

## 1. Required info when requesting DLTS measurements

### I. In case the sample is in wafer shape without deposited contacts

1. Ascertain that:	<ul style="list-style-type: none"> <li>• There is no mechanical damage on the surface</li> <li>• That the sample is clean</li> <li>• That there is no remaining oxidation layer etc. on the surface</li> </ul>
2. Material	<ul style="list-style-type: none"> <li>• SiC, GaN, Si, GaAs, Ga2O3, MOS (MIS) interface, etc.</li> </ul>
3. Wafer structure	<ul style="list-style-type: none"> <li>• Substrate/epi specifications; various thicknesses; crystalline direction, surface processing history, etc.</li> <li>• Conduction type; carrier density; mixed alloy composition; direction of easiest cleavage, etc.</li> </ul>
4. Measurement objective	<ul style="list-style-type: none"> <li>• General purpose (expected output)                             <ul style="list-style-type: none"> <li>* Standard defect analysis output: Defect energy levels, capture cross section, concentration</li> <li>** There are cases when requests can't be accommodated if made post-measurement</li> </ul> </li> <li>• Objective examples:                             <ul style="list-style-type: none"> <li>• Evaluation of defects in epi layer</li> <li>• e.g., in case of multiple samples, investigation of the influence of heat-treatment</li> <li>• investigation of the cause of device failure/defects</li> <li>• Evaluation objective: majority carrier traps or minority carrier traps</li> <li>• The density profile (depth profile) with respect to a specific defect (e.g. Z1/2 level in 4H-SiC)</li> <li>• Details about any additional information you'd like to gather about the samples (feasibility will be discussed prior to accepting the measurement request)</li> </ul> </li> </ul>
5. Measurement conditions	<ul style="list-style-type: none"> <li>• Measurement region (e.g. depth from surface)</li> <li>• Contact preparation (contact material, etc.)</li> <li>• Physical property constants to be used (limited to cases with special requirements)</li> <li>• Others, such as bias/pulse voltages etc., basic DLTS measurement parameters</li> <li>• *In case of no special requirements, please leave it to us (for samples that are homogeneous in thickness direction the DLTS measurement parameters allow for some degree of arbitrary selection).</li> </ul>

### II. In case of already contacted samples

In addition to „I.“	<ol style="list-style-type: none"> <li>① Device structure (device structure, as detailed as possible)</li> <li>② Sample characteristics (I-V, C-V) data, breakdown voltage (if available)</li> <li>③ Junction surface area</li> </ol>
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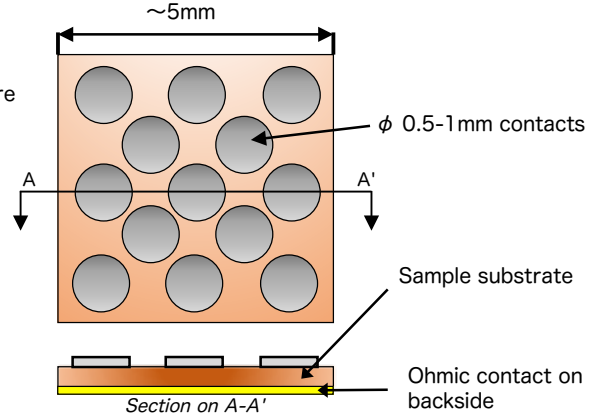
## 2. Sample preparation

In case of a wafer, we would appreciate it if you could supply a 5-6mm square shaped chip, otherwise we also accept 2-3cm sized chips we will cleave into the appropriate size at our lab. If proper sample preparation can be undertaken on your side, we also accept ready-samples.

## 3. Measurement report format

The measurement report is provided in standard analysis report format:

- Measurement purpose
  - Measurement conditions
  - Measurement result: incl. graphs and tables
- File format: PDF, PPT, TXT (graph data)



## 4. Frequently asked questions

1. **What kind of samples/material can be measured?**  
 → All semiconducting materials can be measured. In general, all DLTS measurements you encounter in papers etc. can be measured at Ceramicforum.
2. **What results can be expected regarding each material category?**  
 → Parameters and concentration of defect levels in semiconductors  
 → Info on in what form the defects manifest themselves (depth profile etc.)

Please state your expectations regarding the measurement results when issuing a request („measurement goal“). Expectations will be reviewed for feasibility by our engineer prior to measurement.

For other basic questions regarding the principles of the DLTS measurement method including what information can generally be gained please consult related literature.

3. **Measurable temperature range**  
 → In general 80-400K, although measurements up to 700K are possible (contacts able to withstand those temperatures are required)

### Ordering process

- ① Measurement request
- ② Discussion of specs
- ③ Quotation
- ④ Measurement
- ⑤ Report by e-mail (after 2 weeks)
- ⑥ Report by postal mail (if required, after 3 weeks)
- ⑦ Invoice