DEMO CIRCUIT 1227A
Quick Start Guide

LTC3534EDHC
1MHz, 500mA, Synchronous Buck-Boost Converter

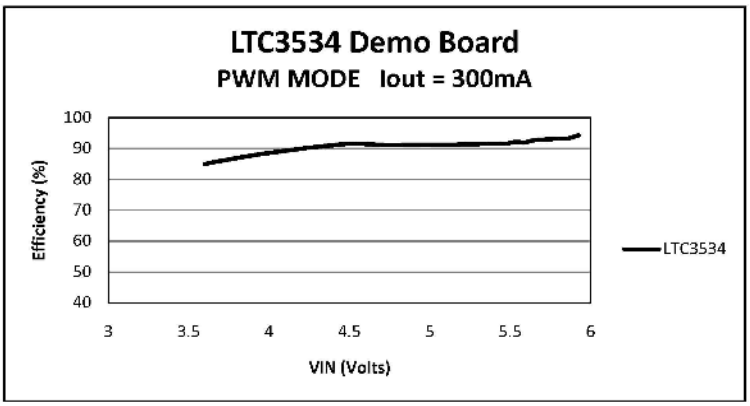
DESCRIPTION

Demonstration Circuit 1227A is a wide VIN, high efficiency, fixed frequency synchronous Buck-Boost converter using the LTC3534EDHC. The LTC3534EDHC buck-boost topology operates with input voltages above, below or equal to the output voltage making the product ideal for multi-cell Alkaline/NiMH or single Lithium-Ion/Polymer applications where the output voltage is within the battery voltage range.

The LTC3534EDHC operates with a 2.4V to 7V input voltage range and a VOUT range from 1.8V to 7V. The demonstration board has been designed to operate with VIN from 3.6V to 6.4V and VOUT is set to 5.0V, with an output current up to 500mA. Typical demo board efficiency is shown below.

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

Input Voltage Range: V_{CC}	3.6V to 7.0V
VOUT	5.0V
IOUT	500mA (max)



QUICK START PROCEDURE

Using short twisted pair leads for any power connections and with all loads and power supplies off, refer to Figure 1 for the proper measurement and equipment setup. The Battery/Power Supply (PS1) should not be connected to the circuit until told to do so in the procedure below.

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. Jumper, PS1 and LOAD Settings to start:
   PS1= OFF
   JP1 (VOUT) = OFF
   JP2 (PWM) = FIXED FREQUENCY
   LOAD = 500mA / 10 Ω 5W resistor
2. With power OFF connect the power supply (PS1) as shown in Figure 1. If accurate current measurements are desired (for efficiency calculation for example) then connect an ammeter in series with the supply as shown. The ammeter is not required however.
3. Connect the load to VOUT as shown in Figure 1. Again, connect an ammeter if accurate current measurement or monitoring is desired.
4. Turn on PS1 and slowly increase voltage until the voltage at VIN is 3.6V. Move Jumper JP1 to ON.
5. Verify VOUT is ~5.0V.
6. VIN can now be varied between 3.6V and 6.4V. VOUT should remain in regulation.

   NOTE: If VOUT drops out of regulation, check to be sure the maximum load has not been exceeded, or that VIN is not below the minimum value (3.6V).
7. For operation in BURST Mode move Jumper JP2 to BURST MODE. IOUT is limited in BURST MODE. See the datasheet for more information.

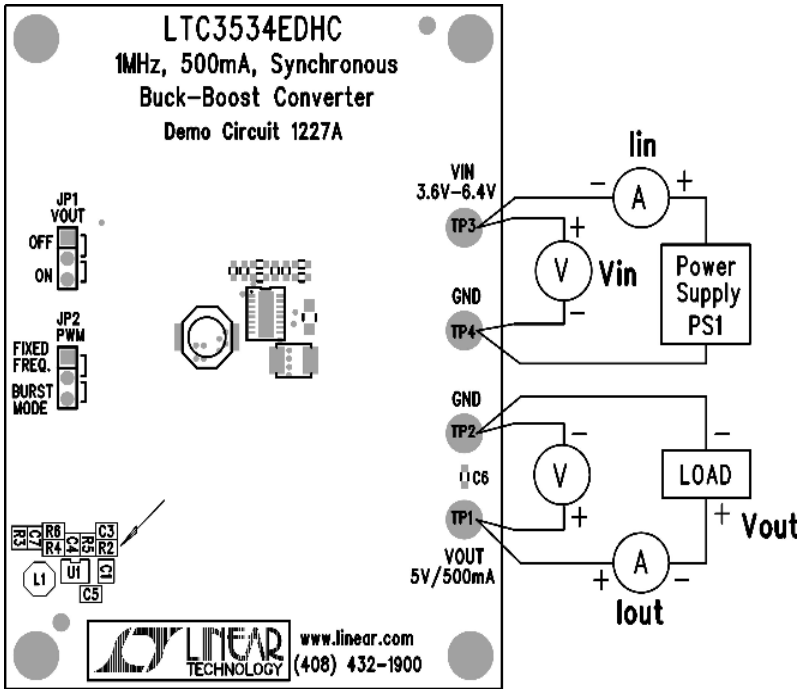


Figure 1. Proper Measurement Equipment Setup

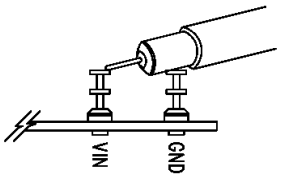
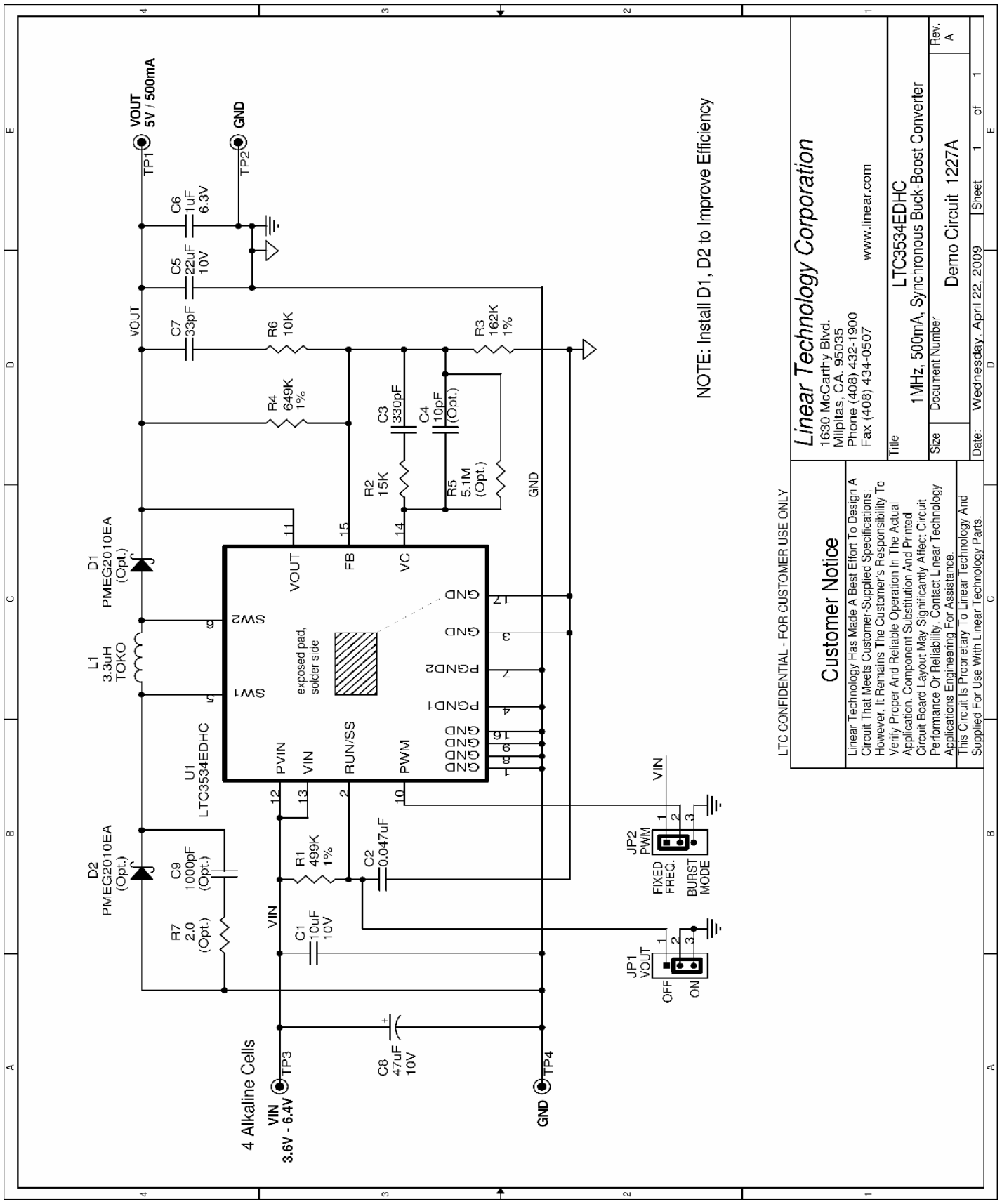


Figure 2. Measuring Input or Output Ripple


VOUT
5V / 500mA
TP1
GND
TP2
C6
1uF
6.3V
C5
22uF
10V
C7
33pF
R6
10K
R4
649K
1%
R3
162K
1%
C3
330pF
C4
10pF
(Opt.)
R2
15K
R5
5.1M
(Opt.)
D1
PMEG2010EA
(Opt.)
L1
3.3uH
TOKO
U1
LTC3534EDHC
SW2
SW1
exposed pad,
solder side
PVIN
VIN
RUN/SS
PWM
VOUT
FB
VC
GND
PGND2
PGND1
D2
PMEG2010EA
(Opt.)
C9
1000pF
(Opt.)
R7
2.0
(Opt.)
R1
499K
1%
C2
0.047uF
C1
10uF
10V
JP2
PWM
FIXED
FREQ.
BURST
MODE
JP1
VOUT
OFF
ON
C8
47uF
10V
4 Alkaline Cells
VIN
3.6V - 6.4V
TP3
TP4
GND
NOTE: Install D1, D2 to Improve Efficiency
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