

A Low Phase-Noise Voltage-Controlled SAW Oscillator with Surface
Transverse Wave Resonator for SONENT Application

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Abstract

A surface transverse wave (STW) resonator based oscillator was developed in response to SONENT OC-48 application. To meet the low jitter objective, a high-Q STW resonator was designed and fabricated in this work. The residual phase noise measurement techniques are used to evaluate the feedback oscillator components, such as loop amplifier, STW resonator and electronic phase shifter, which can play important roles in determining the oscillator's output phase noise spectrum. The oscillator's white phase noise floor is -170 dBc/Hz for carrier-offset frequency greater than 1 MHz. The oscillator's phase noise level of -67 dBc/Hz at 100 Hz carrier offset. Both low close-in phase noise and low white phase noise floor makes the oscillator meet low jitter requirement. The electronic frequency tuning range exceeds ± 200 ppm. The oscillator provide 13.5dBm of output power and consume 32.5mW from +5Volts power suppl

Keyword : VCSO, Phase Noise, Transverse resonator