

# **Investigations of Bulk Dynamic Threshold-Voltage MOSFET with 65GHz “Normal-Mode” Ft and 220GHz “Over-Drive Mode” Ft for RF Applications**

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## **Abstract**

The RF properties of bulk dynamic threshold-voltage MOSFET (B-DTMOS) with a deep n-well isolation was investigated both under the normal DTMOS mode and two newly-proposed DTMOS operation modes: moderate ( $0.6V < V_{gs}=V_{bs} < 0.85V$ ) and over-drive ( $V_{gs}=V_{bs} > 0.85V$ ) modes. While Ft can be improved to 65GHz at 12.5mA with 1.5V Vds bias under normal-mode DTMOS operation, a high Ft of 220GHz with good linearity and stability is achieved under over-drive mode of operation.