



ABSTRACT

In a surface acoustic wave (SAW) device such as a SAW resonator or a SAW filter, loss is minimized and steep characteristics are improved. IDT electrodes and a reflector are provided to a piezoelectric substrate cut out at a cut-angle which allows the substrate to excite leaky surface acoustic wave (LSAW). The IDT electrodes have a given film thickness and a given pitch "p" of finger-electrodes. An phase velocity of the SAW is reduced to slower than an phase velocity "vb" of a slow shear wave propagating on the substrate, and resonance frequency "f" satisfies a relation of $2 \times p \leq v_b/f$. This structure allows using Rayleigh surface acoustic wave (RSAW) which does not produce propagation loss, and improving insertion-loss and steep characteristics from those of a conventional SAW device using LSAW.