



Request for Quote and Specifications of pulsed I-V setup

- The GEECI (Gallium Nitride Ecosystem Enabling Centre and Incubator) at SID-Indian Institute of Science is seeking bids from qualified vendors for pulsed I-V measurement system with the specifications mentioned below.
- Companies need to submit two bids, a technical bid and a commercial bid, in **two separate** sealed envelopes. The bids should be submitted no later than 21 days from the date of posting of this tender and by 5 pm on the 21st day or next weekday in case the 21st day falls on a weekend.
- Deviations from the technical specifications requested are allowed. Such deviations must be highlighted and justified. Their acceptance or rejection will be left to the discretion of the technical committee.
- The setup will be used toward research development at the Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc). IISc is India's No. 1 academic institution on higher learning and the Centre for Nano Science and Engineering is home to one of the best academic fabs in the world.
- The technical response, corresponding to the setup being offered, should be in the form of a compliance table with at least 5 columns. Serial number in column 1. Each of the numbered technical items below should be addressed in a separate row of the table in column 2. Compliance to this requirement, in Yes/No, deviation from it and justification should be provided in the neighbouring columns 3-5. Post the opening of a hard copy of the technical bid the committee will request for a soft copy of the files for further processing. Companies should **NOT** mail soft copies of the files unless specifically requested for.
- Detailed technical specifications of the system being offered should be included.

Bids should be sent to Prof. Srinivasan Raghavan, CeNSE, IISc, Bangalore, 560012. Direct all questions concerning this acquisition to Prof. Srinivasan Raghavan at sraghavan@iisc.ac.in and geeci.sid@iisc.ac.in

Specification for Pulsed IV and RF characterization System.

1. Standalone synchronous dual pulsing system capable of simultaneously pulsing gate and drain of FETs from a quiescent point to any point on the desired IV curve.
2. System should be suitable for measuring DC IV measurement also.
3. The system should be fully integrated turn-key solution with high flexibility and modularity, and should be upgradable
4. All measurement control must be available at one central user interface.
5. Power sources should be built in or embedded.
6. The system should comprise the following basic components:
 - i. Pulsed IV system for Pulsed, DC characterization
 - ii. Control software
 - iii. Compact Modelling Software
7. The pulsers should provide DUT and thermal breakdown protections, and should enable emergency stop when the operating point exceeds the specified current or voltage or frequency or temperature
8. The setup must enable characterization of both on-wafer as well as packaged devices. Any fixture required for the same, should be provided.

SPECIFICATIONS OF THE PULSED IV SYSTEM

SL No	Equipment	Qty	Specification Details	Specifications
1	Drain Pulser Head	1	Maximum voltage	+/- 200V or higher
			Maximum current pulsed	+/- 30A or higher
			Maximum DC current	3 A or higher
			Power Handling	100 W (DC) and > 2 kW (pulsed)
			Pulse Width (Min. /Max.)	200 ns to DC
			Duty cycle (Min. /Max.)	up to 100% (i.e., continuous DC)
			Rise and fall times (10-90%, 90-10%)	40 ns or lower
			Maximum measurement error	1% or better

2	Gate Pulser Head	1	Maximum voltage	+/- 20V or higher
			Maximum current pulsed	+/- 500mA or higher
			Maximum DC current	200 mA or higher
			Power Handling	2W or higher (DC) 10 W (pulsed)
			Pulse Width (Min. /Max.)	200 ns to DC
			Duty cycle (Min. /Max.)	up to 100% (continuous DC)
			Maximum measurement error	1% or better

3	Pulsed IV Characterization Software	Vendor to supply suitable software for the instrument control and operation, display of test results and analysis of test data
4	Compact Modelling Extraction Software	Nonlinear compact model extraction software. Vendor to supply basic software for model extraction and display of test results and analysis of test data
5	System configuration	Pulsed IV System with enhanced user interface, high-definition display, system software and documentation

Terms & Conditions:

1. **Control and measurement software:** All the control and measurement software provided, must control all the associated instrumentation without requiring any manual intervention.
2. **Service / Support:** Telephone/web support should be free of charge for the warranty time.
3. **Manuals:** Operation and service manuals for the measurement system along with the manuals for respective third-party equipment should also be supplied (Both hardcopies and softcopies).
4. **Licensing:** Software must be licensed in the name of IISc.
5. **Warranty:** Minimum One year (preferred 2 years) for the entire system including third party equipment / modules.
6. **Installation & Trainings:** Price should include installation, set-up, and minimum 5 days training at IISc. Additional online training as and when required must be available. Besides, the local engineer should be available for on-site visit in case of issues (this should be without charge) and as and when we require additional training (IISc will pay travel and accommodation of this).

Common Terms and Conditions: A separate table to be included for each of the items below in the technical bid
SEMI Standards: The technical bid should include details of the SEMI standards the tool confirms to.
Clean Room Compatibility: The system should be compatible with better than class 1000 cleanroom environment.
Shipping: On all systems the cost of shipping up to IISc should be included. IISc will help with customs clearance at Bangalore Airport. Please include your payment option. IISc would prefer to retain at least 20% of payment till instruments have been commissioned and successfully demonstrated.
Tool Training: The bid should include as an option the cost of training personnel on site before shipment and post installation at IISc.
Tool footprint and utilities: A floor plan should be part of the technical bid. A list of utility requirements should be part of the technical bid. The system should be compatible with 240±10V, 50 Hz single phase or 415±20V, 50 Hz 3 phase supplies. The MINIMUM set of utility requirements needed are provided in Table 1. If there are additional utility requirements, please include them in the technical bid. Please list connector types for all utilities.
Cost of Ownership and supply of spares: The quote should include a listing of spares that need to be replaced periodically to ensure that the system is in operation in a stable fashion – the stability parameters being defined by the vendor and agreed to by the client – the cost of such items, the ability to guarantee their availability at this cost for a period of 5 years from the time of procurement. The aim of this exercise is to compare cost of ownerships between reactors.
Maintenance: The cost of an annual maintenance contract and cost of emergency technical support that may involve an engineer being on site should be quoted for in the commercial bid and addressed in the technical bid. The availability of trained engineers in India for servicing the system will be preferred and should be described in the technical bid.



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<p>Maintenance: On all systems a set of basic tools required -non-standard screw or spanner head that is required for routine tool maintenance should be mentioned- for performing routine maintenance should be included.</p>
<p>Maintenance: System operation, process and troubleshooting manuals and detailed drawings are a must. Their inclusion must be indicated in the technical bid.</p>
<p>Online support: System should have the capability for online diagnostics from a remote location in case of tool problems.</p>
<p>Post sales service and Indian Presence: Bidders should provide details of after sales service and support available in India. If not India, the nearest geographical location should be specified. Please provide details of the number of trained personnel in India who can service the machine, the number of tools sold in India and the corresponding number in the southern region or in Bangalore.</p>
<p>Shipping: On all systems the cost of shipping up to IISc should be included. IISc will help with customs clearance at Bangalore Airport.</p>
<p>Payment Terms and Conditions: On all systems the payment terms should be specified in the technical and commercial proposal and is subject to negotiation. Please include your payment option. IISc would prefer to retain at least 20% of payment till instruments have been commissioned and successfully demonstrated.</p>
<p>References: Bidders should provide details of other locations in India with similar tool installations.</p>
<p>References: Bidders should provide details of at least 3 other locations globally where similar tool installations have been deployed for device fabrication in a clean room preferably for production purposes.</p>
<p>Company financials: Bidder shall have to submit audited accounts of financial year 2017-18, 2018-19 and 2019-20. Audited statement must be signed and stamped by qualified chartered accounted. Income Tax return for assessment year – 2017-18, 2018-19 and 2019-20.</p>
<p>The following documentation should be provided. ISO9001 quality certification. CE marking confirmation. Must confirm to SEMI standards to be specified in the technical quoted.</p>