CHARACTERIZATION OF A COMMON-SOURCE AMPLIFIER USING FERROELECTRIC TRANSISTORS

Mitchell Hunt[1], Rana Sayyah[1], Todd C. MacLeod[2], and Fat D. Ho1

[1]The University of Alabama in Huntsville, Department of Electrical and Computer Engineering, Huntsville, Alabama, 35899, USA
[2]National Aeronautics and Space Administration, Marshall Space Flight Center, Huntsville, Alabama, 35812, USA

ABSTRACT

This paper presents empirical data that was collected through experiments using a FeFET in the established common-source amplifier circuit. The unique behavior of the FeFET lends itself to interesting and useful operation in this widely used common-source amplifier. The paper examines the effect of using a ferroelectric transistor for the amplifier. It also examines the effects of varying load resistance, biasing, and input voltages on the output signal and gives several examples of the output of the amplifier for a given input. The difference between a common-source amplifier using a ferroelectric transistor and that using a MOSFET is addressed.
Keywords: FeFET; FFET; ferroelectric transistor; common-source amplifier