

eVoS ME

Asymmetric bias waveform generator for direct control of substrate voltage and ion energy



The eVoS™ ME asymmetric bias waveform generator is designed to achieve direct control of wafer-surface voltage and resulting ion energy distributions (IED) in plasma-based etch and deposition processes. The eVoS system comprises an agile high voltage power supply combined with innovative asymmetric waveform generating technology to establish and control wafer surface potential. The asymmetric output of the eVoS eliminates the limitations and restrictions of wafer biasing inherent to sinusoidal RF bias applications. Fast digital metrology and novel control algorithms enable the production of near mono-energetic IEDs.

FEATURES

- Ability to produce near mono-energetic ion energy distributions
- Pulse capability with necessary input and output signals for synchronization
- Direct switch-module integration replaces existing RF matching networks
- Real-time bias voltage and ion current feedback via high-speed metrology
- Adaptability to standard chamber interface

BENEFITS

- Direct control of wafer bias voltage and resulting ion energies
- Reduced power through use of the “right power,” only delivering the useful ion energy
- Significantly increased etch selectivity for shorter processes and straighter, deeper features
- Enhanced ion energy selection/discrimination compared to RF bias methods

AT A GLANCE

Step Voltage (Max)

3 kV

Step Voltage (Min)

500 V

Peak-to-Peak Voltage

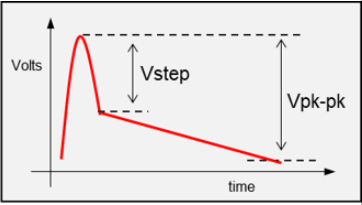
5 kV

DC Current

6 A

TECHNICAL DATA

General (Nominal Chuck 3.5 nF)	
V _{step} Max	3 kV
V _{step} Min	500 V
DC Current	6 A max
Pulse Capability (Main/Satellite)	10 Hz to 5 kHz 10% to 90% duty 100 μs min pulse interval
Multi-Level Operation	Max 8 levels max 100 μs min interval for each level including 50 μs transition time



Switch Module	
Output Connection	20 mm nominal socket/slug, customizable
Communication Ports	Ethernet (RJ45), serial (micro-USB, RS-232)
Aux Power	24 VDC
Communication Protocol	AEBus
Cooling	Water: 2 gpm, +5°C to +35°C
Output Fundamental Frequency	200 kHz to 1.1 MHz
Dimensions	Custom chamber mount

DC Power Supply	
Input Power	360 to 480 VAC 3Φ 60 to 45 A 50/60 Hz
Dimensions and Mounting	8 U 19" rack mount
DC Current	6 A max
Output Connection	Triax cable ≤ 9.1 m (30') long
Cooling	Water: 2.5 gpm, +5°C to +35°C Forced Air



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