CS 1701 R.I.E.
Plasma Cleaning System

March®
A NORDSON COMPANY

Advanced Performance and Value

The March CS 1701 Reactive Ion Etching system delivers performance often associated with high-investment etching tools. The system is excellent for metal etching, silicide etching and etching of III-V compounds, anisotropic etching of nitrides, oxides and polyimides.

Key performance features of the CS 1701 system include the large DC bias and the ability to control process pressure independent of gas flow. The system allows users a wide variety of etch profiles ranging from anisotropic requiring high aspect ratios to sloped walls.

Etch Rates & Uniformity

The plasma chamber features a ceramic ring on the bottom electrode that focuses the plasma. This unique design, combined with the solid state 600-watt RF generator, provides maximum power utilization in the chamber and delivers excellent uniformity and etch rates.

Representative etch rates achievable with the CS 1701 system are:

Al:	1 micron/min
GaAs:	1 micron/min
TiW:	5,000 Å/min
SiO_2:	3,000 - 7,000 Å/min

Etching selectivity is optimized by the precise mixing of gases. Two electronic mass flow controllers provide precise and reproducible gas flow. Up to four additional mass flow controllers can be added for system expansion.

Maximum Control of Process Conditions

Controlling process pressure is a critical parameter in obtaining the desired etch profiles. The CS 1701 system provides for chamber pressure control independent of process gas flow. The system's control system permits the user to easily program the pressure settings, gas flow ratios, process time, and temperature. The CS 1701 system delivers high quality and reproducible results.

Microprocessor Control

The CS 1701 system's integrated microprocessor control system provides users with flexibility and ease of use. An important feature of the control system is the ability to link consecutive process steps. Up to nine process steps can be stored and recalled. Linking steps ensures the sample remains under vacuum pressure, and reduces the possibility of contamination caused by returning the system to atmospheric pressure.

Temperature Control

Temperature control is an important factor in optimizing the etching process. Careful control of the temperature conditions in the plasma chamber assists in repeatable results and enhances the etching uniformity.

CS 1701

Specifications

Dimensions: ***Reactor Module:*** 51 x 48 x 30 cm (20 x 19 x 12 in.)
RF Generator: 21 x 18 x 46 cm (8.3 x 7.0 x 18.0 in.)

Weight: ***Not including generator***: 34 kg (75 lbs)

Chamber: ***Hard anodized aluminum***:
25.4D x 3.8H cm (10.0 x 1.5 in.)
Holds one 4 or 6-inch wafer; 8-inch capability (optional)
Aluminum oxide focusing ring

RF Generator: 0-600 watts, 13.56MHz, solid state

Control System:
2 mass flow controllers
Automatic tuning
Baratron pressure gauge (independent pressure control)
Microprocessor-controlled
Automatic optical endpoint detection

Safety:
Emergency shut-off
Safety interlocks
Microprocessor monitoring

Pump System:
600 lpm 27 CFM (approx.)
Prepared and charged with Krytox® performance lubricant

Facility Requirements

Power: ***CS 1701:*** 220V, 2A, 50/60Hz, 1Phase, 3W, 18AWG

RF Generator: 100 – 220 VAC, 1600VA, 50/60Hz, 1Phase, 3W, 14AWG

Pump: 220V, 7A, 50/60Hz, 1Phase, 3W, 14AWG

Pump Exhaust: 27 CFM, 7 PSI maximum to scrubber

Purge Gas: N2 or CDA (¼-in. tubing) 55 PSI (min) to 80 PSI (max)

Process Gas: Cl_2, BCl_3, O_2, CF_4, SF_6
Note: All gases listed are 15 PSI with 1/4-in. tubing

Options:
Contact angle meter (110 or 220V)
Oil filtration system
Oil mist eliminator for corrosive gas
Remote Operator Interface software
Recirculating cooler

Notes:

1. The system should be placed in a well ventilated area.
2. If using chlorine or boron trichloride gases, place them in gas cabinets. All lines to the CS 1701 system should be stainless steel with welded VCR fittings.

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Leading Plasma Innovations

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