

# TropoSPHERE™ Plasma System

## Features and Benefits

- Dual cassette load stations to minimize idle time
- Multi-size capable aligner with minimal hardware change-over required
- Robust robotic wafer engine
- Integrated wafer recognition for high reliability wafer handling
- Compact design minimizes floor space
- Unique kits allow fast change-over between wafer sizes and supports multi-load for smaller wafer sizes
- Highly uniform treatment and fast throughput



## Superior Plasma Technology for High Throughput Wafer Processing

The TropoSPHERE™ Plasma System is designed for high-throughput processing of semiconductor wafers (and other flat substrates) in sizes ranging from 3 in. to 200mm (8 in.) in diameter, for wafers held in open cassettes.

The patented plasma chamber design provides exceptional etch uniformity and process repeatability. Primary plasma applications include a variety of etching, ashing, and descum steps. Other plasma processes include contamination removal, surface roughening, increasing wettability, and enhancing bonding and adhesion strength.

## Application

Wafer processing prior to typical back-end packaging steps – suitable for wafer-level packaging, flip-chip, or traditional packaging.

## High Throughput Processing

The TropoSPHERE's integrated semiconductor wafer handling system provides rapid material transfer for a wide range of wafer sizes. Processing can be done from most types of wafer cassettes.

The patented chamber design and control architecture enables short plasma cycle times with very low overhead,

ensuring that throughput for your application is maximized and cost of ownership is minimized.

## Wafer Cleaning

- Remove contamination prior to wafer bumping
- Remove organic contamination
- Remove fluorine and other halogen contamination
- Remove metal and metal oxides
- Improve spun-on film adhesion
- Clean metallic bond pads

## Wafer Etching

- Descum wafer of residual photoresist / BCB
- Pattern dielectric layers for redistribution
- Strip / etch photoresist
- Enhance adhesion of wafer applied materials
- Remove excess wafer applied mold / epoxy
- Enhance adhesion of gold solder bumps
- Destress wafer to reduce breakage
- Improve spun-on film adhesion
- Clean Aluminum bond pads



## Specifications: TropoSPHERE™ Plasma System

|                             |   |  |
|-----------------------------|---|--|
| <b>Enclosure Dimensions</b> | <b>W x D x H – Footprint</b>                    | 1094W x 1170D x 1700H mm (10.3W x 46D x 63H in.)<br>1094W x 1170D x 2185H mm (10.3W x 46D x 86H in.) with wafer loading doors open |
|                             | <b>Net Weight</b>                               | 295kg (650lbs)   |
|                             | <b>Effective Footprint – Clearances</b>         | Right, Left, Back - 153mm (6 in.), Front - 914mm (36 in.) min.   |
| <b>Chamber</b>              | <b>Volume</b>                                   | 5.5 liters (338 cubic inches)  |
|                             | <b>Variable Configuration</b>                   | 75mm, 100mm, 150mm and 200mm Substrate Sizes   |
| <b>Electrodes</b>           | <b>Powered Electrode Dimensions</b>             | 305W x 305D mm<br>12W x 12D in.  |
| <b>RF Power</b>             | <b>Standard Wattage</b>                         | 600W   |
|                             | <b>Frequency</b>                                | 13.56 MHz  |
| <b>Gas Control</b>          | <b>Maximum Number of MFCs</b>                   | 4  |
| <b>Control System</b>       | <b>Interface</b>                                | PLC with PC Based Touch Screen Interface   |
| <b>Remote Interface</b>     | <b>Communications</b>                           | SMEMA, SECS/GEM, Remote HMI  |
| <b>Vacuum Pump</b>          | <b>Dry Vacuum Pump</b>                          | 16 CFM, Variable Frequency Drive   |
| <b>Facilities</b>           | <b>Power Supply</b>                             | 220 VAC, 20 A, 50/60Hz, Single Phase, 12 AWG, 3-Wire   |
|                             | <b>Process Gas Fitting Size &amp; Type</b>      | .25-in. OD Swagelok Compression  |
|                             | <b>Process Gas Purity</b>                       | Industrial grade or better   |
|                             | <b>Process Gas Pressure</b>                     | Regulated from .69 bar (10 psig) min. to 1.4 bar (20 psig) max.  |
|                             | <b>Purge Gas Fitting Size &amp; Type</b>        | .25-in. OD Swagelok Compression  |
|                             | <b>Purge Gas Purity</b>                         | Industrial grade Nitrogen or CDA   |
|                             | <b>Purge Gas Pressure</b>                       | Regulated from 5.5 bar (80 psig) min. to 6.9 bar (100 psig) max.   |
|                             | <b>Pneumatic Valves Fitting Size &amp; Type</b> | .25-in. OD Swagelok Compression  |
|                             | <b>Pneumatic Gas Purity</b>                     | CDA, Oil Free, Dewpoint <=7°C /45°F, Particulate Size <5 micron  |
|                             | <b>Pneumatic Gas Pressure</b>                   | Regulated from 5.5 bar (80 psig) min. to 6.9 bar (100 psig) max.   |
|                             | <b>Vacuum Source</b>                            | -40 kPa (-5.8 psi)   |
| <b>Exhaust</b>              | 25.4 mm (1 in.) OD Pipe Flange                  |  |
| <b>Compliance</b>           | <b>Certifications</b>                           | CE Marked, SEMI S2/S8 (EH&S/Ergonomics)  |
| <b>Ancillary Equipment</b>  | <b>Nitrogen Generator (option)</b>              | Necessary for Purge Gas Requirements   |
|                             | <b>Chiller (option)</b>                         | Required When Configured with Cooled Electrode   |
|                             | <b>Hydrogen Kit (option)</b>                    | Allows System to Use Hydrogen Gas for Processing   |
|                             | <b>Scrubber (option)</b>                        | Intended for Fluorinated Operations on the System  |
| <b>Shipping</b>             | <b>Gross Weight</b>                             | 445 kg (979 lbs)   |
|                             | <b>Number of Packages</b>                       | 1  |
|                             | <b>Packing Conforms to ISPM 15</b>              | Yes  |

**For more information, speak with your local representative or contact your regional office.**

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