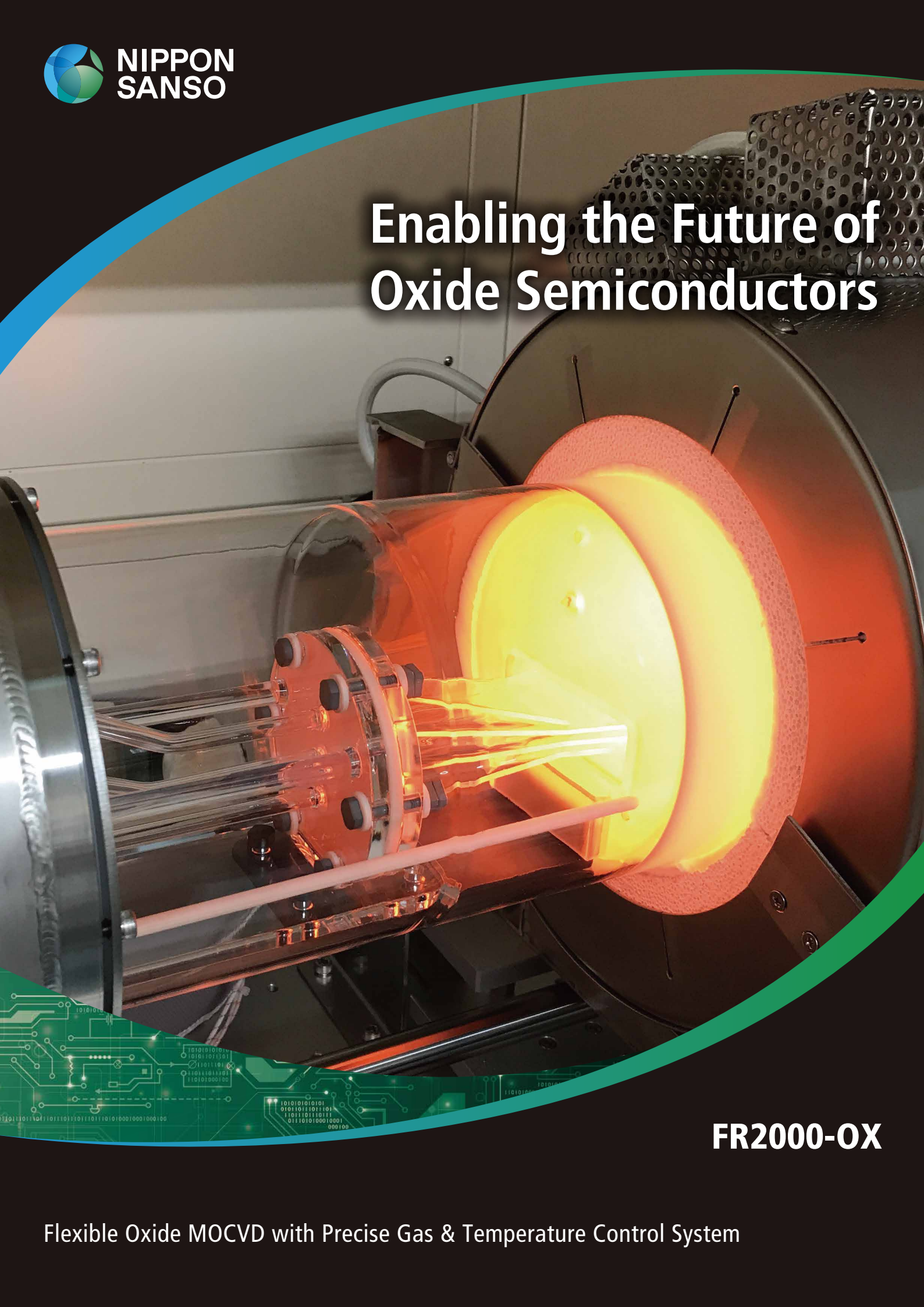


# Enabling the Future of Oxide Semiconductors



**FR2000-OX**

Flexible Oxide MOCVD with Precise Gas & Temperature Control System

# Cutting Edge MOCVD System for Oxide Power Devices

## Advantages

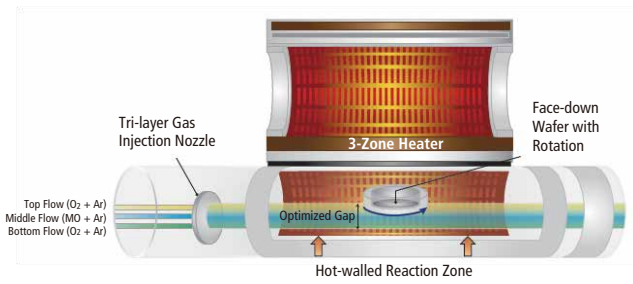
- A horizontal tri-layer laminar flow gas phase with hot wall design, based on Nippon Sanso technology, enables controlled, uniform gas flow and limits parasitic reactions
- A production-friendly face-down wafer design reduces particle contamination in epitaxial growth layers
- The system is provided with Nippon Sanso's unique automatic logging functions as a standard feature for easy troubleshooting
- Simple reaction tube reactor design enables easy maintenance
- Easy-to-use software and operation panel



## Applications

Power devices, UV photodetectors and all new related applications

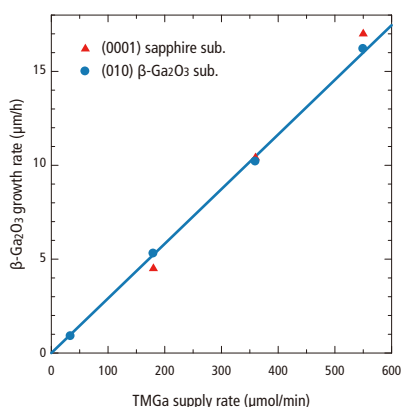
FR2000-OX reactor design and concept



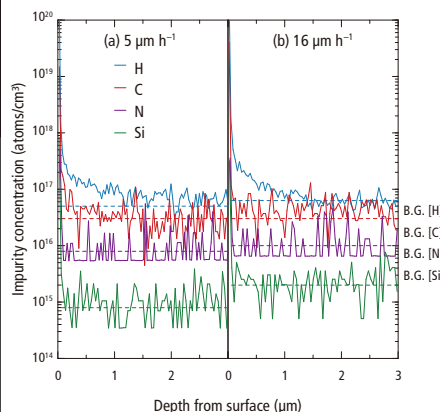
## FR2000-OX Specifications

Reactor type	Face down, horizontal with rotation
Wafer size	2" x 1 (Single wafer)
Heating system	Two (2) zone control, hot-wall system
Sources	Three (3) or more
Gas nozzles	Tri-layer gas injection

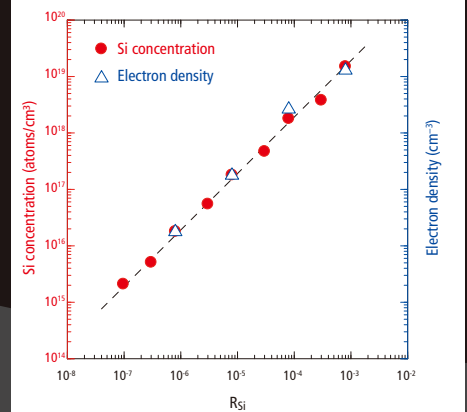
Growth rate on sapphire and Ga<sub>2</sub>O<sub>3</sub><sup>(1)</sup>



Impurity data by SIMS<sup>(1)</sup>



Si-doped Ga<sub>2</sub>O<sub>3</sub><sup>(2)</sup>



Reference

- (1) J. Yoshinaga and Y. Kumagai, Appl. Phys. Express16, 095504 (2023).  
 (2) J. Yoshinaga and Y. Kumagai, Appl. Phys. Express18, 055503 (2025).

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