

FPP-5000

specifications

Measurement Functions and Range:

Digital computation allows the direct, error free, display of sheet resistivity in ohm/square from 1.1 m Ω /sq to 450 K Ω /sq, slice resistivity in ohm centimeters from 4.19 x 10⁻² m Ω -cm to 17.1 K Ω -cm, V/I in ohms from 0.25 m Ω to 99.9 K Ω or metallization thickness in kiloangstroms from 20 Å to 243 KÅ. Use of graphs, tables or mechanical calculations and either associated errors are totally eliminated.

Operation:

Operator simply places wafer on molded wafer carrier, and closes RFI/light shield to initiate test. Unit automatically ranges to correct range and displays correct reading including decimal point and multiplier. Reading is held to assist in data logging until next test is initiated.

Probe Head:

Convenient plug-in probe head/adaptor assembly permits changing or replacing of worn probe heads in minutes without special tools or alignment fixtures. Alessi probe heads are provided as standard equipment.

Constant Force Mechanism:

The FPP-5000 utilizes a probe up configuration. This probe up technique assures repeatable probe pressure at every test independent of operator force and substrate thickness.

Probe Tip and Wafer Protection:

The probe tips remain below the stage of the FPP-5000 until the cover is lowered eliminating damage to the wafer. Probe tips remain unpowered until after contact with wafer to eliminate arcing with consequent probe tip erosion and wafer pitting.

RFI/Light Shield:

Cast aluminum RFI/Light Shield eliminates problems due to radio frequency noise and photoelectric effects when measuring high resistivity layers.

Direct Digital Display:

Test results are displayed on direct five digit LED display.

Penetration Function:

Built-in penetration function applies a 170V, 4 msec pulse to probes through a 10M resistance prior to test for low contact resistance if desired. Penetration function is front panel selected.

Auto Typing:

Automatic type testing (P-N) is determined by a Rectification or Thermoelectric test. The substrate type will be indicated by illumination of either the P or N indicator. Invalid or questionable tests are indicated by illumination of both indicators.

Forward and Reverse Current Test:

Automatic forward and reverse current test for instant verification of proper probe tip contact.

Cycle Time:

Total test time less than 2 secs. (typically 1 sec.)

Electronic Accuracy:

± 0.5% on all but extreme ranges for contact resistances up to 5 K Ω . Unique automatic zero circuit minimizes thermal and source impedance effects and eliminates need to manually readjust instrument zero. The self calibration and zero circuitry assures high accuracy.

Voltage Detector:

Input impedance greater than 10¹². Input bias current less than 50 pA.

Maintenance & Service:

The microprocessor based electronics employ state of the art components for trouble free operation and high reliability. All electronic components mounted on easily replaced printed boards.

Operating Temperature Range:

15°C to 30°C.

Power:

115/230 volts ± 10%, 50/60 Hz. Less than 12 Watts.

Dimensions:

15" wide, 15" deep, 5" high (lid closed), 15" high (lid open)

Accessories:

FPP-5000 is shipped with the following accessories:

- (a) 2" wafer carrier
- (b) 3" wafer carrier
- (c) 4" wafer carrier
- (d) 5" wafer carrier
- (e) 6" wafer carrier
- (f) Fragment carrier
- (g) Operation and Maintenance Manual (2)

Options:

- (a) RS232 Interface—allows printout of all measurement data, operator and wafer identification. Data can also be supplied to a host computer.
- (b) Remote Head—ideal for resistivity and thickness measurements on large metallized surfaces. System includes an external probe head assembly (internal probe is removed) connected to the main unit through a 8 ft cable.

Measurement Range (AP-150 and FPP-5000)

PARAMETER	FROM	TO
Sheet resistance range	1.1 m Ω /sq.	450 K Ω /sq.
Slice resistivity range for a 15 mil wafer V/I range	4.19 x 10 ⁻² m Ω -cm	1.71 K Ω -cm
V/I	25m Ω	9.99K Ω
Metallization thickness range for 99.9% pure aluminum	20 Å	243KÅ
Electronic Accuracy	0.5% for V/I of 5m Ω to 5K Ω at an ambient temperature of 15°C to 30°C	

Specifications are subject to change without notice.

MEASUREMENT RANGE

PARAMETER	FROM	TO
Sheet resistance range	1.1 mΩ/sq.	450 KΩ/sq.
Slice resistivity range for a 15 mil wafer	4.19 x 10 ⁻² mΩ-cm	17.1 KΩ-cm
V/I range	.25 mΩ	99.9 KΩ
Metallization thickness range for 99.9% pure aluminum	20 Å	243 KÅ
Electronic Accuracy	±0.5% for V/I of 0.5mΩ to 5 KΩ at an ambient temperature of 15° C to 35° C	±8% for all other measurement ranges up to an ambient temperature of 55° C

Power: 115/230 volts 10% 50/60 HZ Less than 30 watts.

FPP-5000 ORDERING INFORMATION

MODEL	DESCRIPTION			
	Complete Four Point Probe System for 2", 3", and 5" wafers*		Dimensions: 15" wide, 15" deep 5" high (lid closed) 15" high (lid open)	
	APPLICATION	Pressure gm/Pln	Tip Radii in mils	Part No.
FPP-5000	Standard Configuration FPP-5000 for silicon slices and ingots	70-180	2.0	8295-200-01
FPP-5000	1. For epilayers ≤ 1 μ thick with polished & unpolished surfaces 2. For epilayers > 1 μ thick with polished & unpolished and bulk resistance of < 1 Ω-cm	40-70	5.0	8295-200-05
FPP-5000	For epilayers > 1 μ thick polished & unpolished surface with bulk resistance ≥ 1 Ω-cm	40-70	2.0	8295-200-03
FPP-5000	For metallization layers	40-70	10.0	8295-200-07
FPP-5000	For gallium arsenide and gallium phosphide arsenide	70-180	0.7	8295-200-09
	ACCESSORIES			
	2" Molded Wafer Carrier			8295-415-01
	3" Molded Wafer Carrier			8295-415-02
	4" Molded Wafer Carrier			8295-415-03
	5" Molded Wafer Carrier			8295-415-04
	Fragments ¼" diameter, minimum			8295-415-05
	Spare Electronics Analog Board A			8295-226-00
	Spare Electronics Digital Board B			8295-227-00
	Spare Electronics Display Board C			8295-228-00
	Extra Head In Block			8295-239-00
WS-100	Wafer Simulator			8237-100-00
	Simulator Board with Cable (for FPP-5000)			8237-206-00
	Adapter Cable (for FPP-5000)			8237-207-00

FPP-5000 ordering information for 8" dia. wafers, upon request

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