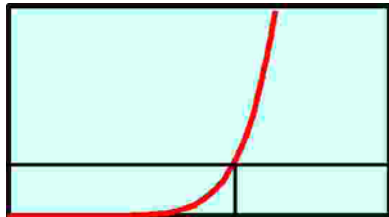
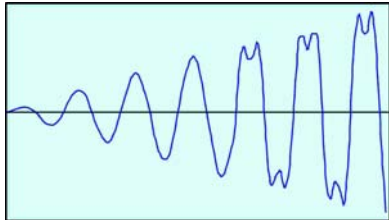
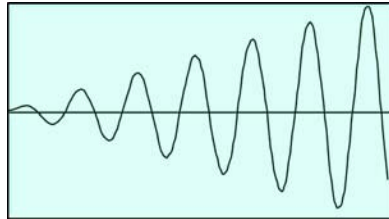




Measurement principle

J<sub>c</sub> - measurement



**Third harmonic critical current measurement**

The underlying contactless, inductive measurement principle is illustrated in the three schematic graphs.

The amplitude of the AC - driving current is increased.

The superconducting film screens the magnetic field as long as the current does not exceed its critical value. When the critical current is exceeded in the peaks of the sine the response signal gets distorted.

This non - linearity can be detected sensitively by checking higher harmonics. Once calibrated by transport measurements the harmonic response relates directly to the critical current density.

T<sub>c</sub> - measurement

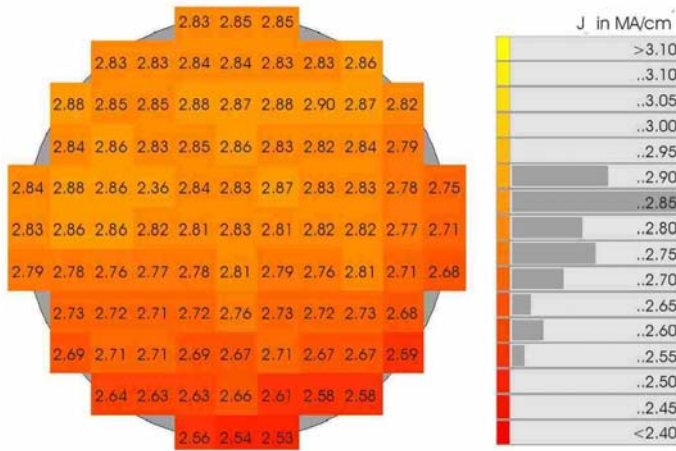
**T<sub>c</sub> - measurement**

With the same ease as the critical current density the transition temperature of samples up to 4" diameter can be determined with an optional inset. No need for big cryostats – no cutting or monitor samples any more.

Film samples are mounted in a closed metal case to guarantee thermal equilibrium around the probe coil. Hence, the measurement allows only spot checks of the sample.

The measurement principle is the same as for the j<sub>c</sub> - scan, but the amplitude of the driving current is very low, so that the non – linear response is restricted to the immediate vicinity of the superconducting transition, when the sample is warming up.

#### Scan certificate



Current density map of 4" HTS film on sapphire

## CRYOscan

### Quality certificate

Quality inspection with Cryoscan™ is to a large extent automated. This allows routine checks of a large number of wafers.

After the scans the instrument automatically generates quality inspection sheets which can be filed or printed to keep track of each individual sample. Thus it helps to recognize rejects in an early stage prior to expensive processing or device testing and is an essential ingredient for the continuous documentation of the device fabrication process.