LT3572
Dual Full-Bridge Piezo Driver
With 900mA Boost Converter

DESCRIPTION

Demonstration circuit 1197 features LT3572 in a 800kHz step-up converter circuit, designed for 30V output from a 3V to 5V input. The high output voltage is then used by the dual full-bridge drivers. The LT3572 is capable of independently driving two Piezo motors with two input PWM signals. The motors respond accordingly based on the duty cycle and the frequency of the PWM signals. The drivers operate in an H-bridge fashion, where the OUTA and OUTB pins are the same polarity as the PWMA and $\overline{PWMB}$ pins respectively and the $\overline{OUTA}$ and $\overline{OUTB}$ are inverted from PWMA and PWMB respectively. A $\overline{PGOOD}$ pin indicates when the output of the step-up converter is in regulation and the Piezo drivers can start switching. The step-up converter and both Piezo drivers have their own shutdown control.

The LT3572 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 1197.

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

Performance Summary for Piezo Driver ($T_A = 25^O C$)

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		3V
Maximum Input Voltage		5V (Note 1)
Output Voltage V_{OUT}		30V +/-3%
Typical Load		2 TULA50 Piezo Motors
Typical Switching Frequency		800kHz

Note 1: Maximum input voltage of the demo circuit is limited by the voltage rating of the input capacitor.

QUICK START PROCEDURE

Demonstration circuit 1197 is easy to set up to evaluate the performance of the LT3572. 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 Vin or Vout and GND terminals. See Figure 2 for proper scope probe technique.

1. Place JP3, JP4 and JP5 on the ON position:

2. Connect the two TULA50 Piezo Motors to JP1 and JP2.

3. With power off, connect the input power supply to Vin and GND.

4. Turn on the power at the input.

NOTE. Make sure that the input voltage does not exceed the maximum input voltage.

5. Check for the proper output voltage.

6. Apply PWM signals, typically switching between 0V and 2V, to the PWMA and PWMB pins.

7. Adjust the duty cycles of the input PWM signals and observe the movement of the motors.
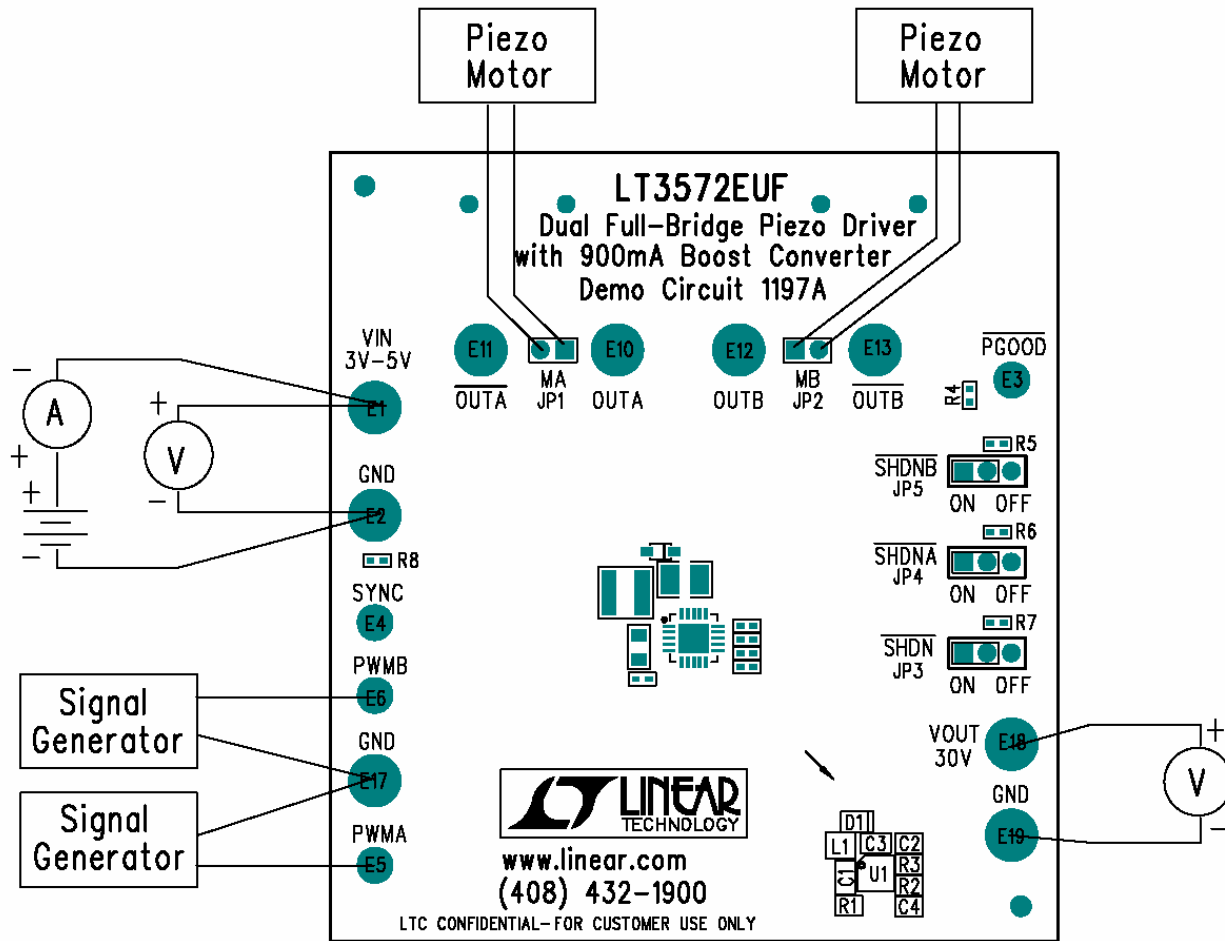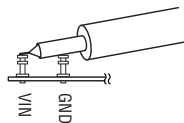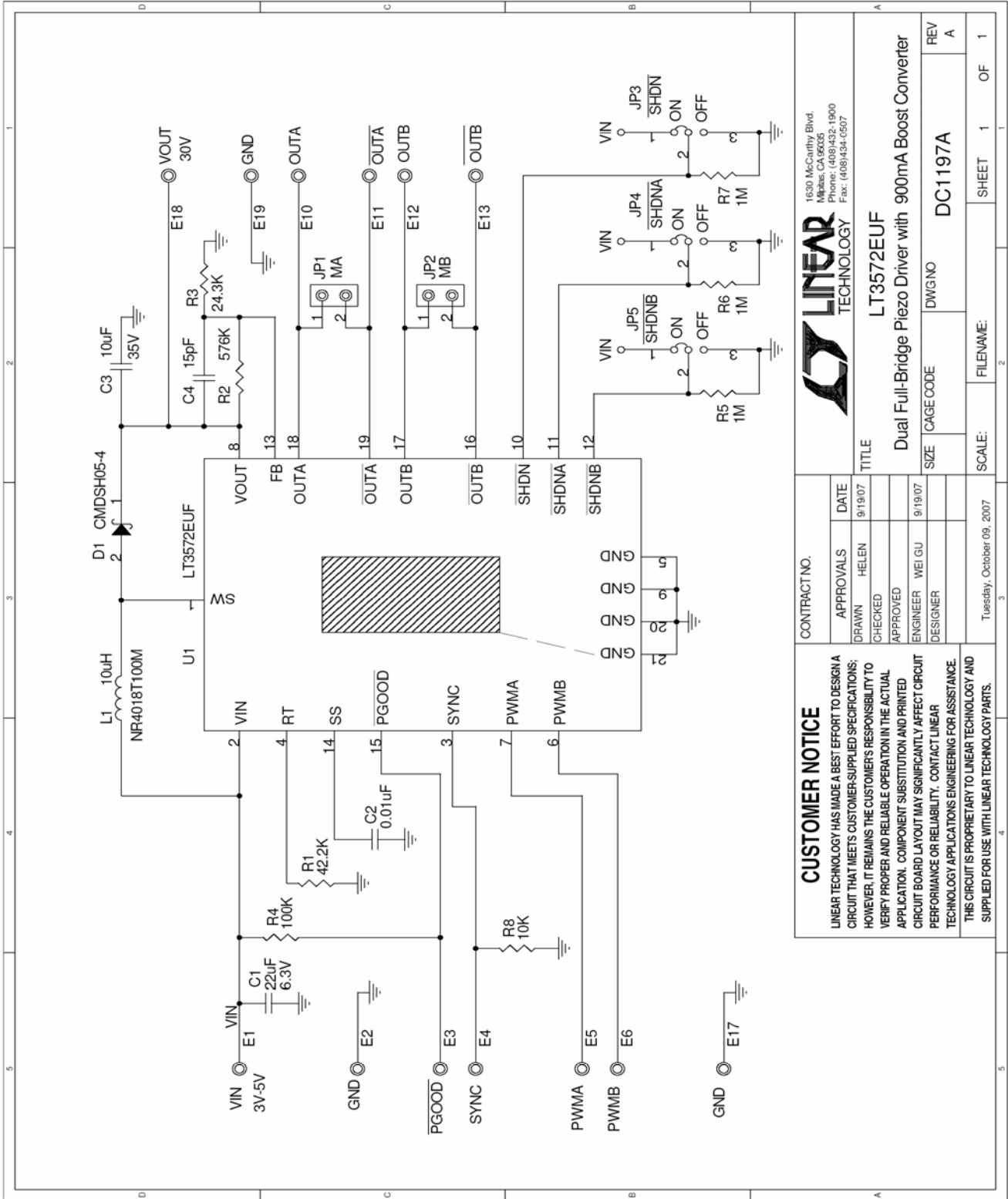
Figure 1. Proper Measurement Equipment Setup

Figure 2. Measuring Input or Output Ripple

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LT3572EUF

DWG NO. DC1197A

REV A

SHEET 1 OF 1

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THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.

APPROVALS   DATE
DRAWN   HELEN   9/19/07
CHECKED
ENGINEER   WEI GU   9/19/07
APPROVED
DESIGNER

Tuesday, October 09, 2007