## Influence of Measurement System on Negative Bias Temperature Instability Characterization: Fast BTI vs Conventional BTI vs Fast Wafer Level Reliability

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**Abstract :** Negative Bias Temperature Instability (NBTI) is one of the critical degradation mechanisms in semiconductor device reliability that causes shift in the threshold voltage (Vth). However, thorough understanding of this reliability failure mechanism is still unachievable due to a recovery characteristic known as NBTI recovery. This paper will demonstrate the severity of NBTI recovery as well as one of the effective methods used to mitigate, which is the minimization of measurement system delays. Comparison was done in between two measurement systems that have significant differences in measurement delays to show how NBTI recovery causes result deviations and how fast measurement systems can mitigate NBTI recovery. Another method to minimize NBTI recovery without the influence of measurement system known as Fast Wafer Level Reliability (FWLR) NBTI was also done to be used as reference.

**Keywords :** fast vs slow BTI, fast wafer level reliability (FWLR), negative bias temperature instability (NBTI), NBTI measurement system, metal-oxide-semiconductor field-effect transistor (MOSFET), NBTI recovery, reliability

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