

Foundry Services

- Epitaxial Structures Design
- Standard Laser Diode Processing
- Customized Processing
 - Mask Design
 - Facet Coatings
- Packaging of Bars & Arrays
 - Both Standard & Custom
- Microlensing of Bars & Arrays
- Diode Laser Fiber Coupling



WAFER PROCESSING CAPABILITIES

Photolithography -
Various process steps using a photo-sensitive material to transfer the pattern of a mask to a work piece

Plasma Deposition -
Plasma enhanced chemical vapor deposition (PECVD) of oxide, nitride or oxynitride

Sputter Deposition -
The ion bombardment of a "target" or cathode to sputter off and deposit material such as titanium, platinum or gold

Plasma Etch -
Dry etch (plasma or reactive ion etch mode) of material reactive with a fluorine or oxygen based etch chemistry

Rapid Thermal Anneal/Alloy -
A halogen lamp heated quartz chamber used to alloy (blend) metals or to anneal (repair or improve) material via a thermal cycle

Lapping/Polishing -
A mechanical and/or chemical process to thin and/or smooth a work piece

Wet Etching/Cleaning -
A host of liquid chemical processes to etch or clean GaAs and other materials

BAR/CHIP PROCESSING CAPABILITIES

Scribe & Cleave -
Systems and tooling to break a processed wafer into precisely defined pieces to form individual bars or diodes

Evaporation Deposition -
E-beam and thermal evaporation of metals or dielectrics

Packaging -
The ability to assemble and solder individual or groups of bars into a variety of packages

Device Test -
Test stations that can measure and record initial device performance and track extended performance (life testing)

NORTHROP GRUMMAN
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WAFER LOT QUALIFICATION

9 bars of each smallest common lot are randomly selected to qualify the lot
- Typically an entire wafer or a coating run

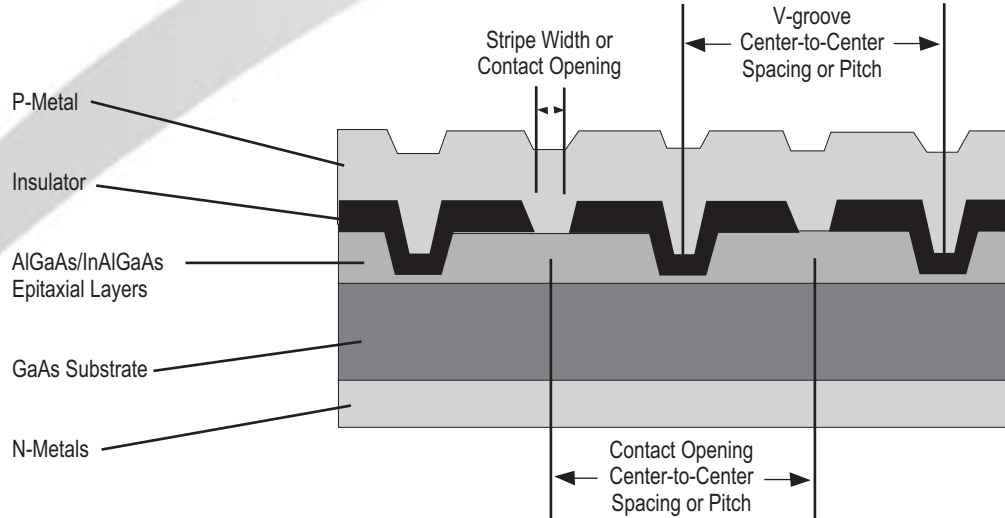
Bars are packaged on Silver Bullets™

6 bars verify life and 3 bars verify COD

Initial characterization

- Power, voltage and wavelength vs current;
near field image

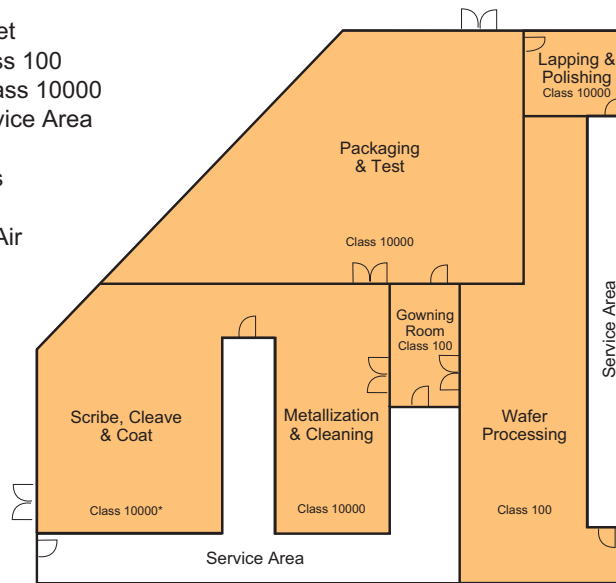
FINISHED BAR CROSS-SECTION



MANUFACTURING AREA

4100 square feet
- 765 sq. ft Class 100
- 2575 sq. ft Class 10000
- 760 sq. ft Service Area

House Systems
- DI Water
- Compressed Air
- Chilled Water
- Nitrogen



* HEPA coverage at work stations

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Information contained herein is believed to be reliable and accurate.

This Product is covered by one or more of the following Patents: 5,898,211 5,985,684 5,913,108 6,310,900 Other US and Foreign Patents Pending.

Laser diode product components are intended for use in a user-devised end system. However, these products are capable of emitting Class IV radiation. Extreme care must be exercised during their operation. Only persons familiar with the appropriate safety precautions should operate a laser product. Directly viewing the laser beam or exposure to specular reflections must be avoided. Serious injury may result if any part of the body is exposed to the beam. The eye is extremely sensitive to the infrared radiation and therefore, proper eyewear must be worn at all times. Use of optical instruments with these products may increase eye hazard. Always wear proper eye protection when operating.



Rev A 06/03

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