

Hot-Carrier Charge Trapping and Reliability in High-K Dielectrics

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This paper reports on hot-electron and hot-hole charge trapping in HfO_2 pFETs/nFETs and Al_2O_3 nFETs. For equivalent injected charge, trapping due to substrate hot holes in pFETs is far more severe than from holes injected by cold tunneling. Enhanced trapping due to hot electrons in the nFETs is also observed, but only in the presence of illumination. These observations are consistent with a picture in which hot holes act as a precursor for trap creation.