

Silicon Photonics Core Switch Test Report



Overview

Abstract—This paper reports the performances of a silicon photonics optical switch matrix fabricated by using large-scale three-dimensional (3-D) integration. In AI training clusters, thousands or even tens of thousands of GPUs perform All-Reduce operations, generating massive “east-west” traffic. This traffic exhibits high burstiness, extremely high bandwidth demands, and extreme sensitivity to latency. The network is no longer merely a pipeline. Silicon photonics has developed into a mainstream technology driven by advances in optical communications. More precisely, silicon photonics. Broadband nonvolatile electrically programmable silicon photonic switches Rui Chen,¹Zhuoran Fang, Johannes E. Fröch, Peipeng Xu,²Jiajiu Zheng,^{1*} Arka Majumdar^{1,3*} ¹Department of Electrical and Computer Engineering.

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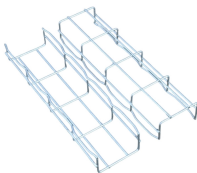
While the latter is suitable for narrowband operation, a broadband design is generally preferred to access a wider spectral range. Here we report a broadband nonvolatile electrically programmable $2 \times \dots$



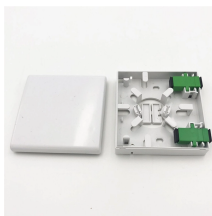
Summary • First high-speed Silicon Photonics wafer probe card demonstrated – Good DC measured data at wafer scale – Good RF measured data at wafer scale • Up to 67GHz • Silicon Photonics ...



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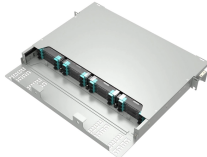
Silicon photonics 2022: the success story continues The Si photonics platform's maturity and rapidly-developing ecosystems fuel market-share growth in datacom and pull into its vicinity new ...



We chart the generational trends in silicon photonics technology, drawing parallels from the generational definitions of CMOS technology. We identify the crucial challenges that must be...



Silicon Photonics and Co-Packaged Optics The push to put lasers beside the switch ASIC is formalized in the OIF 3.2 Tb/s CPO spec, which spells out thermal, optical, and electrical ...



This report will deeply analyze the technical standards, core silicon photonics landscape, system vendors' solutions, and revolutionary changes in optical interconnect technologies ...



In this study, we categorised silicon-integrated optical switches by their internal mechanisms and discussed the most advanced literature on the subject. We additionally take a look ...



We describe the design of silicon photonic circuits and components that comprise the proposed DFT architecture. The designs are extensively simulated and validated as test-access and fault-detection ...



Short-reach optical interconnects using silicon photonics technology enable high-speed data transfer with low power consumption and improved thermal efficiency, making it ideal for real-time decision ...

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