High Density Plasma

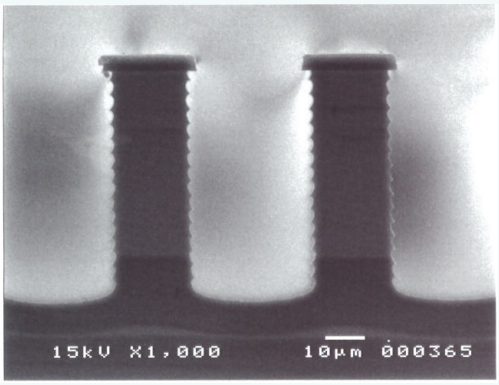
High-speed Silicon Deep Etching System

Designed Specifically for R&D

etching

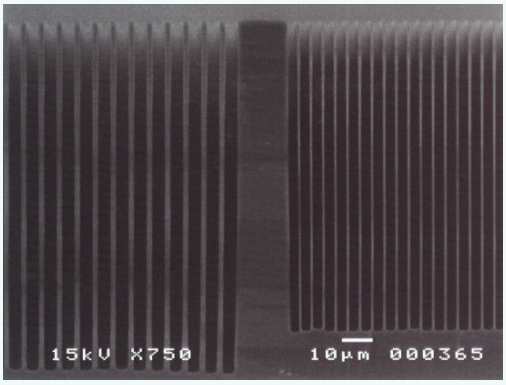
Examples of Etching Process

—High Rate Etching—



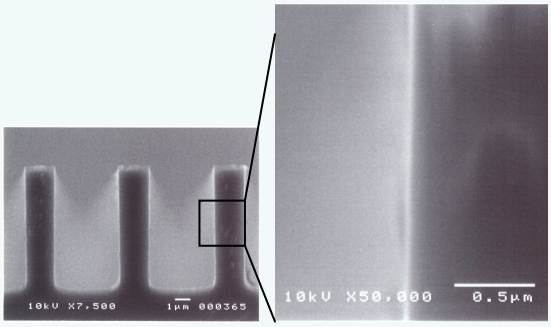
Etch Rate: 14 µm/min

—High Aspect Etching—



Etch Rate: 3 µm/min
Aspect Ratio: 31
Etch Depth: 95 µm

—Low Scalloping—



Pattern Width: 4 µm
Etch Depth: 8 µm

MODEL RIE-400iPB

Licensed from Robert Bosch GmbH of Germany

The SAMCO RIE-400iPB is an inductively coupled plasma RIE system that uses high-density plasma to perform **high speed silicon etching** required in the fabrication of MEMS and electronic devices.

The system, capable of etching **up to ⌀4" wafers** , was designed to provide all the high-performance features of the larger RIE-800iPB in an **easy to use**, easy to maintain, **affordable package**.

An optional SiO_2 etching kit offers the ability to perform precise, highly **controllable SiO_2 etching** with minimum changeover time. By allowing users to process both SiO2 and Si the system provides **Maximum Value to Customers!**

Features

- High Speed, Highly Selective, Deep Si Etching is made possible using an unique plasma source and chamber specifically designed for the "Bosch Process".
- Specifically Designed for R&D - easy to use, easy to maintain, high cost-performance package!
- SiO_2 Etching Kit available as an option
- High Rate Etching – greater than 14 μm/min
- Low Scalloping through high speed gas switching
- Through Wafer etching (depth: 600 μm)
- SOI (silicon on insulator) notch prevention technology

Applications

- Fabrication of acceleration sensors, gyro sensors, actuators etc
- Inkjet printer head
- Through Silicon Via (TSV) for 3D packaging
- Manufacturing of medical devices (μTAS, etc)

Options

- Circulator (For TMP and Dry pump cooling)
- SiO_2 etching Kit

▲Please contact SAMCO for details regarding other options

Specification

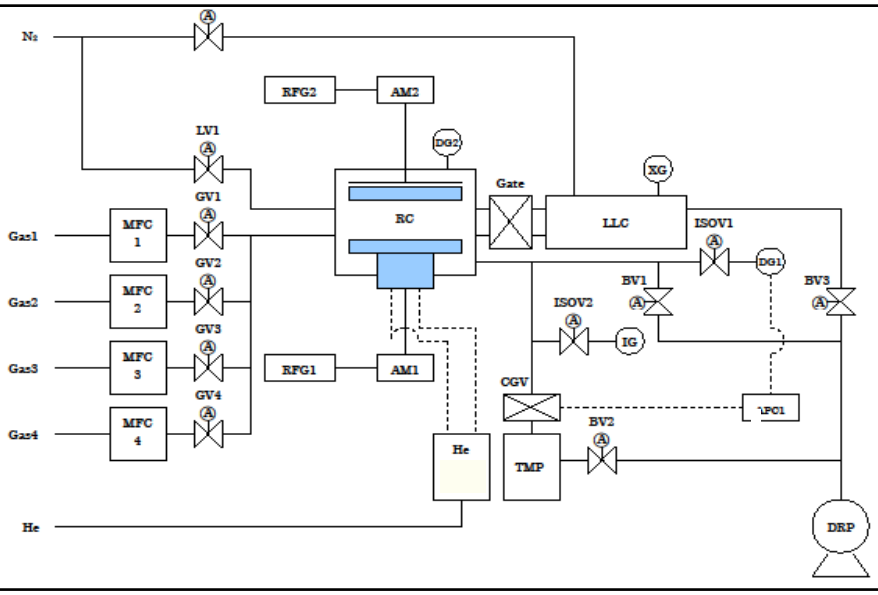
Reaction Chamber	Al, inner diameter φ320mm
Substrate Stage	Al, φ106mm
Load lock Chamber	Al, outer measurement 340(W)×445(D)×144(H)mm
ICP RF Power	13.56MH, crystal oscillation, Max.1kW, automatching
BIAS RF Power	13.56MHz, crystal oscillation, Max.300W, automatching
Gas Lines	4 mass flow controlled lines (*optional lines available*)
Vacuum Gauges	R. Chamber : diaphragm gauge 1 (1.33×10^{2}～1.33×10^{-2}Pa) L.L Chamber: crystal gauge (atmospheric～1×10^{-2}Pa)
Vacuum System	R. Chamber : turbo molecular pump (1300L/sec) + dry pump (1300L/min) L.L Chamber: dry pump (shares R.C. pump)
Operation Method	Touch panel operation with recipe management
Dimensions	986(W)×1790(D)×1975(H)mm

Utilities

Power Supply		AC200V、3φ 75A
Earth		Type D ground
Cooling	System	Over 2L/min
	DRP	4～8L/min
Evacuation Duct		Main body
		Gas box
		Dry pump
Compressed Air		0.5～0.7MPa(G)
N_2	System	0.1MPa(G)
	DRP	0.1～0.7MPa(G)
Exhaust Ducts		For dry pump

Flow Sheet

MFC	1~4	Mass Flow Controller
GV	1~4	Gas Inlet Valve
LV	1,2	Leak Valve
BV	1~3	Exhaust Valve
CGV		Control Gate Valve
ISOV	1,2	Isolation Valve
DG	1,2	Diaphragm Gauge
IG		Ionization Gauge
XG		Crystal Gauge
TMP		Turbo Molecular Pump(1300L/sec)
DRP		Dry Pump(1300L/min)
AM	1,2	Auto matching Unit
RFG	1	RF Generator Max.300W
RFG	2	RF Generator Max.1kW
RC		Reaction Chamber
LLC		Load Lock Chamber
APC		Automatic Pressure Controller



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