Fraunhofer ISIT

Fraunhofer Institute for Silicon Technology ISIT

Thermal Digital Twin

Maximize hardware performance, minimize downtime!

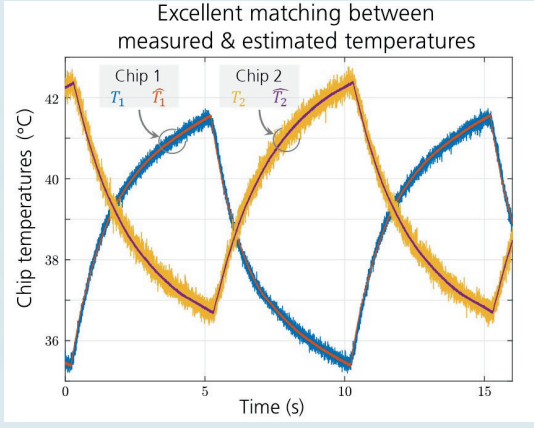
Benefits of our monitoring approach:

- Online monitoring of thermal system ageing
- Optimized maintenance planning through remaining useful lifetime estimation
- Improve lifetime through active thermal control and PQ-power curve extension
- Design margin reduction, owing to accurate Tj estimation

Thermal Digital Twins #WeKnowHow

Assessing power modules' health can rely on thermal impedance, but this parameter is difficult to monitor online with current methods. Our thermal digital twins (DTs) approach creates a realtime-capable replica of the physical thermal behavior and enables monitoring the thermal impedance online.

By measuring a limited number of temperatures at selected points within a power module, its comprehensive equivalent thermal model is identified. This is then used to accurately estimate transistors' temperatures (Tj) and assess their degradation levels.



Fraunhofer ISIT
Active Reliability

Dr. Yoann Pascal
Phone +49 152 1341 7028
yoann.pascal@isit.fraunhofer.de

Scan for further information!

Fraunhofer ISIT