



# MICROELECTRONICS — SPACE PARK FOUNDRY

A leader in production, prototyping, research and development of microelectronics

Northrop Grumman's Microelectronics Center is comprised of two U.S.-based government-Trusted foundries and advanced packaging facilities. We design and deliver millions of critical microelectronics annually to support next-generation defense and commercial systems. From design to fabrication, our mission-tailored microelectronics solutions deliver unparalleled performance for any application.

## DOMINATING THE ELECTROMAGNETIC SPECTRUM FROM RF TO THz WITH COMPOUND SEMICONDUCTORS

Space Park has a full suite of space qualified compound semiconductor technologies used in national asset space programs and commercial applications.

- Gallium Nitride (GaN) HEMT: High power and high survivability low noise applications through 100GHz
- Gallium Arsenide (GaAs) HEMT: Linear power and low noise applications through 100GHz
- Indium Phosphide (InP) HBT: High speed digital and mixed signals applications through 300 GHz
- Indium Phosphide (InP) HEMT: Low noise and high Frequency applications up to 1THz
- Wafer Level Packaging for chip scale hermetic packages and 3D Heterogeneous Integration (3DHI)
- Diverse Accessible Heterogeneous Integration (DAHI)

## THE GAN DIFFERENCE; POWER PERFORMANCE THROUGH MMW FOR DUAL USE APPLICATIONS

Space Park's qualified production GaN processes provides linear power through W-band. The technology is engineered to provide reliable performance with high gain and bandwidth for your most discriminating RF and mmW applications.

**NORTHROP  
GRUMMAN**



**AWARDED COOLEST  
THING MADE IN CA**  
for THz chip



**20,000 SQUARE FEET**  
of cleanroom manufacturing space



**GUINNESS WORLD RECORD**  
for fastest microchip transistor



**CONTRIBUTES TO 7M**  
annual chip deliveries



**NG TECHNOLOGY IS IN 90%**  
of U.S. national security space satellites



**OVER 50%**  
of production volume is commercial

[ngc.com/micro](https://ngc.com/micro)

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**APPLICATIONS**

- GaN20: Power applications through Ka-band
- GaN15: Power and low noise applications through V-band
- GaN09: Power and low noise applications through W-band
- GaN05 (in development): applications up to 200GHz

**ADVANTAGES**

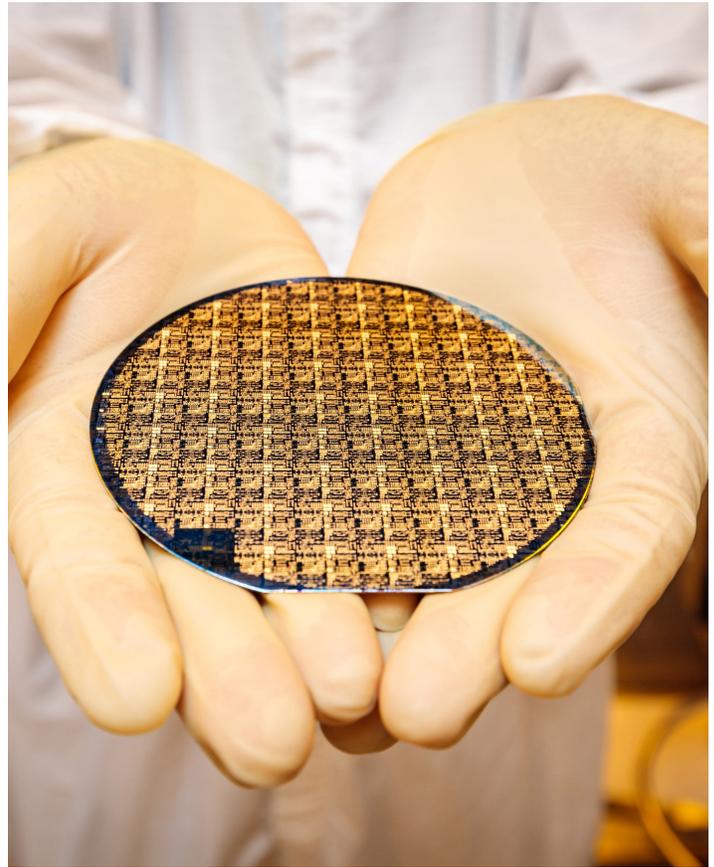
- Efficiency
- Size and weight
- High thermal conductivity

**OUR LEADING TECHNOLOGY**

Space Park Foundry focuses on products that are microscopic, modular, high speed, and low in power consumption and temperature. We are configured for R&D and prototyping, production and packaging.

**III – V TECHNOLOGIES**

- GaAs
- GaN
- InP
- Chip-scale packaging (2.5 and 3D HI)
- Products (Link to website)
- Power amplifiers
- Low Noise amplifiers
- Mixers and Multipliers
- Switches
- Services
- 100mm wafer fabrication
- Full suite of process design kits (PDK)
- Dedicated and multi-customer shared mask runs
- On -wafer RF testing to 220 GHz



FRONT-END FABRICATION	BACK-END PROCESSES	PROTOTYPE & DEVELOPMENT SUPPORT	ADVANCED PACKAGING PROCESSES	TESTING & CHARACTERIZATION
<ul style="list-style-type: none"> <li>• Photolithography</li> <li>• Thin films</li> <li>• Etch</li> <li>• Diffusion</li> <li>• Ion Implantation</li> <li>• Molecular Beam Epitaxy</li> <li>• Electron Beam Lithography</li> <li>• Specialized processes for silicon, III-V, and advanced materials</li> </ul>	<ul style="list-style-type: none"> <li>• Thin film and electroplated metals</li> <li>• Bumping</li> <li>• Under bump metalization</li> <li>• Through wafer vias</li> <li>• Passivation</li> <li>• Wafer thinning</li> <li>• Dicing</li> </ul>	<ul style="list-style-type: none"> <li>• Pilot production for transitioning designs to production</li> <li>• Full suite of process design kits (PDK)</li> <li>• Dedicated and multi-customer shared mask runs</li> </ul>	<ul style="list-style-type: none"> <li>• Wafer Level Packaging</li> <li>• 3D heterogeneous chiplet integration</li> <li>• SiC Interposer</li> </ul>	<ul style="list-style-type: none"> <li>• Inline inspection</li> <li>• Electrical test</li> <li>• Yield analysis</li> <li>• Reliability screening</li> </ul>



Explore our offerings



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