

Current Injector Outperforms Electronic Loads In Measuring POLs

Expanding its family of high-performance signal injectors, [Picotest.com](#) has introduced the J2112A, a fast current injector designed to support testing of high-current point-of-load regulators (POLs) and power distribution network (PDN) measurements (Fig. 1.) The J2112A is a higher-current version of the popular J2111A current injector. The J2112A offers a greater current range (1 A vs. 100 mA for the J2111A) while improving rise/fall times down to 10 ns and achieving a 40-MHz bandwidth.

The J2112A is used for fast and accurate (better than 1- μ A resolution) transient load stepping and profiling, as well as PDN, output-impedance and non-invasive phase margin measurements. According to the company, the J2112A is vastly superior to traditional electronic loads in many respects including its speed, accuracy and essentially zero capacitive loading.

This last feature makes it non-invasive. That means that unlike traditional electronic loads and function generators, it does not load the circuit being tested or alter the measurement by its presence. These characteristics are ideal for PDN measurement. The J2112A is available for immediate purchase.

Signal injectors, or test interface adapters, greatly improve power supply, spectrum analyzer, and oscilloscope-based testing accuracy. Increased-bandwidth and higher-resolution measurements are enabled for PSRR, stability, reverse transfer, input impedance, Bode plots, EMI, PDN, noise, and crosstalk tests along with non-invasive in-circuit testing for load transients, stability and output impedance. The signal injectors work with network analyzers, oscilloscopes, spectrum analyzers and arbitrary waveform generators from all manufacturers. This technology is essential for design and test engineers interested in making measurements with higher fidelity.

While most engineers own a network analyzer, few own the necessary signal injectors to make accurate and repeatable high-resolution measurements. With the Picotest family of signal injectors, you can make these measurements with confidence that your results will be accurate to the bandwidth and resolution levels necessary for your application. The signal injectors are available from Picotest ([www.Picotest.com](#)) individually and in cost-saving bundles.

Founded in 2004, Picotest Corp. specializes in developing and manufacturing high-tech precision electronic instruments and related equipment. Picotest aims to utilize its strong R&D capability to provide the highest quality products and services to customers worldwide. Picotest Corp is ISO 9001:2008 certified and is located in Kaohsiung, Taiwan. SM Sandler Holdings, dba Picotest.com is the exclusive U.S. distributor for Picotest test equipment products and is headquartered in Phoenix, AZ. For more information on Picotest, please contact the company at 1-877-914-PICO or visit [www.Picotest.com](#).



Fig. 1. Picotest's J2112A fast current injector is a higher-current version of the company's popular J2111A. When compared with that current injector, the new J2112A offers a greater current range (1 A vs. 100 mA) while improving rise/fall times down to 10 ns and achieving greater than 40-MHz bandwidth.

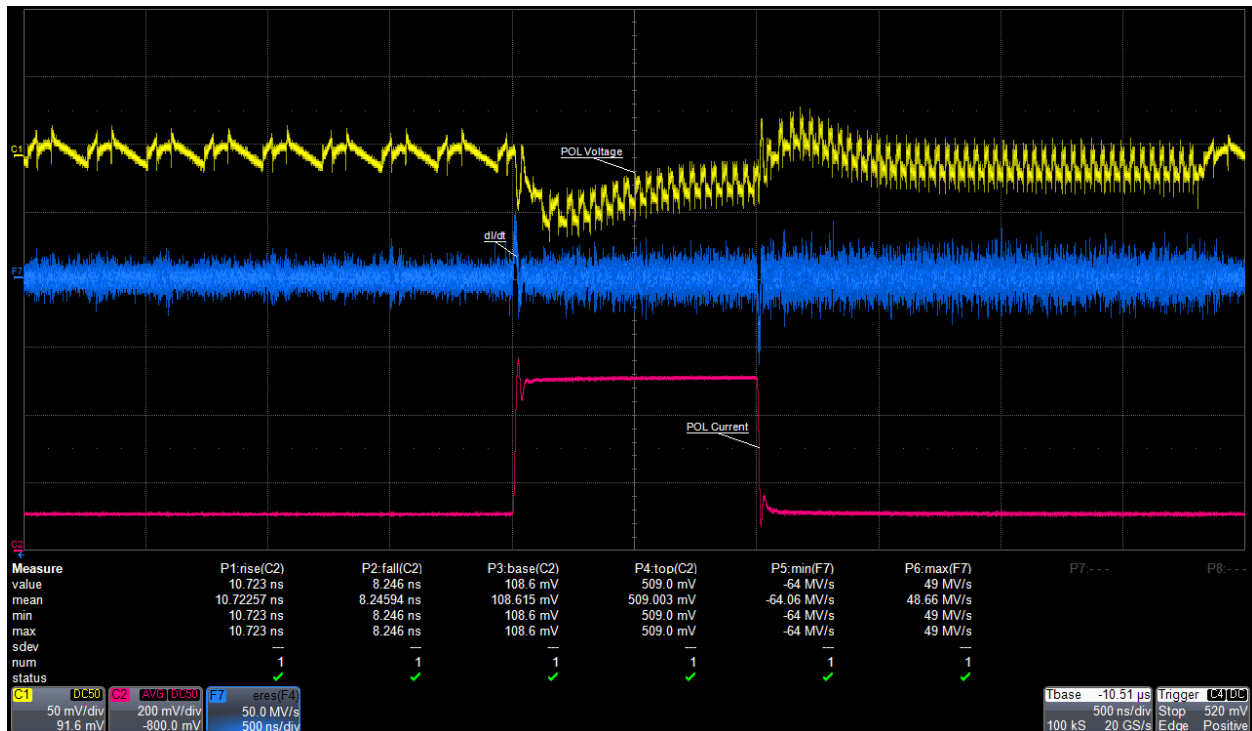


Fig. 2. Picotest put its J2112A current injector to the test in measuring the step-load response of Semtech's SC221, a 650-mA synchronous buck regulator that switches at 20 MHz. This POL is a variation of the SC220, which was announced earlier this year. Here, the J2112A provides non-invasive step loading with 10-ns rise and fall times on the 400-mA test pulse applied to the SC221. The test set-up used in taking this measurement is shown below in Fig. 3.

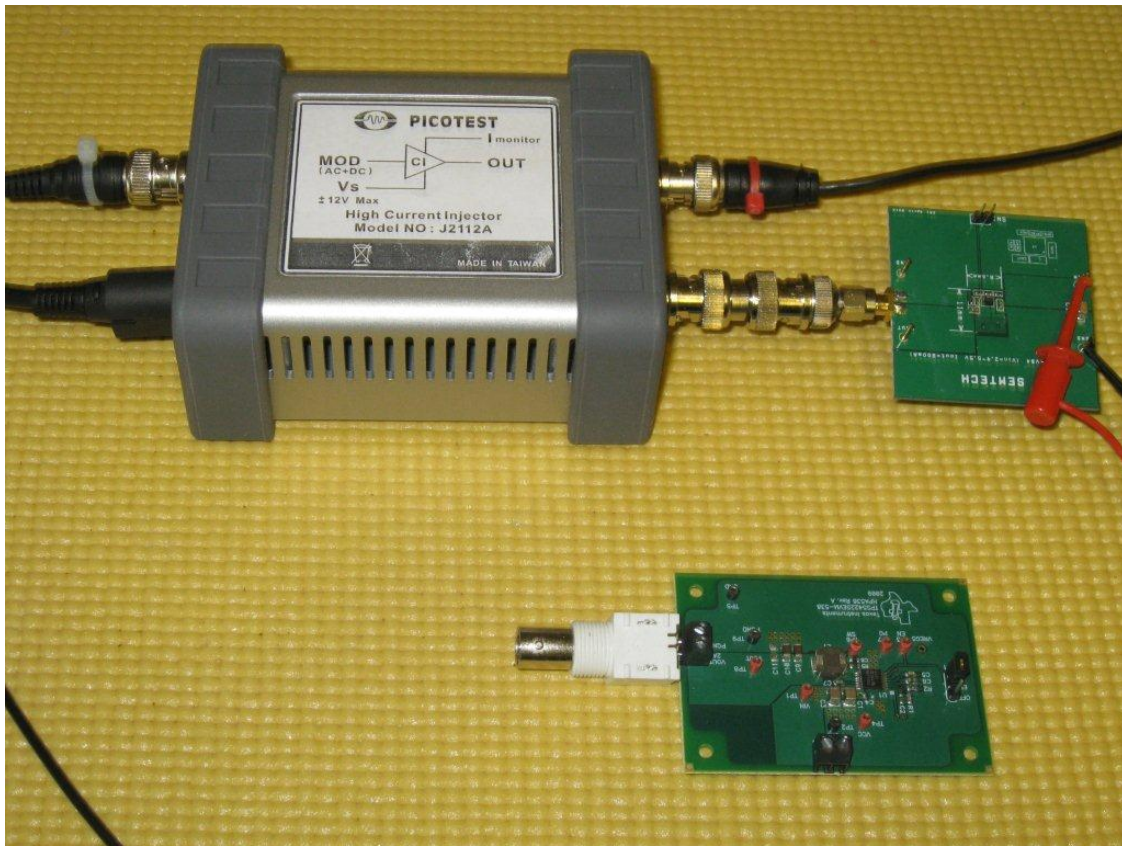


Fig. 3. To test the SC221 20-MHz buck regulator, the J2112A is connected to a Semtech evaluation board via a BNC-to-SMA adapter. Achieving the fast response requires very low interconnect inductance, which is the major limitation of the speed. In this case an SMA connector was soldered directly to the demo board in order to get a short connection. In other applications, very low inductance coax cable such as Tempflex can be used.