

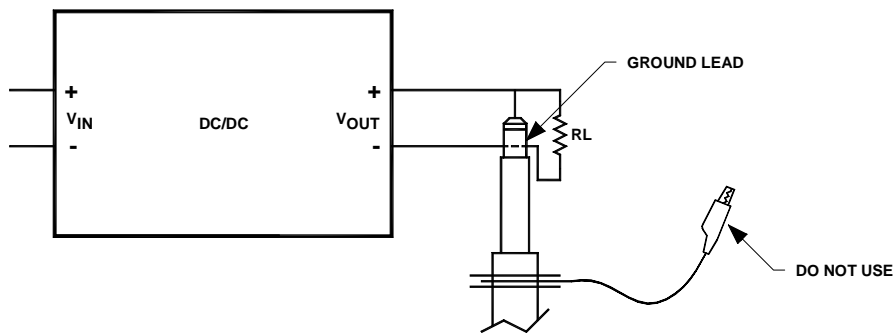
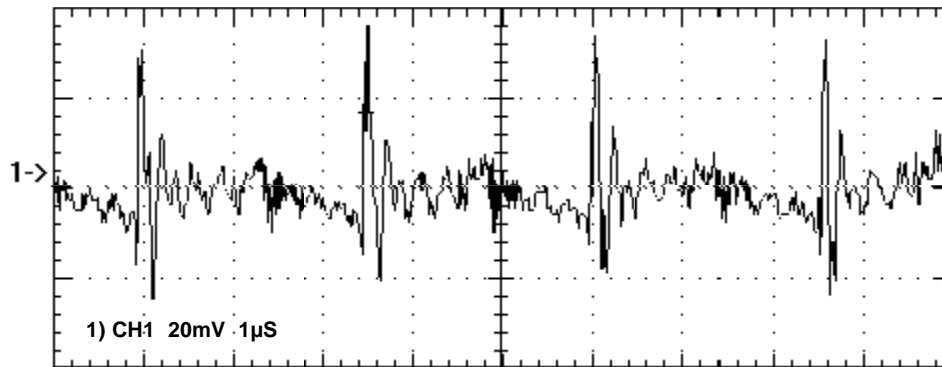
RIPPLE MEASUREMENTS

To measure the output ripple of any DC/DC converter, always use short power runs and bypass the output voltage at the load. Short thick runs will reduce voltage drops. Use the ground at the tip of the probe and NOT the ground lead.

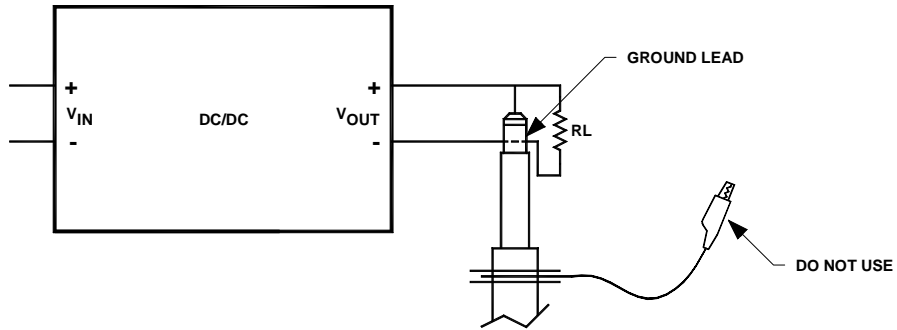
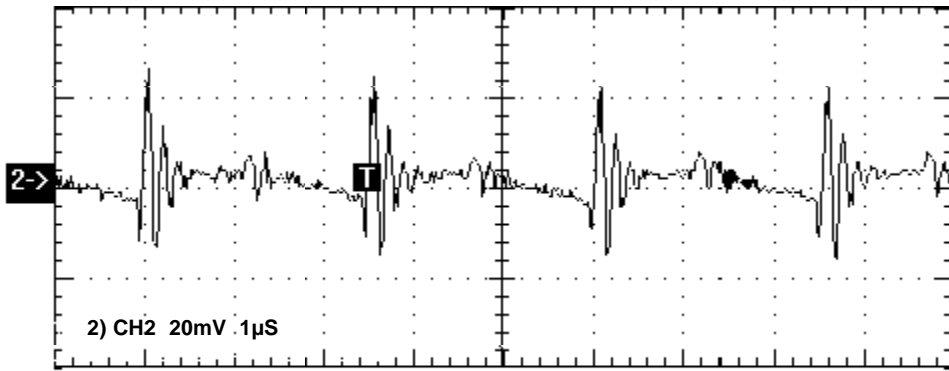
When measuring the output ripple of a DC/DC converter, use only one probe. DO NOT CONNECT a probe ground on the input ground or another probe ground on the output as this connection creates a ground loop through the oscilloscope.

In the following 2 oscillograms, the output noise of the converter is shown. First the ripple is measured with

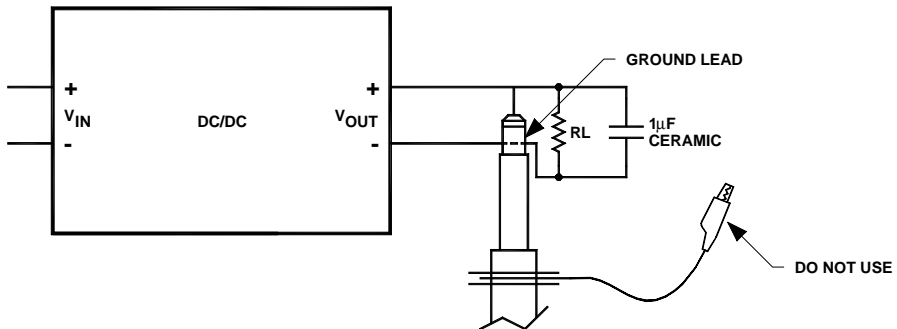
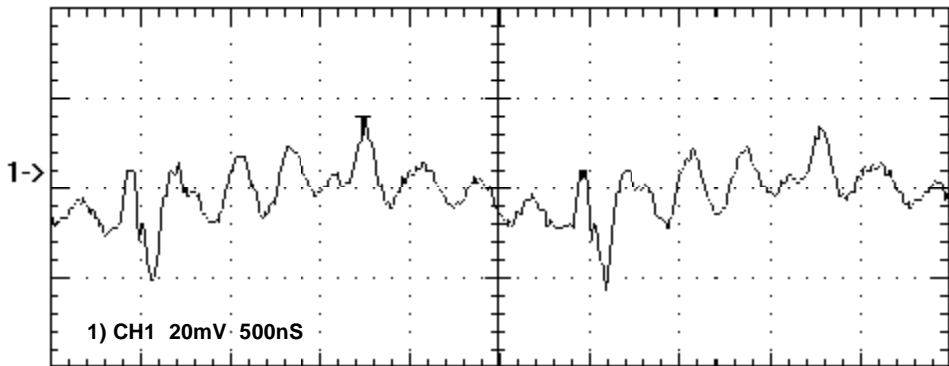
100MHz bandwidth and the same output is shown in Traces 2 through 4 with the circuit set up. NOTE: the converter is out of specification (50mV Max.) in Trace 1. Trace 2 shows the output ripple measured with 20MHz bandwidth. Trace 3 shows the same output ripple as in Trace 2 when a $1\mu\text{F}$ ceramic capacitor is installed across the load. In Trace 4, the common-mode noise appearing as high-frequency oscillation in Trace 3, is eliminated with a $0.01\mu\text{F}$ capacitor connected between input and output ground. Note that this converter does not employ any input, common-mode or differential filters.



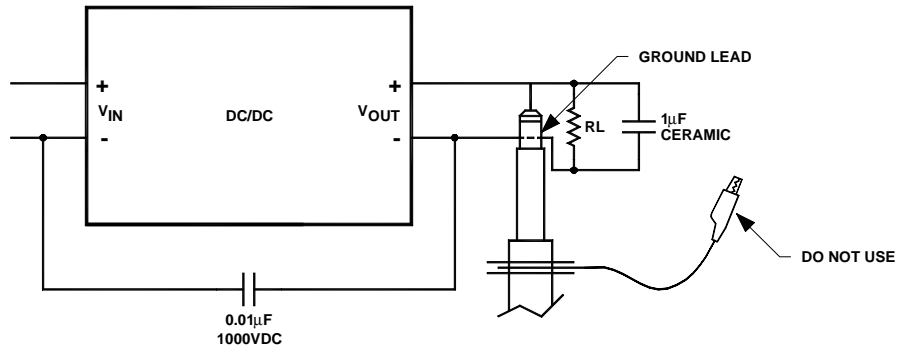
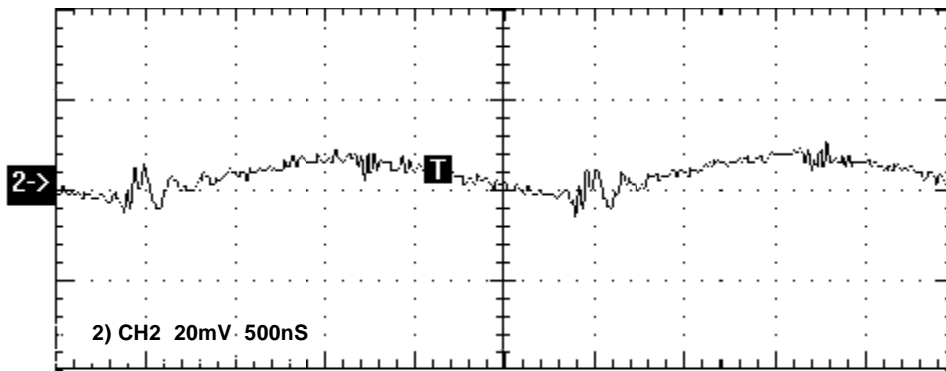
TRACE 1. 100MHz bandwidth



TRACE 2. 20MHz bandwidth



TRACE 3. 1µF capacitor in parallel with the load



TRACE 4. 1µF capacitor in parallel with the load and common-mode voltage capacitor connecting input and output ground