

# Isolated Monolithic Flyback Converter

## DESCRIPTION


Demonstration circuit 1636 is an isolated flyback converter featuring LT3574. The demo circuit is designed for 5.0V output from a 10V to 30V input. The output current is up to 0.5A when the input voltage is higher than 20V. No third winding or optoisolator is required for regulation. The part senses the isolated output voltage directly from the primary side flyback waveform.

The LT3574 operates with input supply voltages from 3V to 40V, and can deliver output power up to 3W with no external power switch. The LT3574 utilizes boundary mode operation to provide a small magnetic solution with improved load regulation. The LT3574 can be used

in industrial, automotive and medical applications where isolated output is required.

The LT3574 datasheet gives a complete description of the part, operation and application information. The datasheet must be read in conjunction with this quick start guide for demo circuit 1636.

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

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Performance Summary (  $T_A = 25^{\circ}\text{C}$  )

PARAMETER	CONDITION	VALUE
Input Voltage		10V~30V
Output Voltage $V_{OUT}$	$V_{IN}=10\text{V}\sim 30\text{V}$	5.0V $\pm 5\%$
Output Current $I_{OUT}$	$V_{IN}=10\sim 20\text{V}$ $V_{IN}=20\sim 30\text{V}$	0.35A 0.5A
Switching Frequency	$V_{IN}=12\text{V}, I_{OUT}=0.35\text{A}$ $V_{IN}=24\text{V}, I_{OUT}=0.5\text{A}$	200kHz 270kHz
Voltage Ripple $V_{OUT}$	$V_{IN}=24\text{V}, I_{OUT}=0.5\text{A}$	50mV
Efficiency	$V_{IN}=24\text{V}, I_{OUT}=0.5\text{A}$	84%

## QUICK START PROCEDURE

Demo circuit 1636 is easy to set up to evaluate the performance of the LT3574. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

NOTE . When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. Measure the input or output voltage ripple by touching the probe tip directly across the  $V_{IN}$  or  $V_{OUT}$  and GND terminals. See Figure 2 for proper scope probe technique.

1. With power off, connect the input power supply to  $V_{IN}$  and GND.

2. Turn on the power at the input.

NOTE . Make sure that the input voltage does not exceed 30V.

3. Check for the proper output voltages.

NOTE . If there is no output, temporarily disconnect the load to make sure that the load is not set too high.

4. Once the proper output voltage is established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

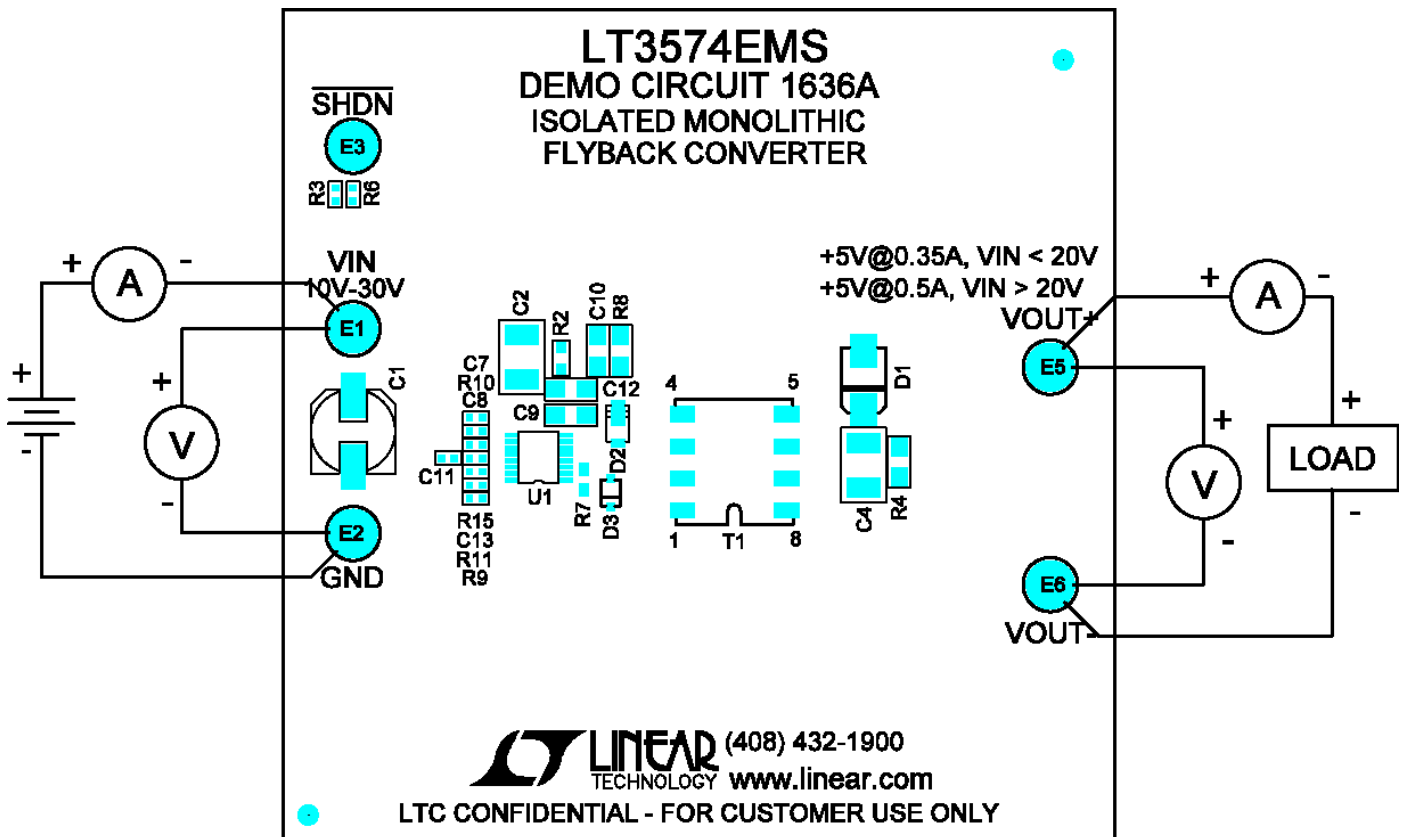


Figure 1. Proper Measurement Equipment Setup

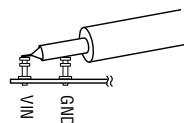
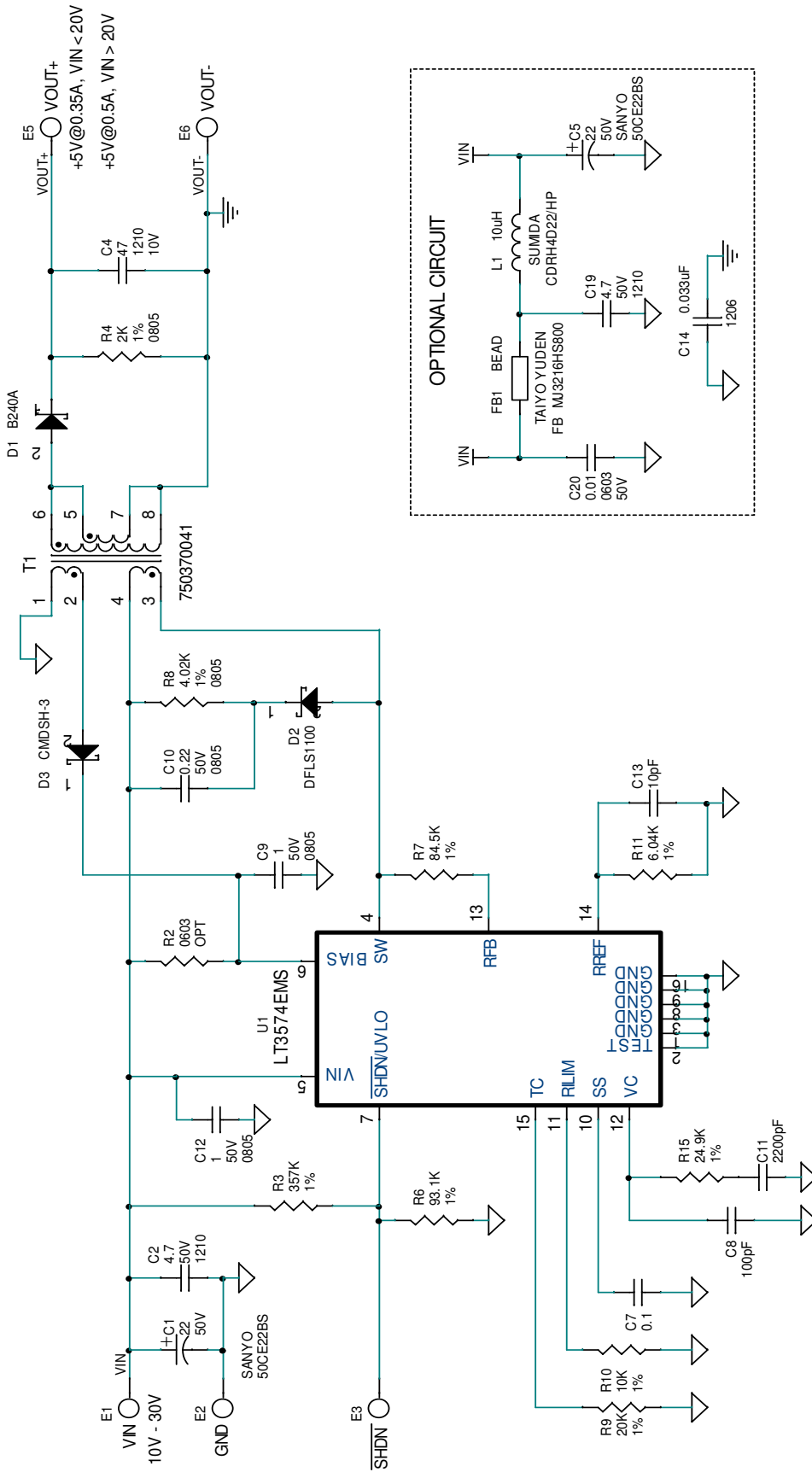


Figure 2. Measuring Input or Output Ripple



NOTES: UNLESS OTHERWISE SPECIFIED,

1. ALL RESISTOR CASE SIZES ARE 0402.
2. ALL CAPACITOR VALUES ARE IN MICROFARADS, AND CASE SIZES ARE 0402.