

XSOM

System-on-Module for Driving
Photonic Integrated Circuits

At Nicslab, we believe that unlocking the power of light can transform lives. That's why we are committed to empowering innovators in developing integrated photonic devices—a versatile electronics component designed for seamless integration.



1

Simplified System Design, Reduced Costs

No matter the materials or characteristics of your integrated photonic system, XSOM, with its customizable carrier board, eliminates the need for additional modules. Whether you require higher voltage driving or precise photo-current measurement, XSOM adapts effortlessly—minimizing costs and complexity.

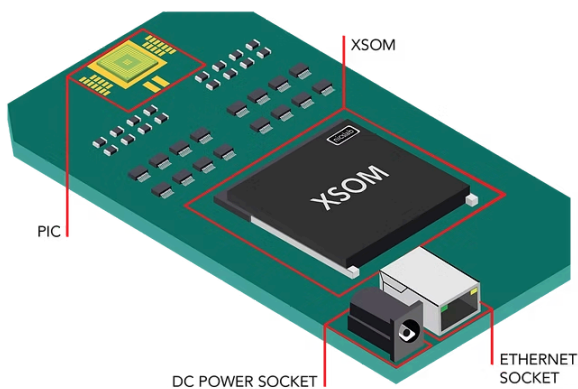
2

Scalability for High-Density Integrated Photonics

In applications like large-scale photonic switches, AI inference photonics, programmable photonics, and quantum photonics, managing hundreds of components efficiently is critical. XSOM enables seamless scalability, operating independently across multiple channels for simultaneous fast driving and monitoring—enhancing both performance and efficiency.

BASIC BOARD

BOARD DESIGN



SPECIFICATIONS

| Indicator | Specification | Notes |
|----------------------------------|-----------------------------|---|
| Communication Port | Ethernet/UART | Installed on extension board |
| Connector | SO-DIMM | Connection to extension board |
| Voltage Output | 20 V/±20 V | 16-bit resolution 2 feedback control options for integrating with other circuit. (max. current 10 mA) |
| Current Output | 300mA @ 30 V | 16-bit resolution, require external buffer |
| Voltage Measurement | 20 V/±20 V | 16-bit resolution |
| Differential Voltage Measurement | Vdiff = 0.05 V VCOM = ±20 V | 16-bit resolution |
| Sampling/Update Rate | 100 KHz | |
| Dimension | 82×127 mm | |

USECASE

The Potential Application System Design

A versatile component designed for seamless integration, helping innovators develop advanced photonic devices

ALTERNATIVE EXPANSION BOARD 1

The foundation for all configurations: XSOM, your PIC, and the critical links—Ethernet, power, and precision resistors—streamlined for early-stage prototyping.

ALTERNATIVE EXPANSION BOARD 2

Built for active emission control: laser-enhanced XSOM with buffers ensures your PIC can drive light with stability and clarity.

ALTERNATIVE EXPANSION BOARD 3

Integrated TIA and buffering enable fast, accurate photonic feedback—unlocking closed-loop performance with real-time responsiveness.

ALTERNATIVE EXPANSION BOARD 4

Engineered for scale and performance: multi-XSOM architecture driving parallel PIC arrays with centralized power and real-time TIA feedback.