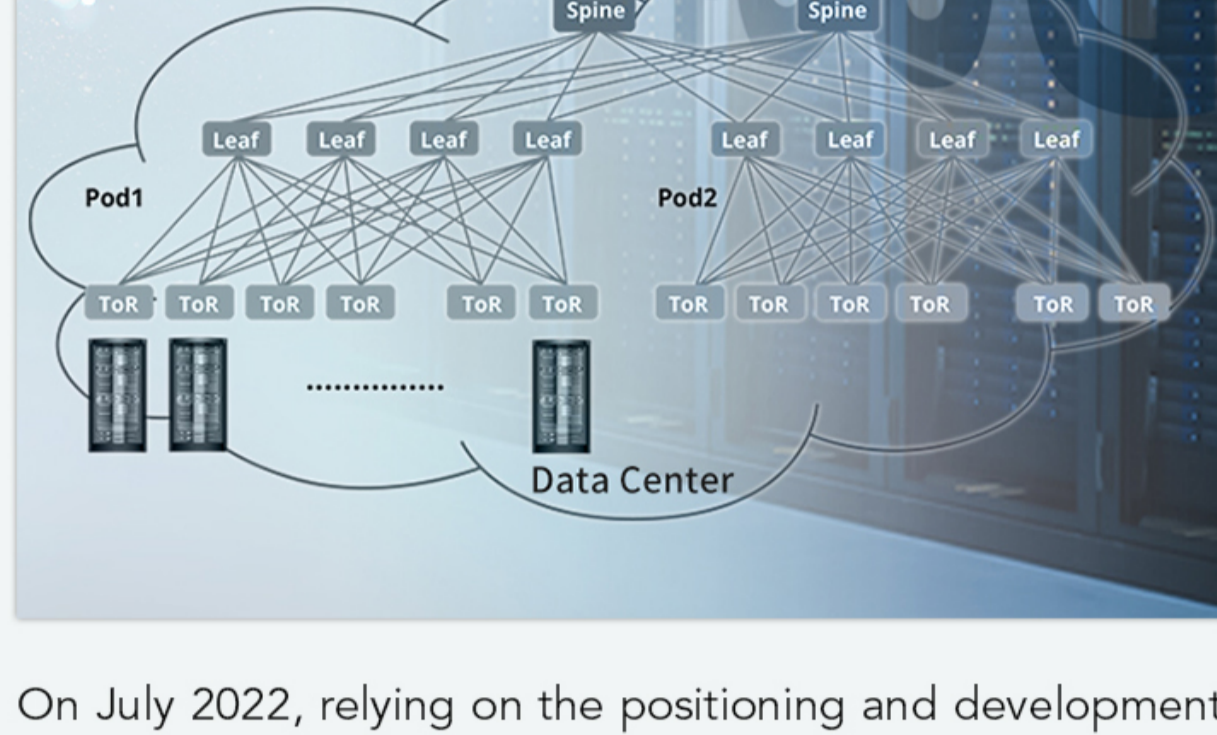


Core technologies of GIGALIGHT 400G silicon optical modules include high coupling efficiency package design and MZI software locking algorithms. Meanwhile, GIGALIGHT has co-designed several silicon optical waveguide chips with partners.

400G QSFP-DD DR4 Silicon Photonics

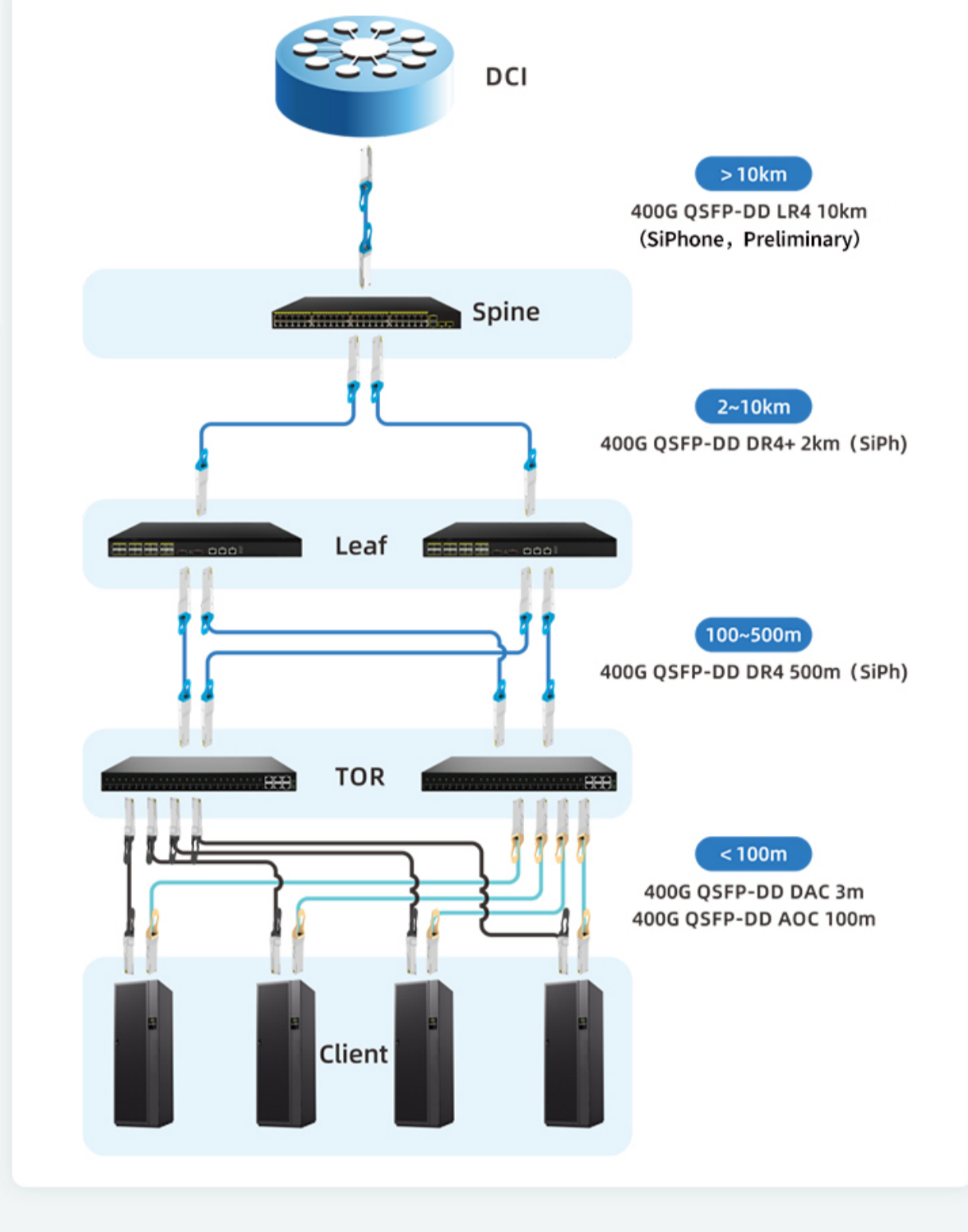
- Adopt 7nm process oDSP
- QSFP-DD electrical port, MPO12 optical port
- 0-70°C working temperature range
- Available in non-hermetic COB package for data center applications
- Three temperature power consumption < 8.7W
- Reach 500m/2km transmission range

400G Data Center

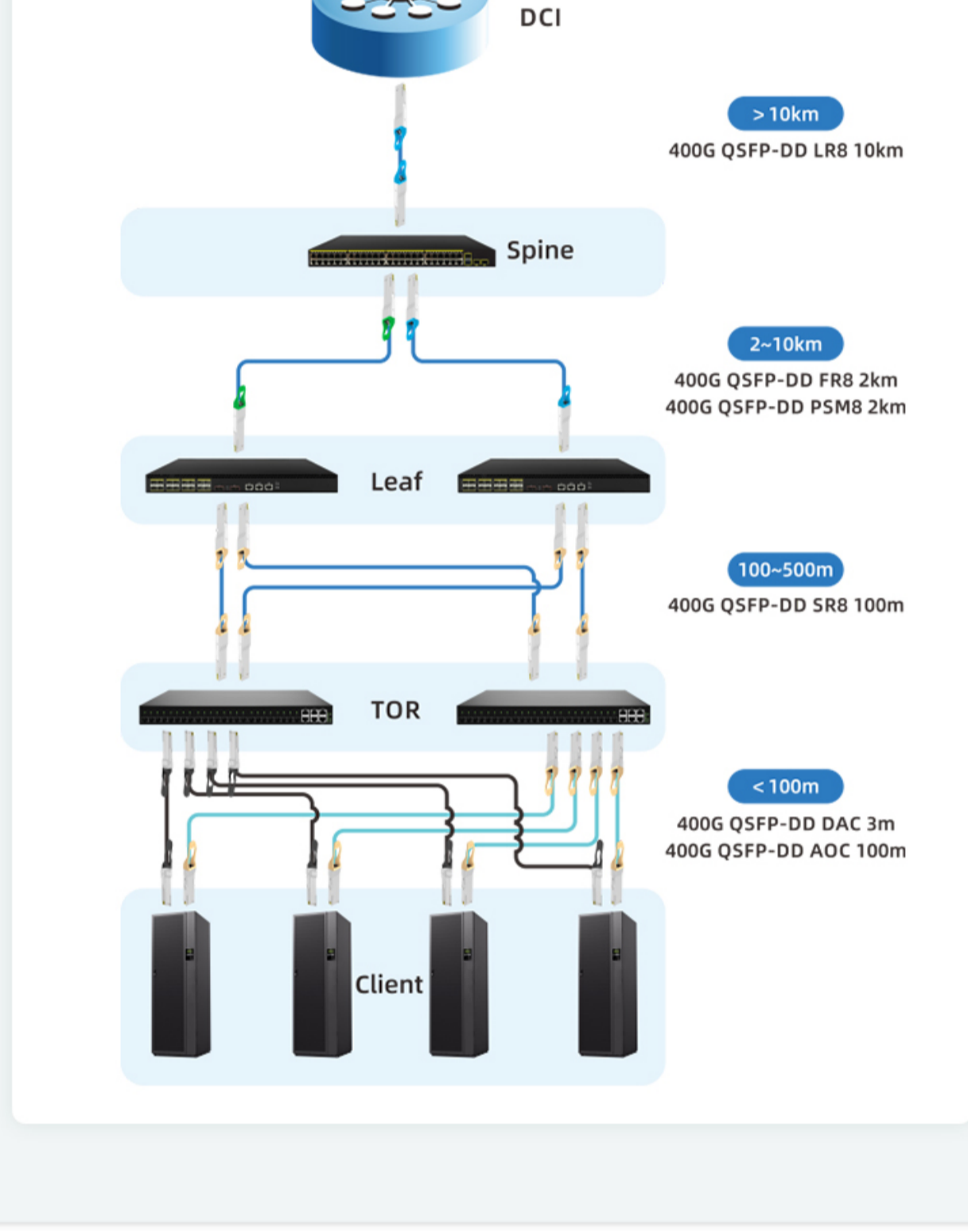


On July 2022, relying on the positioning and development of 8-channel optics, silicon photonics technology and high-speed DAC, GIGALIGHT announced the completion of the R&D and mass production layout of two different architectures of 400G data center product lines, which are undoubtedly designed for different user needs.

Architecture 1: Low-cost architecture based on 4-channel optics, silicon photonics technology and 100G PAM4 technology



Architecture 2: Low-latency architecture based on 8-channel optics and 50G PAM4 technology



Brand Sales

100G QSFP28 DR1

- Cost-effective
- Low power consumption
- Resolve bottlenecks in I/O

From **\$256.30**

[Order Now >](#)

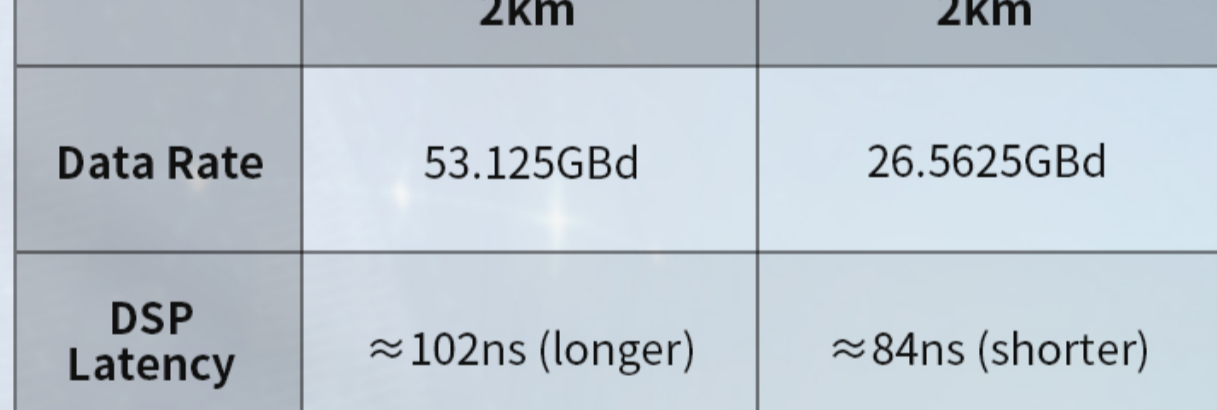
400G QSFP DD DR4

- Cost-effective
- Low power consumption
- Resolve bottlenecks in I/O

From **\$550.00**

[Order Now >](#)

Typical Breakout Applications



New Technology Insights

400G QSFP-DD FR8(EML) VS 400G QSFP-DD FR4(EML)

Item	400G QSFP-DD FR4 2km	400G QSFP-DD FR8 2km
Data Rate	53.125Gbd	26.5625Gbd
DSP Latency	≈102ns (longer)	≈84ns (shorter)
MPI Penalty	Poor	Acceptable
CD Penalty	Poor	Acceptable
KP4 FEC Margin	Reliable	Very reliable
Power consumption	Low	High
Transmission performance	Average	Better

In summary, compared with 400G QSFP-DD FR4, the 8-channel 400G QSFP-DD FR8 optical module has better transmission performance in all aspects, yet slightly inferior in power consumption. GIGALIGHT's original 8-channel optical engine design can greatly improve producibility and reliability.

400G QSFP-DD DR4(Silicon Photonic) VS 400G QSFP-DD DR4(EML)

Item	400G QSFP-DD DR4 500m Solution Comparison	
Product Solutions	Silicon Photonics Solution	Traditional EML Solution
Number of Lasers	2 CW Light Sources	4 EML Lasers (non-cooled solutions)
Coupling Lens	2	4
Isolator	2	4
Modulator	4 x Silicon Photonic Modulator (Monolithic Integration)	EA Integrated Modulator
Photodetector	4 x Silicon Photodetector (Monolithic Integration)	4 x Photodetector
Driver Chip	1 Set	1 Set
TIA Receiving Chip	1 Set	1 Set
DSP	1 Piece	1 Piece
Light Source Coupling Process	Only 3 sets of couplings are required: 2 groups of light source coupling, 1 group of silicon photonics chip TX&RX coupling (1 x 8 array)	5 sets of couplings are required: 4 groups of TX coupling, 1 group of RX coupling (1 x 4 array)
Power Consumption Comparison	9.5W	10W

Silicon photonics technology has brought revolutionary changes to the optical communication industry. Originally, the industry was moving in the direction of deepening EML, more expensive in cost and more complex in structure. However, with the introduction of silicon photomodulation and DFB technology, optical communication has the opportunity to return to an era of technical and cost simplicity.

Other Top Picks

400G 8-channel Optical Modules

Winner of the "2021 Innovation Product Award" in the optical module category

- Adopts unique 8-channel optical engine design, which greatly improves producibility and reliability
- The formal introduction of the 8-channel optical module concept architecture is challenging and differentiating from the industry's traditional 4-channel optical module

*If you are interested in our products or solutions, please reply to the email directly to explain your needs, and our sales manager will get in touch with you as soon as possible!