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# High Resolution On-Chip Measurement Technique -New Analog-BIST Scheme Using Comparator Delay-

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## Research Objective:

Development of on-chip measurement circuit for Milli-Volt order high resolution voltage detection

#### Innovation:

·Time-domain signal processing

The smaller  $\Delta V$ in is, the longer the delay is.



The easier its detection is.

Simple circuit implementation

## Application:

Analog Built-In-Self-Test & Measurement scheme for high-precision Digital-to-Analog Converters

#### Concept of proposed BIST scheme **Voltage error** caused by mismatch among Analyze MOSFETs in DUT Result Analyzei △ Vin DUT circuit Digitize comparator-delay $\Delta Vin \Rightarrow Comparator-delay(T_{count})$ Small /Vin **Large** ∠Vin Logic 1 Loaic 0 $T_{count} \ge T_{spec}$ $T_{count} < T_{spec}$

⇒FAIL

 $\Rightarrow PASS$