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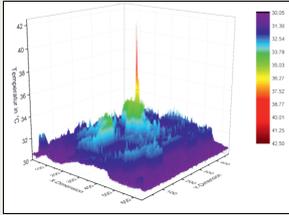
### Requirements

Power electronic components or assemblies must meet extremely high technical requirements in their applications. Additionally, these components are often used in harsh environments or different weather and climate conditions. Despite the highest quality requirements and the efforts of

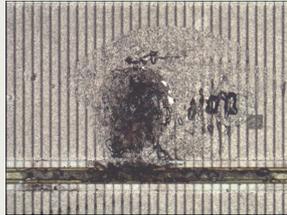
manufacturers regarding reliability and robustness, it always comes back to failures, which often involve high costs. Targeted fault analysis can help to minimize this cost factor and provide evidence for the prevention of recurrent error patterns.

### Services

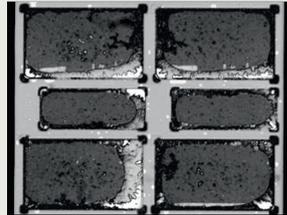
- ✓ Characterization of static and dynamic behavior of power electronic devices
- ✓ Power cycling test to determine the expected lifetime
- ✓ DC longterm stress tests
- ✓ Failure analysis
- ✓ Realization of selected steps of preparation



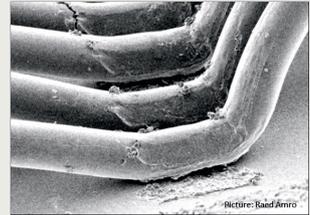
Hotspot investigation by Thermocam



Microscope photograph of the chip surface



Delamination of system solder



Heel crack and bond wire lift-off

### Failure Analysis fields:

✓ **Power generation and distribution**

✓ **Traction drives**

✓ **Automotive**

✓ **Industrial drive controls**

### Scope of Services

✓ **Electrical measurements comprising**

- Static measurements (blocking behaviour up to 10kV, output characteristics, transfer characteristics, hotspot investigation by Thermocam, isolation test up to 10 kV, gate-emitter leakage current)
- Transient electrical measurements (switching losses, short circuit behaviour, surge current resistance)

✓ **Comprehensive optical microscope analysis**

- Determination of bond wire state and bond lift-off
- Recognition of reconstruction of chip metallization
- Conclusions on typical failure images

✓ **Scanning acoustic microscopy**

- Evaluation of solder layers, solder fatigue and delaminations

✓ **Scanning electron microscopy / energy-dispersive x-ray spectroscopy on request in cooperation with scientific and academic partners**

✓ **Cause of failure detection, residual life assessment if necessary**

✓ **Analysis report**

GWT is a R&D service provider for industry and supports scientists in technology transfer in Germany. The goal is to make use of research results in new processes and products more quickly. As a knowledge and technology transfer company, we focus on organizing the innovation process between scientific institutes and business enterprises as efficiently as

possible. The Technical University (TU) Chemnitz, strategic partner of GWT, stands for outstanding research. Within the core competencies "Materials and Smart Systems", "Resource-efficient Production and Lightweight Structures" and "Humans and Technology", solutions for the challenges of tomorrow are developed.

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