

Low Voltage Power Evaluation Testing

In a world with an ever-increasing dependence on alternative energy as well as reduced power consumption, constant technological advances are making energy efficiency a dynamic resource in a wide variety of industries.

This trend has resulted in an increased demand for low voltage power supplies, DC-DC converters, low power semiconductors and even fuel cells. In turn, this has placed an enormous amount of pressure on engineers to find test equipment (i.e. electronic loads) that can perform sufficiently at extremely low voltages as low as under 1 V.

Challenge

The majority of electronic load test equipment has their overall current derated when operated below 3 volts, depending on the load specifications. This makes accurate power evaluation testing on devices such as DC-DC converters and low power semiconductors close to impossible.

A possible solution to this problem is to either connect a bias power supply in series with the electronic load and the DUT (as seen in Figure 1) or use an electronic load with an extremely high current rating. The problem with using a bias, or boost power supply, is that although they can compensate for the limited minimum voltage requirement of the electronic load, the increased amount of current noise can affect the noise measurements made on the DUT. This also results in an increased amount of power that the electronic load must sink (both from the DUT as well as the bias power supply), meaning that a much higher power load is required, resulting in increased cost and wasted space in the test facility. On the other hand, using an electronic load with an extremely high current rating can also result in higher costs and unneeded current capacity.

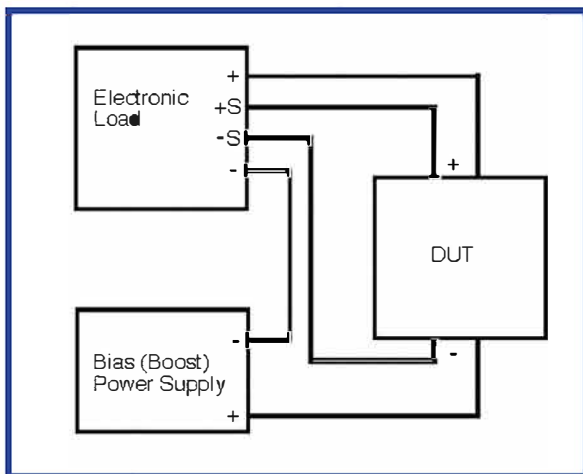


Figure 1. 0 Volt Load w/ Bias PS



Figure 2. PLZ-4A Series Electronic Load

Solution

Electronic loads that can sink their current rating all the way down to 0 V input such as the PLZ-4WA series (Figure 2) allow for a convenient, cost effective solution to the low-voltage dilemma. The PLZ164WA (165 W) and the PLZ664WA (660 W) are self-biased, CC adjustable loads that are fully operational down to 0 V; ideal for extremely low voltage testing. These electronic loads are capable of sinking 100% of their rated current without deration, even below 1 V. Furthermore, extremely precise measurement can be achieved with resolutions in micro currents ensured by 3-range configuration and 5-digit display for the voltmeter, ammeter, and wattmeter. The PLZ-4WA series electronic load is an indispensable piece of test equipment for all test engineers hoping to conduct power evaluation tests with extremely low voltages.