The DuoChuck Integrated Hot Chuck System

- ✓ Two Hot Chucks in one Dark Box
- ✓ Integrated Controller
- ✓ Multiplexes up to 10 probes
- ✓ Dual Programmable Stress Supplies

The MDC Model 8512 DuoChuck Integrated Hot Chuck System is the first hot chuck system designed by a C-V plotter company for use exclusively with computerized C-V plotters. Several unique features of this hot chuck system enable faster and more efficient mobile ion measurements than have been previously possible.

In one dark box enclosure, the MDC DuoChuck combines two independent hot chucks, all temperature controller and stress supply electronics and a multiplexer. The multiplexer can select one of five probes from either chuck for C-V measurement.

This space-saving package can be controlled by the MDC CSM/Win SYSTEM to make MOS mobile ion measurements almost five times faster than a conventional hot chuck system. This speed is made possible by efficient computer control of the probe selection and hot chuck cycling. While the wafer on one hot chuck is in the heating cycle, C-V measurements are taken on the wafer on the other hot chuck.

All test parameters - voltage sweep limits, soak time, soak temperature, soak bias, and oxide thickness are selectable via user-friendly display screens. Sophisticated control and measurement software performs the entire test without operator intervention. An advanced test algorithm checks for measurement anomalies and corrects them or deletes further measurements on the affected probe.

Time is not wasted on invalid measurements. A comprehensive test summary lists all test results and statistics. Test data such as flatband voltage shifts, Qss, and substrate doping may be stored on disk for later analysis with a spreadsheet program. C-V plots may be displayed on the computer screen and plotted or printed.

For critical probing applications, use the Model 8604 DuoChuck Microscope Stand. This accessory supports a microscope on linear bearings which allows the operator to view a wafer on either chuck.

The MDC CSM/Win System with the new DuoChuck Integrated Hot Chuck System assures the most consistent and rapid C-V measurements from shift to shift and operator to operator.

DuoChuck Data Sheet

———— *General Description* ————
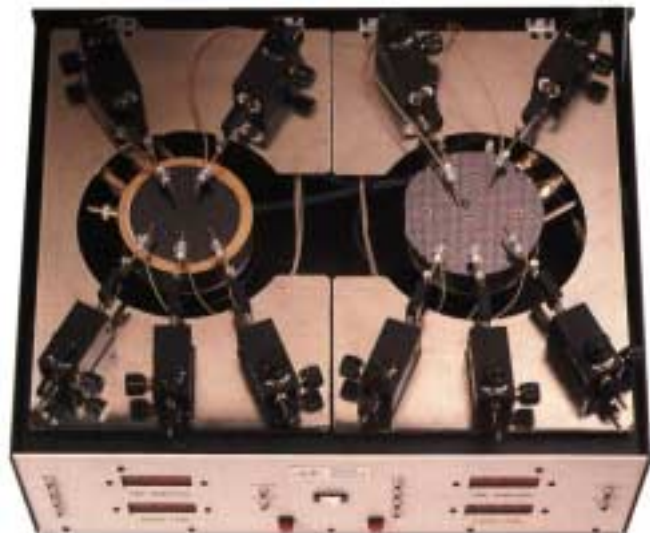
The Materials Development Corporation DuoChuck Integrated Hot Chuck System combines two microprocessor-based hot chuck controllers, two hot chucks, a multiplexer, and dual programmable stress supplies into one sturdy, solid aluminum dark box. All system operations are controlled by a standard RS-232C serial port.

———— *General Specifications and Requirements* ————

POWER:	108 to 125 VAC, 20 Amps, 50 to 60 Hz
	208 to 230 VAC option available
COOLANT SUPPLY:	Tap water at 2 gallons/minute (8 liters/minute) at 15 psi,
	(1 Bar). Maximum pressure of 20 psi (1.3 Bar).
	No de-ionized water.
VACUUM SUPPLY:	20-25 inches (500-600 mm) Hg.
LIGHTS FOR C -V STABILIZATION:	2, computer controlled
BIAS VOLTAGE SUPPLY:	2, ±20 V range, 0.1 V resolution
DIMENSIONS:	Width 25.5" (65 cm); Depth 20.5" (64 cm); Height 9; (23 cm)

———— *Temperature Specifications* ————

RANGE:	Cooling water ambient to 300° C.
DISPLAY ACCURACY:	±1°C (15°C to 300°C)
OVERTEMPERATURE:	Factory set shutdown above 315°C
THERMOCOUPLE:	Type J (2 required for each chuck)

———— *Communications* ————

FORMAT	RS-232C, 8-bit character, 1 stop bit, no parity
BAUD RATES:	300, 600, 1200, 2400, 4800, 9600.

———— *Hot Chuck Information* ————

MODEL	8512-6	8512-8
CHUCK DIAMETERS	6.6" (165 mm)	8.6" (218 mm)
HEATING TIMES (ambient to 300°C)	320 seconds	400 seconds
Cooling Times (300°C to 50°C)	225 seconds	500 seconds