



MICRO-ELECTRONICS

Northrop Grumman solves the toughest problems in space, aeronautics, defense, and cyberspace to meet the ever-evolving needs of our customers worldwide. Together, our 90,000 employees define possible every day using science, technology, and engineering to create and deliver advanced systems, products and services.

For the last 50 years, Northrop Grum-

man's foundry has been developing advanced semiconductors for a variety of applications. Located in Redondo Beach, California, the foundry processes hetero-junction bipolar transistors (HBT) and high electron mobility transistors (HEMT) for monolithic microwave and millimeter-wave integrated circuits (MMICs).

The foundry focuses on products that are microscopic, modular, high speed, and low in power consumption and temperature. These high-performing circuits are used in products that enable missions ranging from advanced satellite com-

munications and complex astrophysics systems to commercial applications, such as smartphones and ground-based communications infrastructures.

FOUNDRY SERVICES AND PRODUCTS

- Design
- On-wafer tests
- Assembly
- Power amplifiers
- Low noise amplifiers
- Mixers and multipliers
- Switches

MICROELECTRONICS

THE MPS DIFFERENCE

Northrop Grumman Microelectronics Products and Services (MPS) is a leader in the design and manufacture of III-V compound semiconductors. MPS is committed to quality and reliability across its vertically integrated semiconductor value chain, from raw materials and design to fabrication and testing.

These technologies have been developed with the goal of delivering a proven, reliable product for defense critical applications. This commitment to quality and reliability begins with raw material (Northrop Grumman performs its own epitaxial growth) and continues through design, fabrication, and testing. Northrop Grumman's vertically integrated development process allows for a holistic view of reliability and quality.

TECHNOLOGIES

- Gallium Nitride (GaN) HEMT
 - High power and high survivability
- Gallium Arsenide (GaAs) HEMT
 - Linear power and low noise
- Indium Phosphide (InP) HEMT
 - Low noise and high frequency
- Indium Phosphide (InP) HBT
 - High speed digital and mixed signals
- DAHI (Diverse Accessible Heterogenous Integration)
- Multi-layer Wafer Packaging

MICROELECTRONICS TO MACRO ELECTRONICS

- Semiconductor material development
- Integrated circuit design and fabrication
- Multi-chip module assembly
- Multi-function hardware integration enabling satellites to conduct space missions

WE OFFER

- 100 mm wafer-size fabrication facilities
- In-house multi-wafer Molecular Beam Epitaxy (MBE)
- Process design kits (PDK) with synchronized layout and model sets
- Processes designed for high-reliability applications
- Department of Defense "Trusted" foundry
- Multi-customer shared mask foundry products and services
- On-wafer RF testing beyond 110 GHz

THE MICROELECTRONICS COMMONS

In 2023, the U.S. Department of Defense announced eight new research and development hubs in the United States that will make up the Microelectronics Commons. In Southern California, the California Defense Ready Electronics and Microdevices Superhub (DREAMS), will be led by the University of Southern California and include Northrop Grumman's Foundry. The coalition hopes to boost microelectronics production for 5G/6G technology.

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