Cascade

TESLA300

300 mm On-Wafer Power Semiconductor Probing System

Overview

The TESLA300 Advanced On-Wafer Power Semiconductor Probe System is an integrated high-power test solution that enables collection of accurate high-voltage and high-current measurement data, with complete operator safety.

The TESLA300 provides lab automation capabilities and enables high-power electrical measurements for device characterization, high-volume engineering and extremely challenging applications. It is also ideally suited in customized solutions, niche production applications, and emerging markets.

Patented AttoGuard technoloy built in TESLA300 significantly improves low-leakage and low-capacitance measurements. In combination with FormFactor's patented TESLA FemtoGuard™ thermal chuck technology, the TESLA300 provides a fully guarded and shielded test environment. The high-power TESLA FemtoGuard chuck also incorporates MicroVac™ technology enabling low-contact resistance, thin-wafer handling and maximum power dissipation.

Contact Intelligence™ is a unique technology which guarantees to make and hold wafer contact with constant high quality. A powerful combination of innovative system design and smart software algorithms provides an automated solution to achieve highly-reliable measurement data. It reduces test cycle times and provides faster time to data, regardless of which application you are addressing.

Contact Intelligence™

Features / Benefits

Higher efficiency and lower cost of test	• Scalable from semi-automated operation to fully-automated prober
High accuracy and repeatability	• Superior high-voltage and high-current measurements • Safe and accurate hands-off testing with reliable and repeatable contact
Automated test	• Contact Intelligence enables unattended tests on small pads • Thermally induced drift can be automatically corrected, enabing automated temperature transitions over the full temperature range using VueTrack (the effective temperature range and minimum obtainable pad size depend on probe card and probe card holder or positioner used)
Test productivity	• Fast delivery of a wide variety of precise model parameters to enhance process and device development
Flexibility	• Power semiconductor device characterization, DC/RF device characterization, WLR • Full thermal range of -60°C to +300°C, supported by high thermal stability design • Usage of manual positioners and probe cards within EMI-shielded environment

Note: For physical dimensions and facility requirements, refer to the TESLA300 Facility Planning Guide. If not otherwise mentioned, the specified values are given for a temperature range from +18°C to +24°C and relative humidity of 20% to 50%.

Power Handling

Max voltage	3,000 V (triaxial), 10,000 V (coaxial)
Max current	200 A (pulsed), 20 A (DC)
Power dissipation	Maximum 100 W generated in 1 cm^2 area

System Components

Prober System

The TESLA300 probe system (base platform) is available in two different configurations:

TESLA300-F	TESLA300, fully-shielded	EMI-shielded system for low-leakage measurements (full thermal range)
TESLA300-S	TESLA300, shielded	Shielded system for low-temperature and dark environment (full thermal range)

Mechanical Performance

X-Y Stage

Travel XY	301 mm x 501 mm (11.9 in. x 19.7 in.)
Resolution	0.2 µm (0.008 mils)
Repeatability	≤ 1 µm (0.04 mils)
Accuracy	Standard mode: ≤ 2 µm (0.08 mils), Precision mode: ≤ 0.3 µm (0.012 mils)
Speed	50 mm/sec (2 in./sec)
Bearings	Precision balls bearings
Motor-drive system	High-performance micro stepper motor
Feedback system	Ceramic ultra-low thermal expansion linear encoder

Z Stage

Travel	10.0 mm (.39 in.)
Resolution	0.2 µm (0.008 mils)
Repeatability	≤ 1 µm (0.04 mils)
Accuracy	≤ 2 µm (0.08 mils)
Speed	20 mm/sec (0.8 in./sec)
Lifting capacity	20 kg (44 lb.)
Probe-force deflection (measured at the chuck edge)	≤ 0.0007 µm/µm slope per 10 kg load (0.0007 in./ in./22 lb)

Theta Stage

Travel	± 3.75°
Resolution	0.2 µm (0.008 mils)*; 0.00008°
Repeatability	≤ 1 µm (0.04 mils)*; ≤ 0.0004°
Accuracy of fine correction	≤ 2 µm (0.08 mils)*; ≤ 0.0008°
Accuracy of large movement (>2°)	≤ 5 µm (0.20 mils)*; ≤ 0.0019°

* *Measured at edge of 300 mm chuck*

MicroChamber*

Electrical	TESLA300-F	TESLA300-S
EMI shielding	> 30 dB (typical) @ 1 kHz to 1 MHz	> 20 dB (typical) @ 1 kHz to 1 MHz
Light attenuation	≥ 130 dB	≥ 130 dB
Spectral noise floor	≤ -170 dBVrms/rtHz (≤ 1 MHz) **	≤ -150 dBVrms/rtHz (≤ 1 MHz) ***
System AC noise	≤ 5 mVp-p (≤ 1 GHz)****	≤ 20 mVp-p (≤ 1 GHz) ***

* *Available for TESLA300-F and TESLA300-S only.*

** *Test setup uses triaxial thermal chuck, 50 Ω termination, high-quality LNA, and DSA /DSO instrument.*

*** *Typical results. Actual values depend on probe/test setup.*

**** *Test setup: Station power ON, Thermal system ON (40°C), MicroChamber® closed. Instrument setup: Time domain digital scope (DC to 1 GHz), 50 Ω input impedance, cable to chuck BNC connector. Measurement: Peak-Peak Noise Voltage (acquire 1000 data points, and calculate mean of Vp-p data).*

Air-Purge Management	
Purge	Clean dry air (CDA)
Purge control	Manual or automatic (software controlled)
Nominal purge flow rate – Maintenance	80 liters/min (2.8 SCFM)
Nominal purge flow rate – Quick purge conditioning	240 liters/min (8.5 SCFM)

Platen System

Platen	
Dimensions	1058 mm (W) x 866 mm (D) x 25 mm (T)
Platen-to-chuck height	43.0 ± 0.5 mm (1.69 ± 0.02 in.)
Accessory mounting	Universal Rail System: 53 cm (21 in.) Left / Right Rail, 70 cm (28 in.) Rear Rail
Platen mount	Fixed height, High Thermal Stability kinematic mount*

* *Available for TESLA300-F and TESLA300-S only.*

Platen Insert	
Dimension	720 mm x 720 mm x 38 mm (incl. guard for fully-shielded version)
Weight	47 kg (104 lb.)
Material	Steel for magnetic positioners
Surface finish	Fine ground for vacuum positioner high stability

Platen Cut-out	
Diameter	344 mm (13.5 in.)
Standard interface	Probe card holders, custom adapters and TopHat™

Probe Card Holder*	
Probe card shape	Rectangular
Probe card width	114.5 mm (4.5 in.)
Max. probe card length (standard)	284 mm (11.18 in) /142 mm (5.59 in) from probe center to front/rear
Max. probe card length (HTS)	160 mm (6.30 in) / 80 mm (3.15 in) from probe center to front/rear
Tip drop**, (standard)	3.0 mm to 5.0 mm (0.12 in. to 0.20 in.)
Tip drop** (High Thermal Stability)	4.7 mm (0.185 in.)

* *For more details, please see the Probe Station Accessory Catalog.*

** *Measured vertical step from mounting level to needle tips. Side view camera tolerates ± 0.5 mm deviation from nominal value.*

Wafer Chuck

Diameter	305 mm (12 in.)
Material	Gold-plated copper
DUT sizes supported	Shards (10 mm x 10 mm or SEMI-M1 compliant wafers up to 300 mm / 12 in.)
Vacuum rings	7 mm, 66 mm, 130 mm, 180 mm, 280 mm
Vacuum-ring actuation	Software controlled (Center, 200 mm, 300 mm)
Planarity incl. stage movement*	≤ 10 µm (0.4 mils) @ 25°C
	≤ 30 µm (1.2 mils) @ -55°C
	≤ 30 µm (1.2 mils) @ 200°C
	≤ 40 µm (1.6 mils) @ 300°C

* *With active z-profiling.*

Platform

General

Attenuation of the vibration damping system	0 dB @ 6Hz, 5 dB per octave @ 6Hz to 48Hz, 15 dB above 48Hz*
Stage damping	15 dB in less than 1500 m sec

* *Due to the sensitivity of measurements to vibrations, the TESLA300 is equipped with a high-performance active vibration damping system. However, unacceptable equipment vibrations can occur when the floor vibrations are high. For this reason, the TESLA300 must be used in an environment having background vibrations at or below the Operating Theatre level. This corresponds to a maximum level of 4000 micro-inches/sec (72 dB), measured using the 1/3-octave band velocity spectra method (expressed in RMS velocity as specified by The International Standards Organization [ISO]). For further information and technical solutions with environments using raised floors, please see the FormFactor Stations Facility guide. Damper natural frequency 2.5 Hz.*

Contact Intelligence Technology*

The TESLA300 provides the lab automation capabilities needed to make critical precision electrical measurements. With Contact Intelligence technology, TESLA300 adapts to temperature variance and provides automated drift correction for unattended testing on small pads over time and temperature. Contact Intelligence technology is enabled by the following features:

- VueTrack™ closed-loop positioning capability minimizes the need of manual re-adjustment when probing small pads across multiple temperatures.
- Velox probe station software provides a single command interface for automated temperature transitions continuously managing the separation between probes and pad during temperature ramp.
- Velox probe station software provides the ability to optimize the soak time after a temperature transition or when stepping across the wafer based on the temperature variance.
- High Thermal Stability (HTS) microscope bridge enables automated over-temperature measurements.
- HTS platen provides stability over a wide thermal probing range.
- HTS probe card holder ensures EMI-shielded and light-tight environment, achieving accurate and reliable small-pad probing (option).

Platform (continued)

Software

The TESLA300 is equipped with Velox probe station control software. Operating system is Windows 10.

Velox Probe Station Control Software

Velox software provides all features and benefits required for semi- and fully-automated operation of the probe system, such as:

- **User-centered design:** Minimized training costs and enhanced efficiency.
- **Windows 10 compatible:** Highest performance and safe operation with state-of-the-art hardware.
- **Loader integration:** No need for any additional software. Easy creation of workflows and receipts.
- **Smart automation features:** Faster time to data due to reduced test cycle times.
- **Hundreds of tuneable options:** High flexibility for a large variety of applications.
- **Simplified operation for inexperienced users:** Reduced training costs with Workflow Guide and condensed graphical user interface.

VeloxPro Package

(Optional)

VeloxPro is a SEMI E95-compliant enhancement with test executive capabilities, featuring:

- **SEMI E95-compliant** probe station control software with condensed graphical user interface for simplified operation
- **Test executive software** enabling control of third-party measurement equipment via the probe station

Tester Interface

The TESLA300 uses commands through GPIB as a permanent listener. The GPIB interface provides the ability to:

- Request an inventory of all wafers available in the cassettes
- Define a wafer map
- Define a job (out of wafers and recipe)
- Change chuck temperature and initiate re-alignment
- Receive notifications when the wafer is aligned and ready to test

Communication Ports

Type	Qty	Location	Notes
USB 3.0	2	IPC front	For access to USB devices
USB 3.0 USB 2.0	1 3	IntelliControl (option) at front of prober	For quick access to USB devices at front Convenient USB access to test instruments at front
GPIB IEEE 488.2	1	Rear connection panel	For test instrument control
LAN	1	Rear connection panel	For integration into measurement environment and local network

Sound level

Constant level	≤ 60 dB (A)
Peak level	< 72 dB (A)

Station Controller

High-performance system controller with Velox probe station control software and Windows 10 OS

Measurement Performance*

Typical Chuck Noise (Triaxial)**

		TESLA300-F	TESLA300-S
10 V	-60°C	50 fA	100 fA
	25°C	30 fA	50 fA
	200°C	50 fA	100 fA
	300°C	100 fA	150 fA
3 kV	-60°C	2 pA	4 pA
	25°C	2 pA	4 pA
	200°C	3 pA	6 pA
	300°C	6 pA	10 pA

Typical Chuck Leakage (Coaxial)

		TESLA300-S
3 kV	-60°C	2 nA
	25°C	2 nA
	200°C	5 nA
	300°C	10 nA
10 kV	-60°C	5 nA
	25°C	5 nA
	200°C	15 nA
	300°C	30 nA

System Residual Capacitance

	TESLA300-F	TESLA300-S
Capacitance	9.0 pF	75 pF

** Specifications are preliminary.*

*** Overall leakage current is comprised of two separate components: 1) offset, and 2) noise. Offset is the DC value of current due to instrument voltage offset driving through isolation resistance and instrument offset current itself. Noise is low-frequency ripple superimposed on top of offset and is due to disturbances in the probe station environment. Noise and leakage are measured with a B1505A- B1510A (HPSMU) and or B1513A/B/C with Cascade Microtech setups or equivalent; 1s sample interval, auto or 1 nA range, 1 µA compliance, 40 PLC integration. Typical noise values are defined using the standard deviation. The maximum peak noise value may be 2-3 times higher than typical noise values depending on environmental factors such as humidity, vibration, temperature fluctuation, condition of the cable and connectors etc.*

Thermal System Performance

Thermal System Overview

Temperature ranges	-60°C to 300°C, ATT, air cool (200/230 VAC 50/60 Hz)	(TS-426/416-14E/R)
	-40°C to 300°C, ATT, air cool (200/230 VAC 50/60 Hz)	(TS-426-08P/R)
	+20°C to 300°C, ATT, air cool (100/230 VAC 50/60 Hz)	(TS-416-05T)
	+30°C to 300°C, ATT, air cool (100/230 VAC 50/60 Hz)	(TS-416-02T)
Wafer temperature accuracy[1,2]	± 2.5°C at 100°C	

1. *As measured with an Anritsu WE-11K-TSI-ANP or WE-12K-GW1-ANP type K thermocouple surface temperature measurement probe with offset calibration procedure.*
   Conditions: closed chamber with minimum recommended purge air, probe centered on a blank silicon wafer, chuck at center of travel and standard probe height. Typical type K thermocouple probe tolerances are ±2.2°C or ±0.75% of the measured temperature in °C (whichever is greater).
2. *The test setup can change the wafer temperature accuracy from the calibration by ±5°C (typical). Test setup attributes include open or closed chamber, probe or probe card construction and number of contacts, purge air flow rate, and lab environmental conditions.*

Thermal System Performance (continued)

ATT Thermal System Specifications (-60°C to 300°C) – TS-426-14E/R

Temperature range	-60°C to 300°C
Resolution	0.1°C
Thermal uniformity[1, 2]	1.0°C @ 25°C, 2.0°C @ -60°C, 3.0°C @ 300°C

1. *As measured with type-K thermocouple surface probe. Conditions: 12 mm diameter probe head, closed chamber with minimum recommended purge air, probe centered in probing area, on standard silicon wafer, and chuck at standard probe height. Typical type K thermocouple probe tolerances are ±2.2°C or ±0.75% of the measured temperature in °C (whichever is greater).*
2. *Peak-to-peak temperature measurement variation across probing sites.*

ATT Transition Time (Typical)*		Standard Mode	ECO Mode
Cooling	25°C to -40°C	17 min	34 min
	25°C to -60°C	53 min	N/A
	200°C to 25°C	18 min	27 min
	300°C to 25°C	33 min	44 min
Heating	-60°C to 25°C	7 min	N/A
	-40°C to 25°C	5 min	5 min
	25°C to 200°C	19 min	19 min
	25°C to 300°C	35 min	35 min

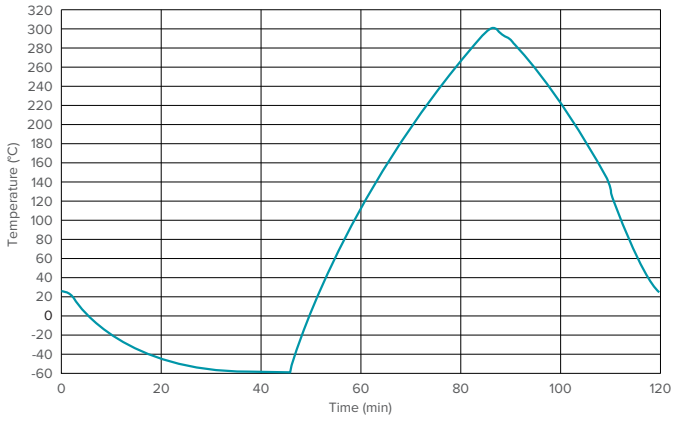
* *Performance valid within fulfilled facility media requirements as stated in the Facility Planning Guide.*

** *Eco mode limits the CDA consumption of the chuck to max. 315 l/min*

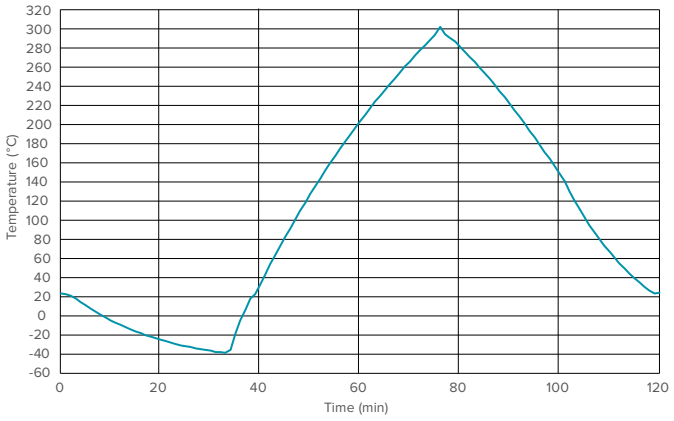
ATT Thermal Transition Time (-60°C to 300°C)

Typical times using TESLA300 with FemtoGuard Chuck

Standard Mode



ECO Mode



Thermal System Performance (continued)

ATT Thermal System Specifications (-40°C to 300°C) – TS-426-08P/R	
Temperature range	-40°C to 300°C
Resolution	0.1°C
Thermal uniformity[1, 2]	1.0°C @ 25°C, 2.0°C @ -40°C, 3.0°C @ 300°C

1. *As measured with type-K thermocouple surface probe. Conditions: 12 mm diameter probe head, closed chamber with minimum recommended purge air, probe centered in probing area, on standard silicon wafer, and chuck at standard probe height. Typical type K thermocouple probe tolerances are ±2.2°C or ±0.75% of the measured temperature in °C (whichever is greater).*
2. *Peak-to-peak temperature measurement variation across probing sites.*

ATT Transition Time (Typical)*		Standard Mode**	Power Mode***
Cooling	25°C to -40°C	59 min	49 min
	200°C to 25°C	28 min	24 min
	300°C to 25°C	35 min	31 min
Heating	-40°C to 25°C	5 min	5 min
	25°C to 200°C	19 min	19 min
	25°C to 300°C	35 min	35 min

* *Performance valid within fulfilled facility media requirements as stated in the Facility Planning Guide.*

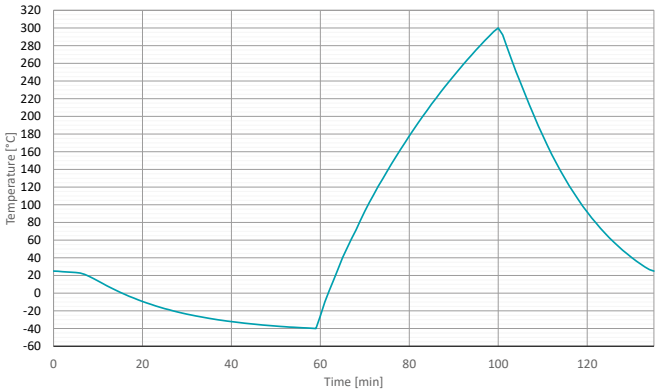
** *Standard Mode limits CDA consumption to max. 300 l/min.*

*** *Power Mode limits CDA consumption to max. 400 l/min.*

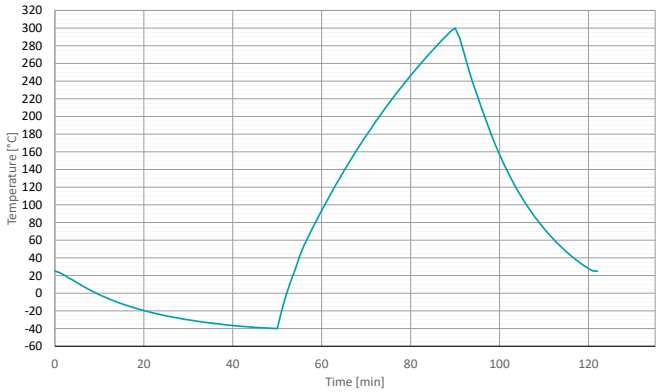
ATT Thermal Transition Time (-40°C to 300°C)

Typical times using TESLA300 with FemtoGuard Chuck

Standard Mode



Power Mode



Thermal System Performance (continued)

ATT Thermal System Specifications (30°C to 300°C) – TS-416-02T

Temperature range	30°C to 300°C
Resolution	0.1°C
Thermal uniformity[1, 2]	1.0°C @ 25°C, 3.0°C @ 300°C

1. *As measured with type-K thermocouple surface probe. Conditions: 12 mm diameter probe head, closed chamber with minimum recommended purge air, probe centered in probing area, on standard silicon wafer, and chuck at standard probe height. Typical type K thermocouple probe tolerances are ±2.2°C or ±0.75% of the measured temperature in °C (whichever is greater).*
2. *Peak-to-peak temperature measurement variation across probing sites.*

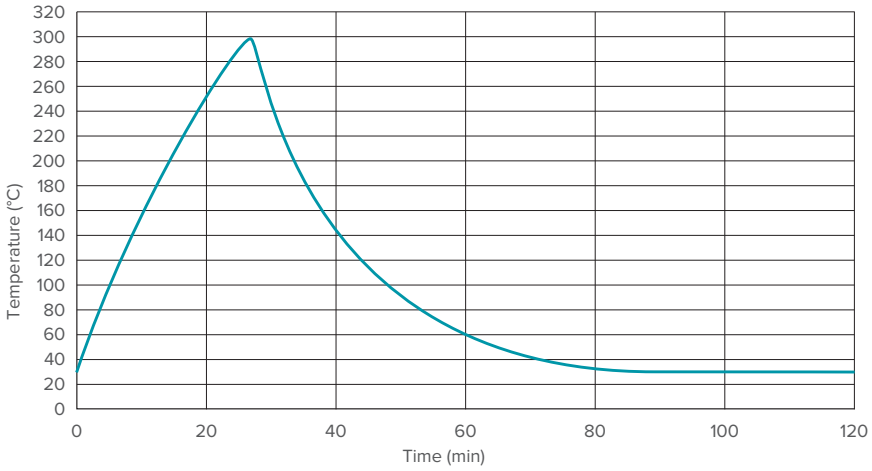
ATT Transition Time (Typical)*

Cooling	200°C to 30°C	60 min
	300°C to 30°C	70 min
Heating	30°C to 200°C	19 min
	30°C to 300°C	35 min

* *Performance valid within fulfilled facility media requirements as stated in the Facility Planning Guide.*

ATT Thermal Transition Time (30°C to 300°C)

Typical times using TESLA300 with FemtoGuard Chuck



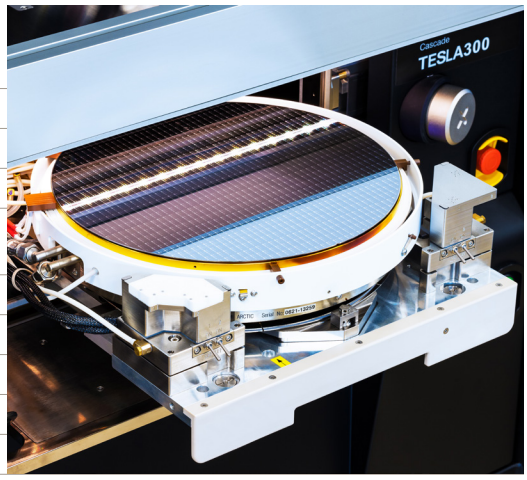
Mount/Transports

Programmable Bridge/Transport Specifications, High-Temperature Stability*	
Travel	75 mm (X) x 75 mm (Y) x 150 mm (Z) (3.0 in. x 3.0 in. x 5.9 in.)
Travel in TopHat	26 mm x 26 mm (1 in. x 1 in.)
Z Lift	150 mm (5.9 in.)
Resolution, X-Y axis	1 µm (0.04 mils)
Resolution, Z axis	0.4 µm (0.016 mils)
Repeatability, X-Y axis	≤ 2 µm (0.08mils)
Repeatability, Z axis	≤ 1 µm (0.04mils)
Accuracy, X-Y axis	≤ 5 µm (0.2 mils)
Accuracy, Z axis	≤ 4 µm (0.016 mils)
Speed	5 mm/sec (0.2 in./sec)

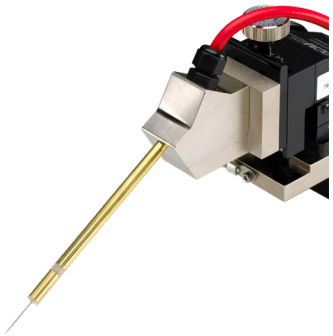
* *Applicable with eVue only*

Aux Chucks

Quantity	Two separated chucks for calibration (CAL, two sites) and cleaning (CLEAN, three sites), mounted independent of the thermal chuck
Max substrate size CAL	22.15 mm x 22.15 mm ISS substrate
	16 mm x 14.5 mm Square substrate
Max substrate size CLEAN	38.1 mm x 38.1 mm gel pad
	Two 16 mm x 14.5 mm contact pads, solid clean pad, brush
Material	CAL: ceramic, CLEAN: steel
Flatness	≤ ± 10 µm (0.39 mils)
Thermal isolation	Air gap, > 10 mm
Positional repeatability	2 µm (0.08 mils) after rollout event
Vacuum actuation	Independent manual control



High Power Probes for TESLA300

	Ultra High Power Probe	High-Current Probe	High-Voltage Probe
			
Probe	UHP	HCP-XX	HVP-XX
Current	Up to 300 A	Up to 100 A	Up to 5 A
Voltage	Up to 10,000 V	Up to 500 V	Up to 3,000 V

**See High-Power Probe data sheet for more information.*

Models

TESLA300 Fully-shielded - Probe station platform, semi-automated with MicroChamber, AttoGuard and PureLine technologies

Configuration includes:

Microscope Bridge/Transport – programmable 75 mm x 75 mm, High Thermal Stability
EMI- and light-tight shielding with TopHat, AttoGuard technology for accurate IV/CV measurements
ContactView™ East-West with ProbeHorizon for fast and safe wafer loading at high-voltage probing height
AUX chuck kit for calibration and cleaning
Velox Controller with dual TFT monitor 24” on ergo arm
AirGun with front access, IntelliControl

TESLA300 Shielded - Probe station platform, semi-automated with MicroChamber

Configuration includes:

Microscope Bridge / Transport – programmable 75 mm x 75 mm, High Thermal Stability
EMI- and light-tight shielding with TopHat
ContactView East-West with ProbeHorizon for fast and safe wafer loading at high-voltage probing height
Velox Controller with dual TFT monitor 24” on ergo arm

Options

Note: To complete the TESLA300 probe system configuration

1. Select a modular chuck from the list on the next page (X=1 f or Nickel-plated chuck and 2 for Gold-plated)

2. Select additions/options from the following list (see compatibility chart on following page)

Part Number	General Description	TESLA300-F	TESLA300-S
780-00327	TESLA300, microscope bridge/transport HTS – programmable 75 mm x 75 mm	Std	Std
161-677	TESLA300, AUX chuck kit	Std	●
780-00172	TESLA300, AirGun with front access, IntelliControl	Std	●
167-500	TESLA300, AirGun with front access		●
	TESLA300, 2nd ContactView North-South for use at standard probing height	●	●
186-000	3D Manual Controls, including XY Knobs and Platen Lift - provides extremely intuitive, rapid and precise manual control of the stage in X, Y and Z direction	●	●

Thermal Chucks*

		Chuck Compatibility	
Part Number	**General Description**	**TESLA300-F**	**TESLA300-S**
TC-426-408	FemtoGuard triaxial chuck, thermal, -60°C to 300°C (ATT), 300 mm (12”)	●	●
TC-426-208	Coaxial chuck, thermal, -60°C to +300°C (ATT) , 300 mm (12”)		●

* *Thermal chucks require thermal systems to control chuck temperature.*

Thermal Systems

		Compatibility	
Part Number	**General Description**	**TESLA300-F**	**TESLA300-S**
TS-426-14E	Thermal System, -60°C to 300°C, ATT (220-240 VAC 50 Hz), CDA-saving, requires CDA dew point <-80°C	●	●

TS-426-14R	Thermal System, -60°C to 300°C, ATT (200-220 VAC 60 Hz, 200 VAC 50 Hz), CDA-saving, requires CDA dew point <-80°C	●	●
TS-416-14E	Thermal System, -60°C to 300°C, ATT (220-240 VAC 50 Hz), with air dryer	●	●
TS-416-14R	Thermal System, -60°C to 300°C, ATT (200-220 VAC 60 Hz, 200 VAC 50 Hz), with air dryer	●	●
TS-426-08P	Thermal System, -40°C to 300°C, ATT (200-230 VAC 50/60 Hz), CDA-saving, requires CDA dew point <-70°C	●	●
TS-426-08R	Thermal System, -40°C to 300°C, ATT (200-220 VAC 60 Hz), CDA-saving, requires CDA dew point <-70°C, UL-certified	●	●
TS-416-05T	Thermal System, +20 to 300°C, ATT (100-230 VAC 50/60Hz)	●	●
TS-416-02T	Thermal System, +30 to 300°C, ATT (100-230 VAC 50/60Hz)	●	●

Note: Thermal systems must match the thermal chuck selected, i.e. TS-416-xxx and TS-426-xxx thermal systems are compatible with TC-426-xxx chucks. The upper temperature limit is defined by the chuck.

System Features

General Probe System Specifications

Usability feature:

- ContactView (East-West orientation) for high-voltage probing height

Automation features:

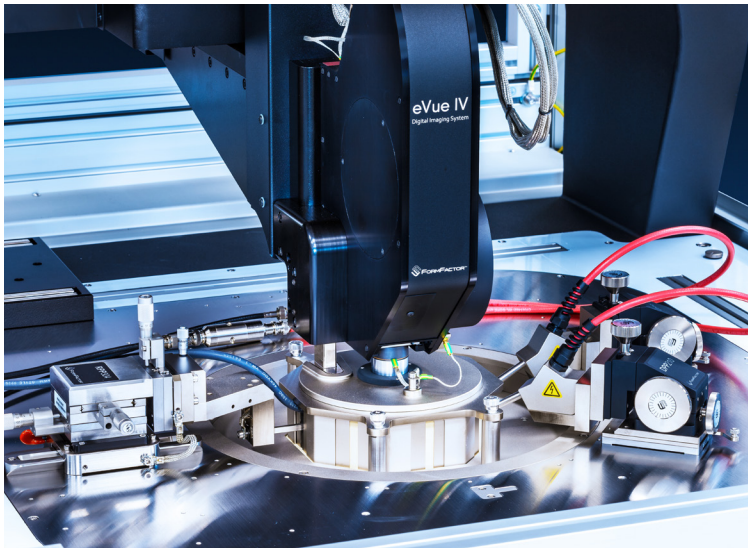
- Automated Thermal Management (ATM)

Top shielding:

- TopHat (for shielded configurations only)
- Probe card holder for use with 4.5” probe cards (with cover for shielded configurations)

Note: All performance metrics identified in this document are valid only when the system is installed and operated within the terms specified in the Facilities Preparation Guide.

TESLA300 fully-automated system with material handling unit MHU301-T.



TopHat for shielded configurations.

MHU Features

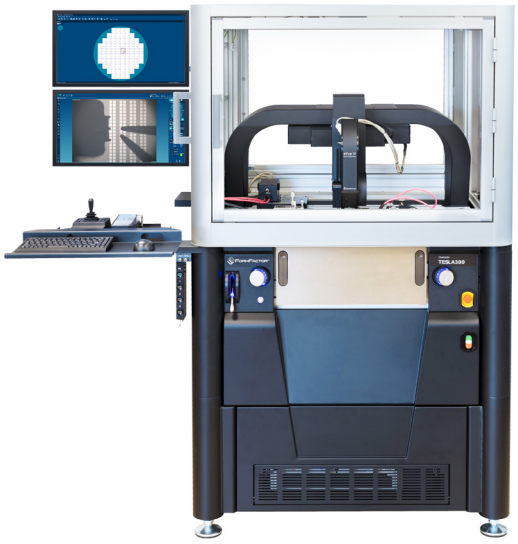
Material handling unit	The MHU301-Topgrip (MHU301-T) with TopGrip end effector can be added to the configuration to provide fully-automated test capabilities. It offers automated loading of the probe system with 200 mm and 300 mm SEMI spec wafers from FOUP/FOSB cassettes. The MHU301-T comes with one SEMI standard load port. Manual loading of wafer fragments (> 10 mm x 10 mm), as well as full wafers, are supported through manual loading of the prober, which bypasses the MHU.
Wafer ID Reading	The probe system has the optional ability to automatically identify wafers. Wafers are identified by a barcode [BC 412 (SEMI T1-95 Standard] and IBM 412, OCR text [SEMI M12, M13 and M1.15 Standard], IBM, Triple and OCR-A fonts or 2D code [Data Matrix (T7 and M1.15 Standard)] at the top or bottom side of the wafer.

Note: 200 mm wafers require a dedicated open cassette adapter to fit to the 300 mm load port.

Configuration Options

Semi-Automated

Stand-alone TESLA300 probe system with no integrated wafer loader



Fully-Automated

Wafer loader MHU301-T interfaced to the TESLA300 probe system

Notes: For detailed facility requirements, refer to the TESLA300 Facility Planning Guide.

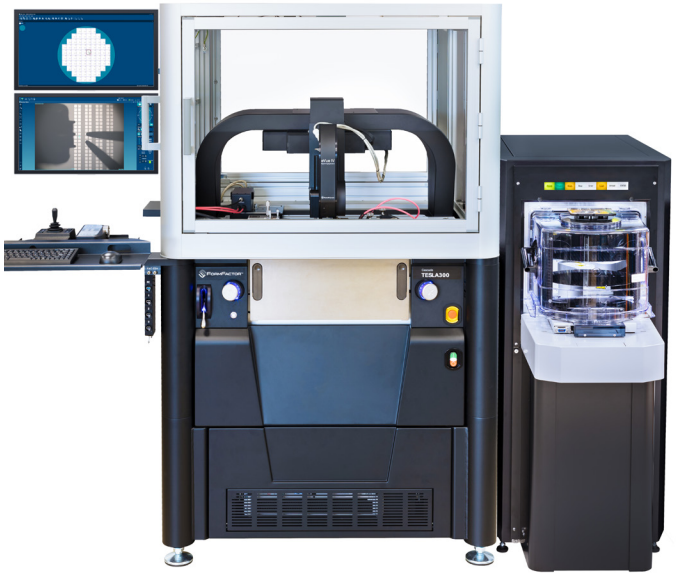
System Upgrade Options

MHU-ready option:

OPT-TESLA300-MHU-NR	Upgrade capability for conversion of a TESLA300 to fully-automated probe system, feature is required to prepare a TESLA300 for later upgrade in the field.

Available options

Automation with MHU301-T	
MHU301-T	Material handling unit with one load port for 300 mm FOUP/FOSB cassettes, for TESLA300 at left side of MHU
180-402	Open Cassette Adapter for 200 mm Wafer Cassettes
182-825	ID reading for MHU301 for front side of the wafer
183-038	ID reading for MHU301 for back side of the wafer
182-826	ID reading for MHU301 Top and Bottom
183-820	Fan Filter unit for MHU301 reducing dust pollution level inside MHU
183-027	Quick Access Port: Additional storage for 2 wafers for faster testing



TESLA300 fully-automated system with material handling unit MHU301-T.

System Throughput

Semi-automated system	
Chuck stepping time	≤ 0.75 sec (200 µm Z down – 1000 µm X-Y – 200 µm Z up)

Fully-automated system	
FOUP cassette load	≤ 30 sec (incl. wafer scan)
Wafer handling cycle @ ambient	≤ 1.8 min (Cassette ➔ PreAligner ➔ Prober ➔ Cassette)
	≤ 2.1 min (Cassette ➔ PreAligner ➔ IDReader ➔ PreAligner ➔ Prober ➔ Cassette)

Regulatory Compliance

Certification	Certification CE declared, FCC 15 and ICES-003 class A Compliant, 3rd party tested for CB against IEC 61010 including National Standard CSA C22.2 No. 61010-1-12 / UL 61010-1:2012, certified for US and Canada (cNRTLus), SEMI S2 and S8. Copies of certificates are available on request.

Warranty

Warranty*	Fifteen months from date of delivery or twelve months from date of installation
Service contracts	Single- and multi-year programs available to suit your needs

* *See FormFactor's Terms and Conditions of Sale for more details.*

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TESLA300-DS-1121