MEDIA RELEASE

NSTIC (GAN) LAUNCHED TO LEAD SINGAPORE IN NEXT-GENERATION SEMICONDUCTOR INNOVATION

The Centre places Singapore amongst global leaders in Gallium Nitride R&D, and provides companies with access to industry-grade infrastructure to accelerate prototyping and commercialisation

Singapore, 26 June 2025 – The National Semiconductor Translation and Innovation Centre for Gallium Nitride (NSTIC (GaN)) was officially opened today by Minister-in-charge of Energy and Science & Technology, Dr Tan See Leng.

NSTIC (GaN) is Singapore's first national facility dedicated to Gallium Nitride semiconductors — a technology that enables smaller, faster and more energy-efficient electronic devices. The Centre brings advanced manufacturing capabilities to Singapore, positioning local innovators to compete in high-growth global markets such as advanced 5G and 6G communication systems, radars and satellite communications.

First set up in 2023 as the National Gallium Nitride Technology Centre (NGTC), NSTIC (GaN) is a partnership between the Agency for Science, Technology and Research (A*STAR), DSO National Laboratories (DSO), and Nanyang Technological University, Singapore (NTU Singapore). The Centre addresses common challenges faced by companies and researchers – such as limited local access to advanced facilities and the need for closer collaboration across the ecosystem – by providing industry and research collaborators with access to advanced wafer fabrication and prototyping infrastructure, strengthening Singapore's position in the global semiconductor ecosystem.

1. Boosting Singapore's Semiconductor Innovation Ecosystem

The semiconductor industry is a key pillar of Singapore's economy, contributing nearly 6% of GDP and supporting around 35,000 skilled jobs across R&D, design, and advanced manufacturing.
NSTIC (GaN) is part of the broader National Semiconductor Translation and Innovation Centre (NSTIC) initiative led by A*STAR, which supports national efforts to deepen semiconductor R&D and innovation across priority domains such as photonics and advanced packaging.

Globally, Gallium Nitride (GaN) is gaining traction as a next-generation semiconductor material. It operates at higher voltages, and switches faster and more efficiently, enabling high-frequency, smaller and more energy-efficient components. These properties make GaN particularly suitable for high-performance applications such as 5G and beyond, satellite communication, and next-generation mobility.

NSTIC (GaN) was established to build national capabilities in this critical technology area, and to support companies in translating GaN innovation into real-world impact. The Centre offers open-access infrastructure and R&D capabilities to help startups, SMEs and MNCs prototype, validate and scale up new GaN-based technologies.

2. A National Facility to Enable Next-Generation Technologies

NSTIC (GaN) is the first facility in Singapore to host both 6-inch GaN-on-Silicon Carbide (SiC) and 8-inch GaN-on-Silicon (Si) wafer fabrication lines – describing the diameter of the wafers, which determines how many chips can be fabricated per wafer and impacts production efficiency and cost. This dual capability allows the Centre to serve a wide range of applications with differing performance requirements.

It will also offer advanced node processing below 0.1 micrometres[1] and frequencies above 100GHz[2] which allows for higher chip density and faster processing speeds. This places Singapore among a select group of global locations with the infrastructure to produce advanced semiconductors that will power future communication and advanced instrumentation technology — strengthening both national resilience and global competitiveness.

From mid-2026, NSTIC (GaN) will begin offering commercial foundry services for prototyping and fabrication. This will enable companies to carry out advanced development work locally, reducing reliance on overseas facilities and accelerating their time-to-market. The availability of such infrastructure in Singapore helps lower capital and technology barriers — especially for start-ups and SMEs — and supports the growth of a more self-sufficient semiconductor innovation ecosystem.

“NSTIC (GaN) is not just a facility — it is a national platform for innovation and a catalyst for future technologies,” said Mr Cheong Chee Hoo, Chairman of the NSTIC (GaN) Steering Committee. “Our goal is to build deep capabilities in GaN manufacturing and research, so that Singapore can help define the future of high-performance semiconductors.”

3. Strengthening Industry Collaboration and Local Supply Chains

Industry partnerships are a key part of NSTIC (GaN)’s approach, enabling the Centre to co-develop technologies, strengthen local capabilities, and support strategic access to critical materials.

One such collaboration involves WaferLead, a local start-up working with NSTIC (GaN) to develop high-quality Silicon Carbide (SiC) substrates — a key component in GaN wafer production. This partnership supports the development and enhancement of wafer performance, quality and reliability, while strengthening local capabilities and Singapore’s supply chain resilience.

As part of the launch, several Memoranda of Understanding (MoUs) and Research Collaboration Agreements (RCAs) will be signed between NSTIC (GaN) and industry partners. These collaborations span areas such as substrate development, high-frequency circuit design, advanced packaging, and fabrication process enhancement.

See **Annex A – Key Industry Collaborations** for more information.

4. Developing a Pipeline of Semiconductor Talent

[1] A **“node”** refers to the **size of the smallest features** that can be made on a chip. The **smaller the node**, the more transistors you can fit onto a chip, making it **faster, more powerful, and more energy-efficient**. Advanced node processing is the high-tech method of building faster, smaller, and more efficient chips by packing more transistors into incredibly tiny spaces.

[2] Refers to **clock frequency** — the speed at which a chip can perform calculations.

NSTIC (GaN) plays a strategic role in developing a strong pipeline of local semiconductor talent. Through partnerships with Singapore's Institutes of Higher Learning (IHLs), the Centre offers students and researchers early exposure to industry-grade infrastructure and processes, equipping them with practical experiences in the semiconductor sector.

The Centre also supports PhD training programmes in collaboration with IHLs and industry, helping to deepen translational research capabilities in GaN technologies. These efforts are critical to ensuring that Singapore has the talent base needed to support the growth of our deep-tech innovation ecosystem.

– End –

Enclosed:
Annex A – Key Industry Collaborations and Early Use Cases

For media queries and clarifications, please contact:

Aefy Raib
Agency for Science, Technology and Research (A*STAR)
Corporate Communications
Mobile: +65 8368 0307
Email: aefyraib@hq.a-star.edu.sg

Lester Kok
Nanyang Technological University, Singapore (NTU Singapore)
Corporate Communications Office
Mobile: +65 9741 5593
Email: lesterkok@ntu.edu.sg

About the Agency for Science, Technology and Research (A*STAR)

The Agency for Science, Technology and Research (A*STAR) is Singapore's lead public sector R&D agency. Through open innovation, we collaborate with our partners in both the public and private sectors to benefit the economy and society. As a Science and Technology Organisation, A*STAR bridges the gap between academia and industry. Our research creates economic growth and jobs for Singapore, and enhances lives by improving societal outcomes in healthcare, urban living, and sustainability. A*STAR plays a key role in nurturing scientific talent and leaders for the wider research community and industry. A*STAR's R&D activities span biomedical sciences to physical sciences and engineering, with research entities primarily located in Biopolis and Fusionopolis. For ongoing news, visit www.a-star.edu.sg.

Follow us on
Facebook | LinkedIn | Instagram | YouTube | TikTok

About Nanyang Technological University, Singapore

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 35,000 undergraduate and postgraduate students in the Business, Computing & Data Science, Engineering, Humanities, Arts, & Social Sciences, Medicine, Science, and Graduate colleges.

NTU is also home to world-renowned autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies and Singapore Centre for Environmental Life Sciences Engineering – and various leading research centres such as the Earth Observatory of Singapore, Nanyang Environment & Water Research Institute and Energy Research Institute @ NTU (ERI@N).

Under the NTU Smart Campus vision, the University harnesses the power of digital technology and tech-enabled solutions to support better learning and living experiences, the discovery of new knowledge, and the sustainability of resources.
Ranked amongst the world's top universities, the University's main campus is also frequently listed among the world's most beautiful. Known for its sustainability, NTU has achieved 100% Green Mark Platinum certification for all its eligible building projects. Apart from its main campus, NTU also has a medical campus in Novena, Singapore's healthcare district.

For more information, visit www.ntu.edu.sg

ANNEX A

KEY INDUSTRY COLLABORATIONS

Entities Signing a Memorandum of Understanding (MoU)

Company	Summary of MoU	Details of MoU
Waferlead	Pioneering Singapore's first sovereign SiC-to-GaN supply chain.	To establish Singapore's first in-country 6" semi-insulating SiC substrate growth and GaN-on-SiC epilayer growth using Metal Organic Chemical Vapour Deposition (MOCVD), enabling sovereign supply chain resilience for advanced semiconductor devices.
Oxford Instruments	Co-developing ALD and ALE process solutions for GaN enhancement.	To co-develop advanced wafer processing solutions such as ALD deposition and ALE/PPDE etching technologies to enhance GaN device performance.
ST Engineering	To jointly explore opportunities in advanced MMIC solutions.	

Entities Signing a Research Collaboration Agreement (RCA)

Company	Summary of RCA	Details of RCA
Rohde & Schwarz	Developing GaN-on-SiC HEMTs for	To develop high-performance GaN-on-SiC HEMTs and MMIC power amplifiers on 6-inch wafers

	100GHz+ mmWave applications.	targeting mmWave applications, achieving ultra-high frequency (above 100GHz) for next-generation wireless communication test & measurement instruments.
Singapore Hybrid-Integrated Next-Generation µ-Electronics (SHINE)	Advanced thermal modeling for reliable high-power GaN HEMTs.	To develop advanced thermal characterization methodologies and modeling techniques for GaN HEMT devices, enabling improved thermal management solutions that enhance reliability and performance for high-power applications.
Incize	Enhancing RF GaN with advanced PSi substrates.	To develop novel porous silicon (PSi) substrates by combining Incize's resistivity-enhancing technology with NGTC's RF GaN expertise, targeting improved signal integrity for 5G/6G and satellite applications.