

# Advanced Technology Center E-Beam Lithographic Operations



Class 100 "Yellow" Clean Room

Our state-of-the-art E-Beam facility houses two Electron Beam Pattern Generators. The ETEC MEBES III system produces high-quality photomasks to demanding specifications, while our LEICA EBPB-4V system delivers 100-nanometer Direct Write-on-a-Wafer capability.

*For more information, please contact:*  
Northrop Grumman Corporation  
Electronic Sensors and Systems Sector  
P.O. Box 1521, MS 3D14  
Baltimore, MD 21203 USA  
Telephone: (410) 765-7469  
Fax: (410) 765-7652  
Email: [michael\\_d\\_fitzpatrick@md.northgrum.com](mailto:michael_d_fitzpatrick@md.northgrum.com)

***NORTHROP GRUMMAN***

**Electronic Sensors and  
Systems Sector**

# Advanced Technology Center E-Beam Lithographic Operations

The E-Beam Lithographic Operations of the Advanced Technology Center are located within minutes of the Baltimore-Washington Airport in Baltimore, Maryland. This DoD-secure, ISO-9001-certified facility has been delivering on-time quality photomasks to our internal and external customers for more than 25 years and is available to help you with your specific photomask requirements.

More than 150,000 photomasks have been produced and used in our in-house Silicon and Gallium Arsenide fabrication lines to deliver state-of-the-art microelectronic devices and integrated circuits including microwave, radiation hardened, mixed signal, very low-power/high-speed analog ADCs, ASICs and CCDs for high-value-added system insertion leverage.

We offer a capability that can satisfy your most stringent technical requirements with fast turnaround at a very competitive price.

In addition to complete or specific maskmaking services, we also offer custom graphics and design services as well as an established Direct Write-on-a-Wafer Capability.

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# Advanced Technology Center E-Beam Lithographic Operations

## MASKMAKING SERVICES

### Data Conversion - Transcription Enterprises (CATS)

- MEBES
- KLARIS
- GDS-II
- APPLICON
- AUTOCAD
- CIF

### Data Manipulation

- Data sizing
- Data compaction
- Pattern data compilation

### MEBES-Generated Photomasks

- 1x full field masters
- 5x, 10x reticles
- DoD-secure facility

### Quality Assurance Package

- Zero defect photomasks
- 100% die to database KLARIS inspection
- Leitz pattern registration certification
- Computerized CD measurement verification
- Versetec / film enlargement pattern data verification
- Pellicle supply and mounting

## DIRECT WRITE-ON-A-WAFER SERVICES

- Data conversion - BEAMS
- Job deck preparation
- Leica Beamwriter EBPG-4V
- Resist processing

## GRAPHIC DESIGN SERVICES

### Design Automation Tools

- CADENCE
  - Analog and mixed-mode designs
  - Design capture and simulation
  - Full custom layout
  - Design verification
    - DRACULA (DRC, ERC, LVS)
- MENTOR
  - Digital designs
  - Mixed mode designs (GDT)
  - Design capture and simulation
  - Gate arrays
  - Standard cell
  - Structured custom layout (GDT)
  - Automatic routing

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## Why you should make us your supplier of choice:

### *Price*

We offer very competitive prices, providing small businesses with incentives normally enjoyed only by large companies.

### *Fast Turnaround*

For the first three mask layers, we provide two-day turnaround from the receipt and acceptance of the order.

### *Quality*

We guarantee every mask to meet your specifications or we will replace it, no questions asked.

### *People*

Dedication and team spirit set us apart from other mask houses. Working together as a Self-Directed Work Team with more than 150 years of combined experience in the production of high quality photomasks, we have thrived while others have failed in this very competitive marketplace.

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