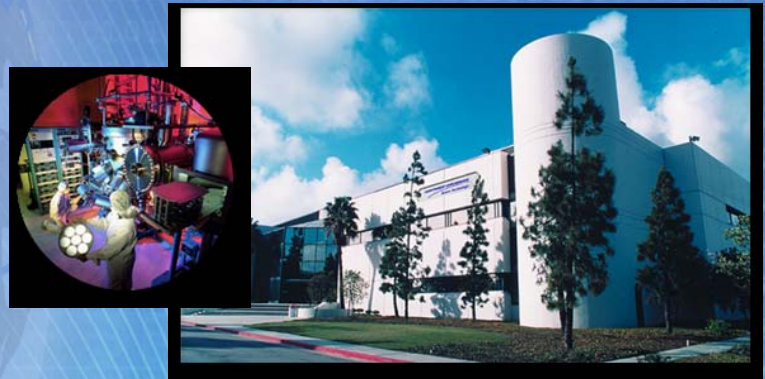


Foundry Services

GaAs, InP, & GaN Technologies

The Northrop Grumman Aerospace Systems foundry, located in Redondo Beach, California, processes commercial volumes of hetero-junction bipolar transistor (HBT) and high electron mobility transistor (HEMT) for monolithic microwave and millimeter wave integrated circuits (MMICs). Our high-performance circuits are used in established and emerging commercial markets, including cellular and broadband wireless systems, cutting-edge aerospace & defense and scientific applications.



We offer:

- Advanced process technologies that enable differentiating MMIC and system performance
- In-house multi-wafer Molecular Beam Epitaxy (MBE) for precision control of device doping profiles
- Process Design Kits with synchronized layout and model sets optimized to millimeter wave, low noise and power applications
- Mature and reliable processes
- Stability of defense critical DoD "Trusted" foundry
- Volume wafer fabrication facilities
- Multi-customer shared mask foundry runs
- On-wafer RF testing beyond 110 GHz

**300 GHz
HBT and
HEMT**

**Indium
Phosphide**

**Fully Integrated
GaN MMIC
Technology**

| Parameter/ Technology | 1um power InP HBT | 0.8 um digital InP HBT (2Met) | 0.6 um digital InP HBT (4Met) | 0.15 um GaAs PHEMT | 0.1 um GaAs PHEMT | 0.1 um InP PHEMT | 0.25 um GaN HEMT |
|-------------------------------------|-----------------------------|---|--|--------------------------|-------------------------|------------------------|------------------------|
| Ft (peak) | 80 GHz | 160 GHz | >250 GHz | 80 GHz | 120 GHz | 180 GHz | 55 GHz |
| Fmax (peak) | 150 GHz | >200 GHz | >300 GHz | 200 GHz | 250 GHz | 350 GHz | 100 GHz |
| Beta/Gm | 25 | 80 | 80 | 550 mS/mm | 650 mS/mm | 900 mS/mm | 350 mS / mm |
| Vce / Vds (Max) | 7.5V | 5V | 4V | 5V | 4V | 1.2V | 25V |
| Current Density (Max) | 0.7 mA / um ² | 1.5 mA / um ² | 2.5 mA / um ² | 250 mA / mm | 250 mA / mm | 150 mA / mm | 250 mA / mm |
| Wafer Thickness | 75 um | 75 um | 75 um | 50 & 100 um | 50 & 100 um | 75 um | 100 um |
| Airbridged Metal Available | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Backside Vias | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Diode Type | Schottky | Schottky | Schottky | Gate Source | Gate Source | Gate Source | NA |
| Wafer Size | 100 mm | 100 mm | 100 mm | 100 mm | 100 mm | 100 mm | 3" |
| Commercial Qualification Date | TBD | NOW | Q2 2011 | NOW | NOW | Q2 2011 | Q2 2011 |

Note: The product represented by this flysheet is subject to U.S. Export Law as contained in the ITAR.

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