



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

Powai, Mumbai 400076.

Ref. No. PR No. 1000050816)

Rfx No.: 6100002474

Technical Specifications : Semiconductor Parameter Analyser with probe station (Qty : 1)

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes/No)	Additional Information (if any)
1.1	Semiconductor Parameter Analyzer – General Features	• 2 SMUs: 1 High-Resolution SMU & 1 Medium- Resolution SMU • 1 MFCMU (Capacitance Unit) • 1 PMU (Pulse/Fast Measurement Unit) • Upgradable: ≥9 slot modules • Ground unit: ±4 A sink current or higher • Compatible with standard probe stations		
1.2	SMU-1 (High Resolution)	• Voltage: 500 mV to 20 V • Resolution: 25 µV source, ±500 nV measure • Current: 1 pA to 100 mA • Current resolution: 1.5 fA source, ±10 aA measure • Capacitive load: ≥100 µF • Modes: Bias, Common, Sweep, List sweep, Step		
1.3	SMU-2 (Medium Resolution)	• Voltage: 500 mV to 20 V • Current: 100 nA to 100 mA • Resolution: 5 pA source, ±100 fA measure • Supports sweep, list, bias, common modes		
1.4	Capacitance Measurement Unit (CVU)	• Frequency: 1 kHz–5 MHz • DC drive: –25 V to +25 V • DC bias resolution: ≤1 mV • AC amplitude: 10–250 mV • Frequency resolution: 10 mHz • Mandatory measurements: CP-G, CP-D, CP-Q, CP-RP, CS-RS, CS-D, CS-Q, R-X, G-B, Z-θ, Y-θ • LP-G, LP-D, LP-Q, LP-RP, LS-RS, LS-D,		

		LS-Q • QSCV with leak compensation • Auto switch between IV/CV • No measurement buffering delays		
1.5	Pulse Measurement Unit (PMU)	• Dual channel • Pulse ± 5 V or better • Pulse width: 150 ns to DC • Current measurement: 1 μA–800 mA • Sampling rate ≥ 200 MSa/s • Supports transient, NBTI, PBTI • Synchronized IV/CV/Pulse switching		
1.6	Software, UI & Analysis	• ≥ 20 user-defined parameters & analysis functions • Modes: Normal, gradient, tangent, regression • Auto-analysis & marker detection • Supports parameter extraction • Interfaces: GPIB, USB, LAN, trigger I/O • Touch, keypad, keyboard & mouse support • Offline + online capability • Built-in memory • User programmable test modules		
1.7	Cables	Mandatory: • Triax cables (low current < 1 pA): 6 units (3 m) • Coaxial cables (3 m) • HV triax cables (3 m) Optional: • GPIB cable ≥ 2 m		
1.8	Connectors & Adaptors	Mandatory connectors (< 1 pA capable): • Triax(M)-BNC(F): 5 • Triax(F)-BNC(M): 10 • Triax(F)-BNC(F): 5 • BNC tees: 10 • Banana connectors: 10 • High-current banana: 5 • GPIB adaptors (2)		
1.9	Additional Requirements	• Auto-switch IV/CV/Pulse without reconnecting DUT • Kelvin ground • MOSCAP (5) & MOSFET (5) reference samples • Test fixture for IV/CV/Pulse verification down to 1 pA • Connectable to any probe station		
1.10	Installation & Training	• Full installation & setup • Demonstration: FETs, LEDs, photovoltaics, memory devices • LabVIEW demo for multi-SMU IV & pulsed		

		measurements • Training for student group		
1.11	Probe Station	• Table: 400×400×110 mm • 4 micro-positioners with triax adapters • Chuck: 4-inch, $\leq 5\ \mu\text{m}$ flatness • Temp up to 250°C • Current: 1 pA–1 A • Tips: 5 μm tungsten • Lamp 6 V 15 W • Microscope 1×–4×		
1.12	Micro-Positioners	• Linear X-Y-Z motion (12 mm each) • Resolution: 0.8 μm • Lead screw: 80 TPI • Triaxial connectors • Tubular tip holder • Frequency: DC–40 MHz		
1.13	Warranty	3-year comprehensive onsite warranty from date of successful installation		