

DESCRIPTION

Demonstration circuit 634 is a low noise avalanche photodiode (APD) bias supply featuring the LT1930A.

This circuit takes an input voltage from 3V to 5.5V. The output voltage can be adjusted from 30V to 90V by applying a control voltage (4.5V to 0V) to the VPROGRAM pin.

The 2.2MHz switching frequency helps to minimize the circuit size.

Design files for this circuit board are available. Call the LTC factory.

Table 1. Performance Summary

PARAMETER	CONDITION	VALUE
Typical Output Ripple ($V_{OUT} = 30V$)	$V_{IN} = 3V$, LOAD = 47k Ω , 10MHz bandwidth	340 μ V _{P-P}
Typical Output Ripple ($V_{OUT} = 50V$)	$V_{IN} = 3V$, LOAD = 47k Ω , 10MHz bandwidth	400 μ V _{P-P}
Typical Output Ripple ($V_{OUT} = 70V$)	$V_{IN} = 3V$, LOAD = 47k Ω , 10MHz bandwidth	535 μ V _{P-P}
Nominal Switching Frequency		2.2MHz

QUICK START PROCEDURE

Demonstration circuit 634 is easy to set up to evaluate the performance of the LT1930A. Follow the procedure below:

1. Before hooking up the input supply and control voltage to the demo board, set the input supply voltage between 3V and 5.5V; set the control voltage between 0V and 4.5V. Then turn off the supplies.
2. Connect input supply, control voltage, load and meters as shown in Figure 1. If you want to monitor output ripple, also connect the BNC connector to the oscilloscope through a coaxial cable.
3. Make sure your setup is safe and the RUN/SD jumper is in the RUN position. **Remember, the output voltage will be 90V when the control voltage is 0V.**
4. Turn on the power supplies and meters. Adjust the control voltage for the desired output voltage.
5. Once the proper output voltage is established. Check the ripple voltage via the coaxial cable. **(See Application Note 92 for detailed discussion on low noise measurement techniques.)**

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 634

AVALANCHE PHOTODIODE BIAS SUPPLY

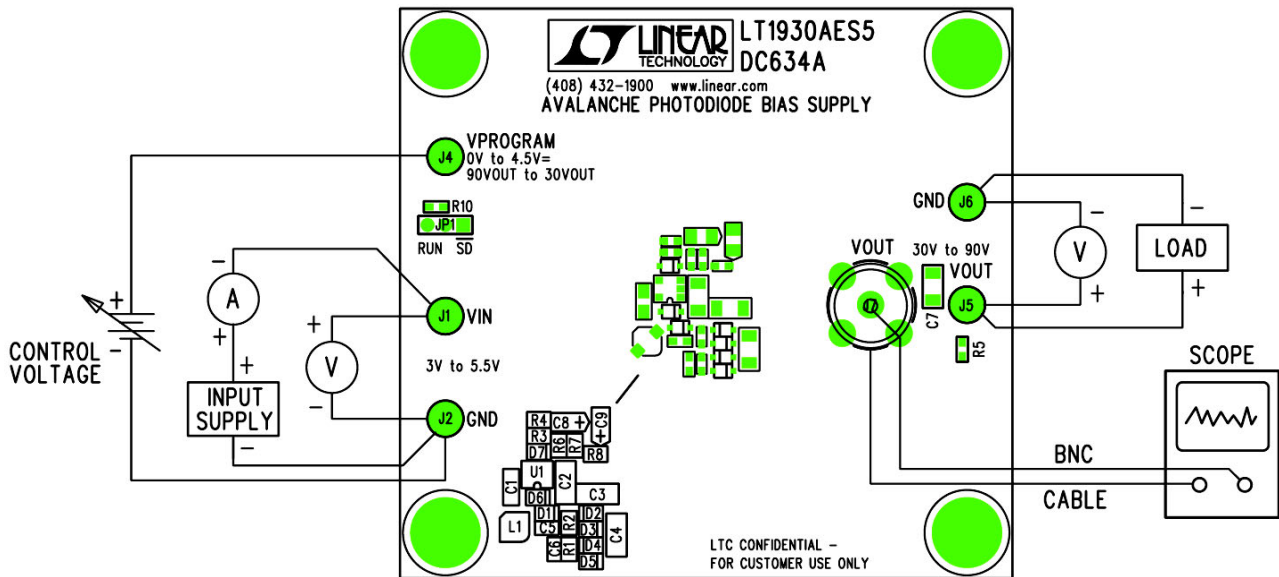


Figure 1. Proper Measurement Equipment Setup

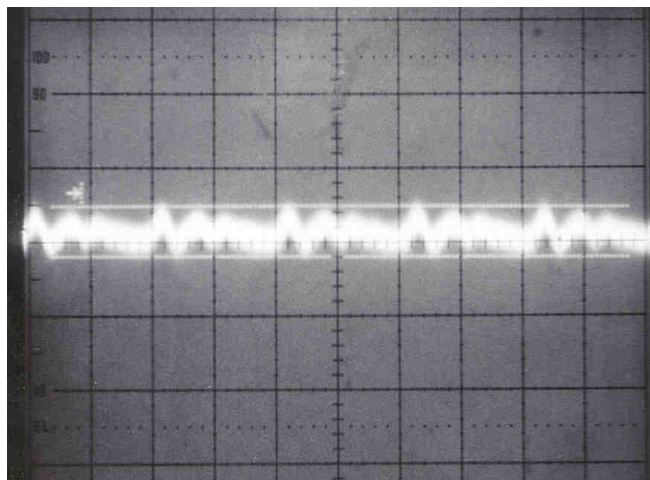


Figure 2. LT1930A Output Ripple ($V_{IN}=3V$, $V_{OUT}=30V$, $LOAD = 47k\Omega$; 0.5mV/div ac coupled; 10MHz bandwidth)

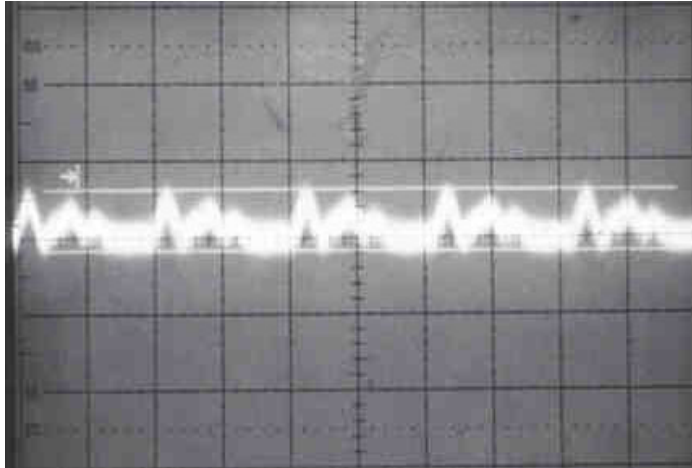


Figure 3. LT1930A Output Ripple ($V_{IN}=3V$, $V_{OUT}=50V$, $LOAD = 47k\Omega$; 0.5mV/div ac coupled; 10MHz bandwidth)

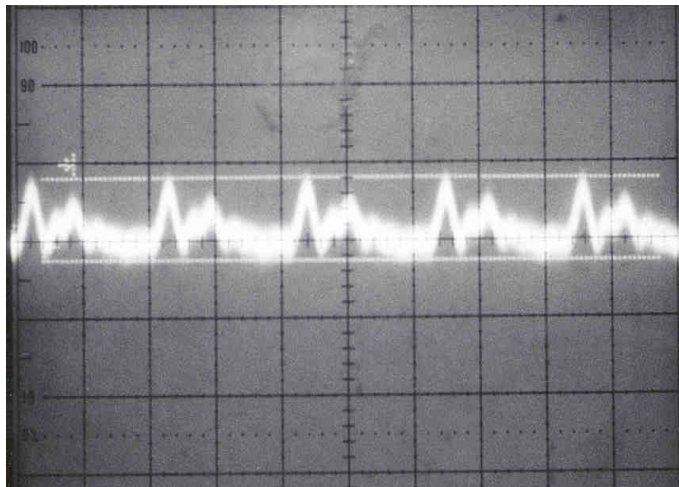


Figure 4. LT1930A Output Ripple ($V_{IN}=3V$, $V_{OUT}=70V$, $LOAD = 47k\Omega$; 0.5mV/div ac coupled; 10MHz bandwidth)

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