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Title:Terahertz reflectometry images faults in silicon chips

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Abstract:A first femtosecond-laser-driven optoelectronic time-domain reflectometry (TDR) system for fault isolation was introduced by Intel, Santa Clara, CA. To demonstrate the capability of the system for TDR-based fault isolation, a thin-film microstrip (TFMS) line with known transmission characteristics in the terahertz range is used as the device under test (DUT). A linear mechanical stage controlling the optical length of the probe beam is used to sweep the time delay of the optical- probe pulses, which are focused at the PC of this probe. Considering the time-domain data of the injected and reflected signal at the TFMS line, an ultrashort rise time of 1.1 ps is obtained. The location accuracy is quantified by taking TDR scans at varying probe- to-end distances (ddQ) in a range of 2875-2900 um in 5 um steps.
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