

DC 373A-A Introduction

DC373A-A is a 48V to isolated 5V/2A converter based on the LT1725 isolated flyback controller. DC373A-A is designed to operate over the standard telecom input voltage range of 36V to 72V. The output is a regulated 5V. The transformer provides 1500V of isolation between the input and the output.

Quick Start

To evaluate the function of the demo board you will need, at minimum, the following items: a power supply with an output voltage range of 36V–72V capable of 15 watts, a voltmeter for measuring output voltage and a load variable from 0A–2A or from infinite resistance down to 2.5Ω . It is also desirable to have an additional voltmeter for the input, ammeters for measuring input and output currents and an oscilloscope for examining operating waveforms.

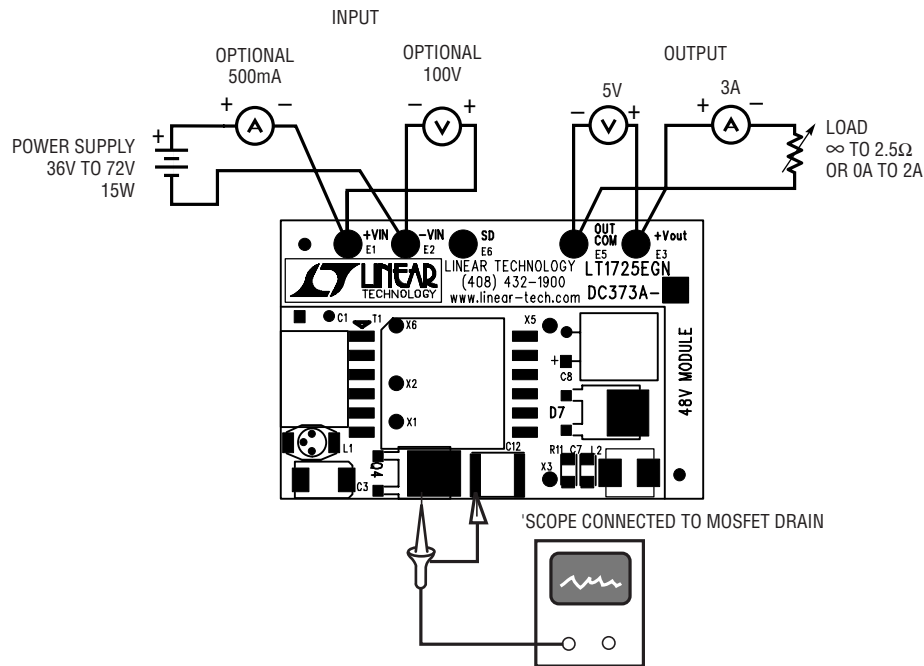
Refer to Figure 1 and follow the instructions below:

Input Side

1. Connect the 36V–72V power supply across +VIN and –VIN.
2. Connect the input ammeter, if available, between the positive terminal of the power supply and +VIN.
3. Connect the input voltmeter, if available, directly across the input terminals, +VIN and –VIN.

Output Side

1. Connect the load is across the +VOUT and OUT COM terminals.
2. Connect the output voltmeter directly across the output terminals.
3. Connect the output ammeter, if available, between the +VOUT terminal and the load.
4. If an oscilloscope is available, the most informative waveform is at the drain of the MOSFET. The second channel can be used on the gate of the FET.



DC373A-A Test and Measurement Setup

5. Once the demo board is connected you can begin to exercise it. Apply power to the board. At input voltages lower than about 33V the board should draw very low current and the output voltage will be 0V. Once the LT1725 UVLO threshold is reached, the output voltage will rise into regulation. Observe the output voltage as input voltage and output load are varied.
6. If an oscilloscope is available, it is instructive to observe the drain waveform. Note how the waveform changes as both the line voltage and load are varied. At low line and high loads the drain waveform is similar to that shown in the timing diagram. As the line voltage is increased and the load is decreased then the drain waveform changes and shows some ringing prior to the turn on of the MOSFET. This is characteristic of the so-called discontinuous conduction mode. Note that output voltage regulation is maintained even during the discontinuous conduction mode. The selection of the one-shot timing resistors is determined by the nature of the drain voltage waveform. The one-shot timing sets the “shutter” that samples the drain waveform to determine the output voltage. The drain voltage is a valid picture of the output voltage during the flat portion of the voltage waveform after the turn off of the FET. Correct selection of the one-shot resistors allows operation in discontinuous mode.

TIMING DIAGRAM

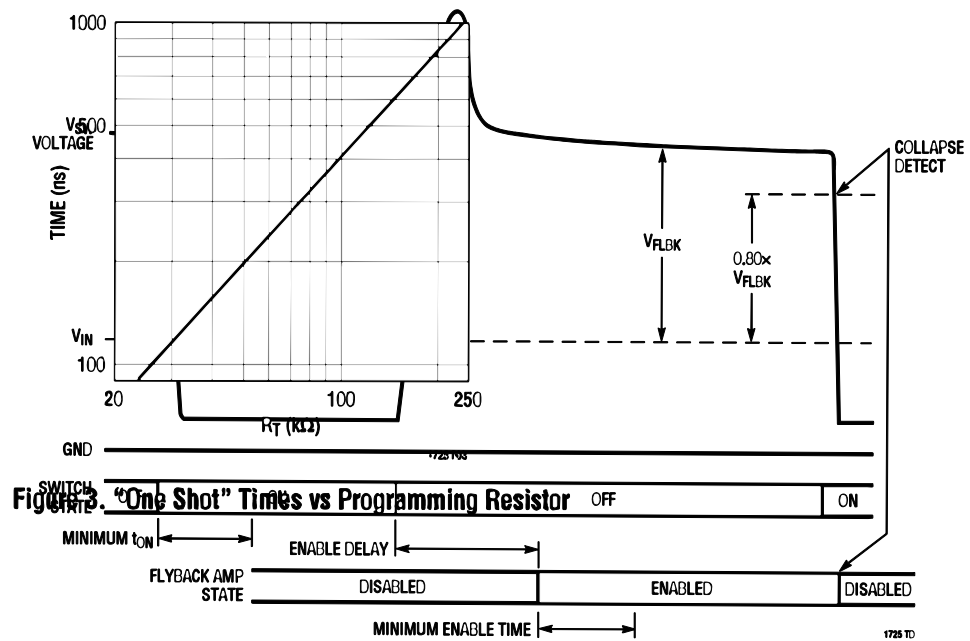


Figure 3. "One Shot" Times vs Programming Resistor

\Drain voltage waveform (continuous mode) showing operation of one-shots to set voltage sampling "shutter"