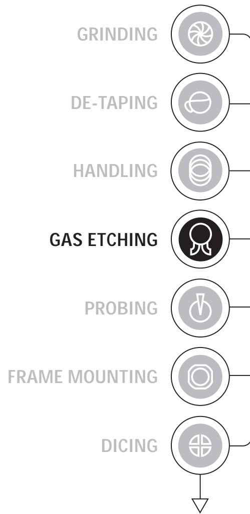
Tru-Si

TE-2001-UT

DOUBLE SHUTTLE ADP GAS ETCH SYSTEM



Tru-Si's Tru-Etch 2001 family of atmospheric downstream plasma (ADP) gas etch systems provide post-grind thinning and backside damage removal for silicon wafers. Its damage free thinning capability improves wafer and die strength. In the TE-2001-UT system, NoTouch™ handling is used throughout to allow wafer thinning down to 50 µm.

In addition to damage free thinning, the system can provide backside surface area enhancement, damage free dicing and through-silicon interconnect formation for advanced, three-dimensional system-in-package applications.

ADP gas etching uses a DC arc between argon gas jets to create a small plasma region that breaks up the etch gas, which is injected from below. The etch gas is broken completely into its constituent atoms, which flow through air at atmospheric pressure. The atoms become neutral, and the unwanted atoms react with the air before reaching the wafer. Hot, neutral fluorine atoms reach the wafer to etch it.

TE - 2001 - UT System

Atmospheric processing eliminates the need for vacuum pumps, special vacuum robotics and throughput reducing procedures such as pump-downs and regenerations.

Mini-batch processing increases throughput, and it makes the system flexible. Simple changing of the process carousel and shuttles allows one system to process 150, 200 or 300 mm wafers.

The process carousel uses NoTouch™ technology to hold wafers while they are etched. Multiple gas voritcies levitate the wafer with even lifting force, while providing an air cushion of approximately 300 µm. This cushion keeps the carousel from touching the wafer, and it protects the front of the wafer from the etch gas. Bumps or other front-side structures the wafer may have are literally untouched.

In the TE-2001-UT system, this same NoTouch™ technology is used for all wafer handling. This provides the support and control required for handling wafers that are thinner than a human hair.

TE-2001-UT DOUBLE SHUTTLE ADP GAS ETCH SYSTEM

SPECIFICATIONS

System dimensions and weight
W: 55" (1.4 m) x D: 117" (3.0 m) x H: 81" (2.0 m)
3500 lbs. (1600 kg)

NoTouch™ wafer handling:

Gases	Clean dry air, N_2
min. flow	55 cfm (1600 slm)
max. pressure	90 psi (630 kPa)

Process gases:

Ar flow rate	1 slm
CF_4 (typical etch gas)	4-6 slm

Power requirements:
120 V, 50/60 Hz, 50 A, single phase
480 V, 50/60 Hz, 40 A, three phase

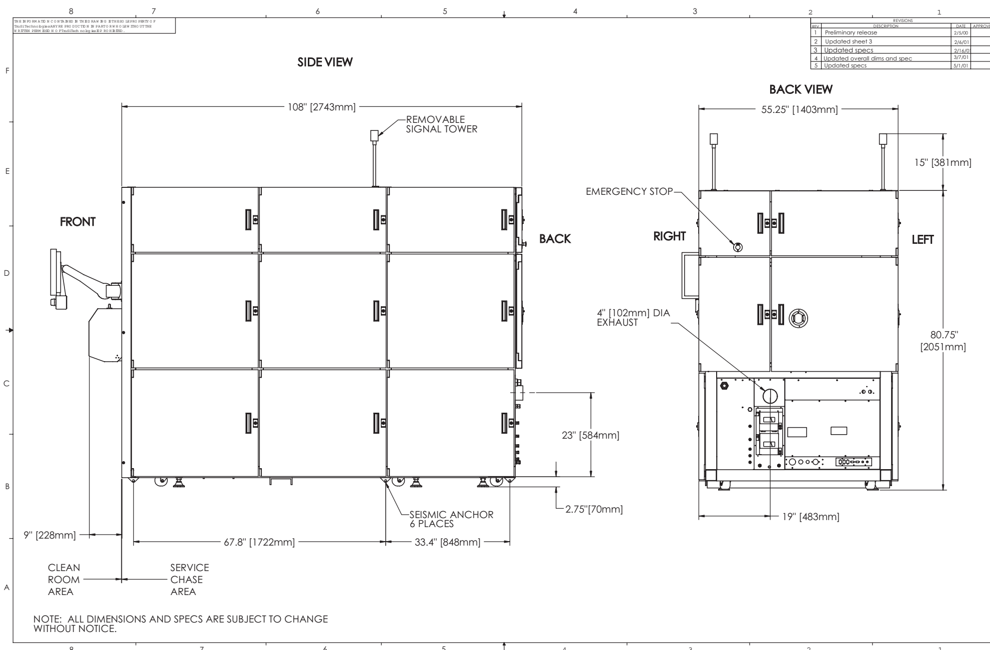
Exhaust

Process region:	300 cfm
Non-process region:	100 cfm
Negative pressure:	250 Pa

Operator interface:
Graphic touch screen
System status lights
Configurable data logging

Etch gas options:
CF_4, SF_6, other fluorine containing gases could be used

Facility requirements layout



Tru-Si's flexible integration scheme allows customers to handle ultrathin wafers not only in the Tru-Etch 2001, but also with tools for other process steps in the ultra-thin wafer processing flow such as grinding, detaping and film frame mounting.

Tru-Si's NoTouch™ robot end effectors and hand-held wands, along with wafer stacking pods available from multiple vendors make flexible integration of advanced wafer thinning operations possible.

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