

ABSTRACT

Consistent model for short-channel nMOSFET post-hard-breakdown characteristics

B. Kaczer, R. Degraeve, A. De Keersgieter, K. Van de Mieroop, T. Bearda, and G. Groeseneken
IMEC, Kapeldreef 75, B-3001 Leuven, Belgium
phone: +32 (16) 281-557, fax: +32 (16) 281-844, e-mail: Ben.Kaczer@imec.be

A physically based picture for a nFET with hard gate oxide breakdown is given and supported by MEDICI and SPICE simulations. Dissimilar post-hard-breakdown nFET characteristics are consistently explained by the *location* of a *constant-size* breakdown path. The proposed equivalent circuit for a nFET with hard oxide breakdown can be used for circuit reliability assessment.