

Figure 2. Amplitude vs Frequency Output of HP4195A Network Analyzer. Current Probe-Amplifier Maintains 1% (0.1dB) Error Bandwidth from 20kHz to 10MHz. Small Aberrations Between 10MHz and 20MHz Are Test Fixture Related

Current Calibrator

Figure 3's circuit, a current calibrator, permits calibration of the probe-amplifier and can be used to periodically check probe accuracy. A1 and A2 form a Wein bridge oscillator. Oscillator output is rectified by A4 and A5 and compared to a DC reference at A3. A3's output controls Q1, closing an amplitude stabilization loop. The stabilized amplitude is terminated into a 100Ω, 0.1% resistor to provide a precise 10.00mA, 60kHz current through the series current loop. Trimming is performed by altering the nominal 15k resistor for exactly 1.000V_{RMS} across the 100Ω unit.

In use, this current probe has shown 0.2% baseline stability with 1% absolute accuracy over one year's time. The sole maintenance requirement for preserving accuracy is to keep the current probe jaws clean and avoid rough or abrupt handling of the probe².

² Private Communication. Tektronix, Inc.

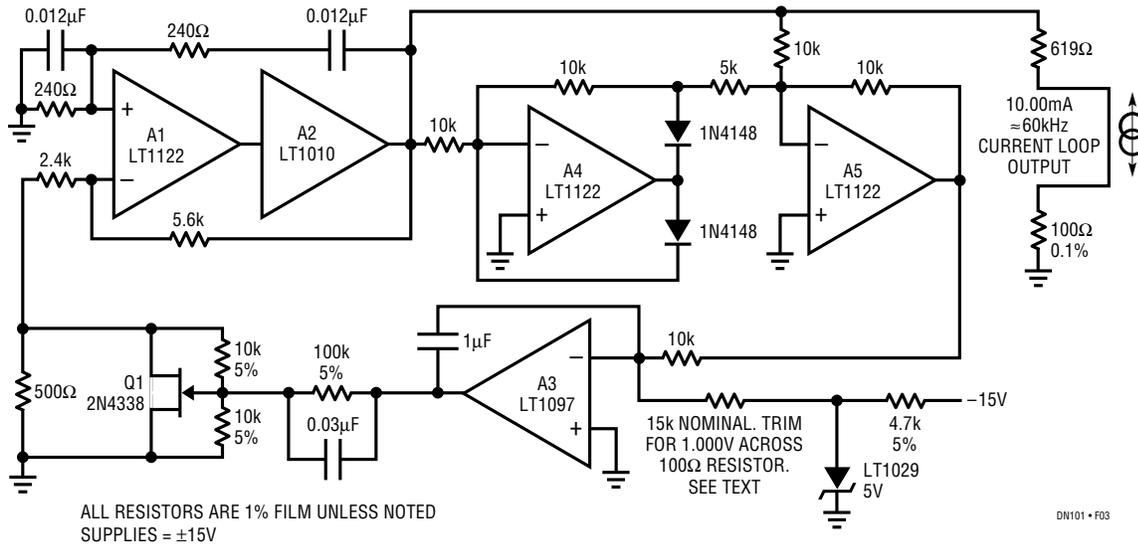


Figure 3. Current Calibrator for Probe Trimming and Accuracy Checks. Stabilized Oscillator Forces 10.00mA Through Output Current Loop at 60kHz

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