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Titel des Beitrags: Experimental Determination of the Complete Scattering Matrix of SAW Reflectors by a New Deembedding Method

Abstract: We present a new measuring method which is capable of determining the complete scattering matrix of a surface acoustic wave (SAW) 180° reflector. Additional to the reflector to be investigated only one interdigital transducer (IDT) has to be designed for SAW excitation. These two elements have to be combined in several different arrangements. Exclusively electrical measurements with a commonly used network analyzer are necessary. From these measurements the acoustical two-port description can be evaluated using a deembedding method which will be described. Furthermore, error estimations have been worked out allowing for the assessment of the results. Experimental results demonstrate the feasibility of our procedure.

Stichworte: acoustic wave scattering, acoustical two-port description, complete scattering matrix, deembedding method, electrical measurements, error estimations, interdigital transducer, interdigital transducers, measuring method, network analyzer, reflectivity, SAW excitation, SAW reflector, SAW reflectors, S-matrix theory, surface acoustic wave reflector, surface acoustic wave transducers

Kongress- / Buchtitel: IEEE Ultrasonics Symposium

Band / Teilband: 1

Verlagsort: Cannes, France

Jahr: 1994

Monat: oct