LT3467

DESCRIPTION

Demonstration circuit 647 is a 1.2MHZ, SOT-23 DC/DC Converter featuring the LT®3467. The demo board demonstrates two separate DC/DC converters for different application needs. The Boost Circuit is designed to convert a 5V input to 12V output at 300mA maximum load. The SEPIC Circuit generates a constant 12V/300mA output with 10V~16V variable input. Both circuits are designed to demonstrate the soft start feature, advantages of the 1.2MHz switching frequency, the internal 42V/1.1A switch, wide input voltage range and small circuit size. These circuits are intended for space-conscious applications such as digital cameras, cellular phones, palmtop computers and LCD displays. The 1.2MHz switching frequency, 1.1A integrated switch, small circuit size, and low component count makes the LT3467 suitable for use in many other applications, such as PC cards, miniature disk drives, xDSL power supplies, flash memory products and local 5V or 12V supplies.

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

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Table 1. Performance Summary ($T_A = 25°C$)

PARAMETERS FOR BOOST CONVERTER	CONDITION	VALUE
Input Voltage		5V
Output Voltage V_{OUT}	$V_{IN} = 5V$, $I_{OUT} = 0A$ to 300mA	12V ±2%
Maximum Output Current		300mA
Typical Output Ripple V_{OUT}	$V_{IN} = 5$, $I_{OUT} = 300mA$	55m$V_{P–P}$
Typical efficiency	$V_{IN} = 5$, $I_{OUT} = 300mA$	86%
PARAMETERS FOR SEPIC CONVERTER	**CONDITION**	**VALUE**
Minimum Input Voltage		10V
Maximum Input Voltage		16V
Output Voltage V_{OUT}	$V_{IN} = 10V$ to 16V, $I_{OUT} = 0A$ to 300mA	12V ±2%
Maximum Output Current		300mA
Typical Output Ripple V_{OUT}	$V_{IN} = 10V$, $I_{OUT} = 300mA$	50m$V_{P–P}$
Typical efficiency	$V_{IN} = 10V$ to 16V, $I_{OUT} = 300mA$	80%

QUICK START PROCEDURE

Demonstration circuit 647 is easy to set up to evaluate the performance of the LT3467. 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.

NOTE: Steps 1-4 are for Boost Converter only.

1. Place jumper in the following positions:

JP1 On

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

3. Turn on the power at the input.

   NOTE: Make sure that the input voltage does not exceed 5V.

4. 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.

NOTE: Once the proper output voltages are established, adjust the loads within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters directly across the V_{IN} or V_{OUT} and GND terminals. See Figure 2 for proper scope probe technique.

NOTE: Steps 5-9 are for Sepic converter only.

5. Place jumper in the following positions:

JP2 On

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

7. Turn on the power at the input.

   NOTE: Make sure that the input voltage is set between 10V and 16V.

8. 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.

9. Once the proper output voltages are established, adjust the loads within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.
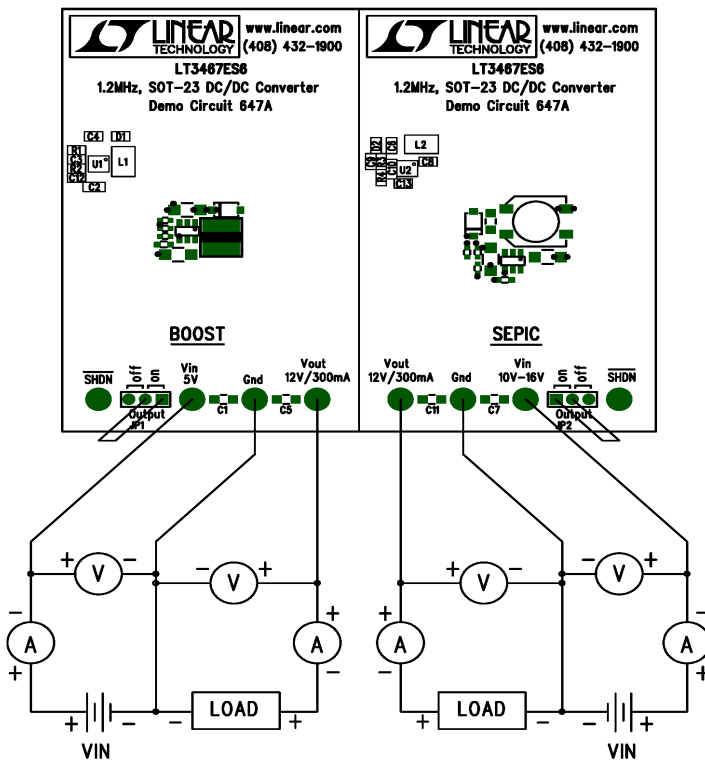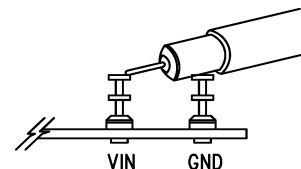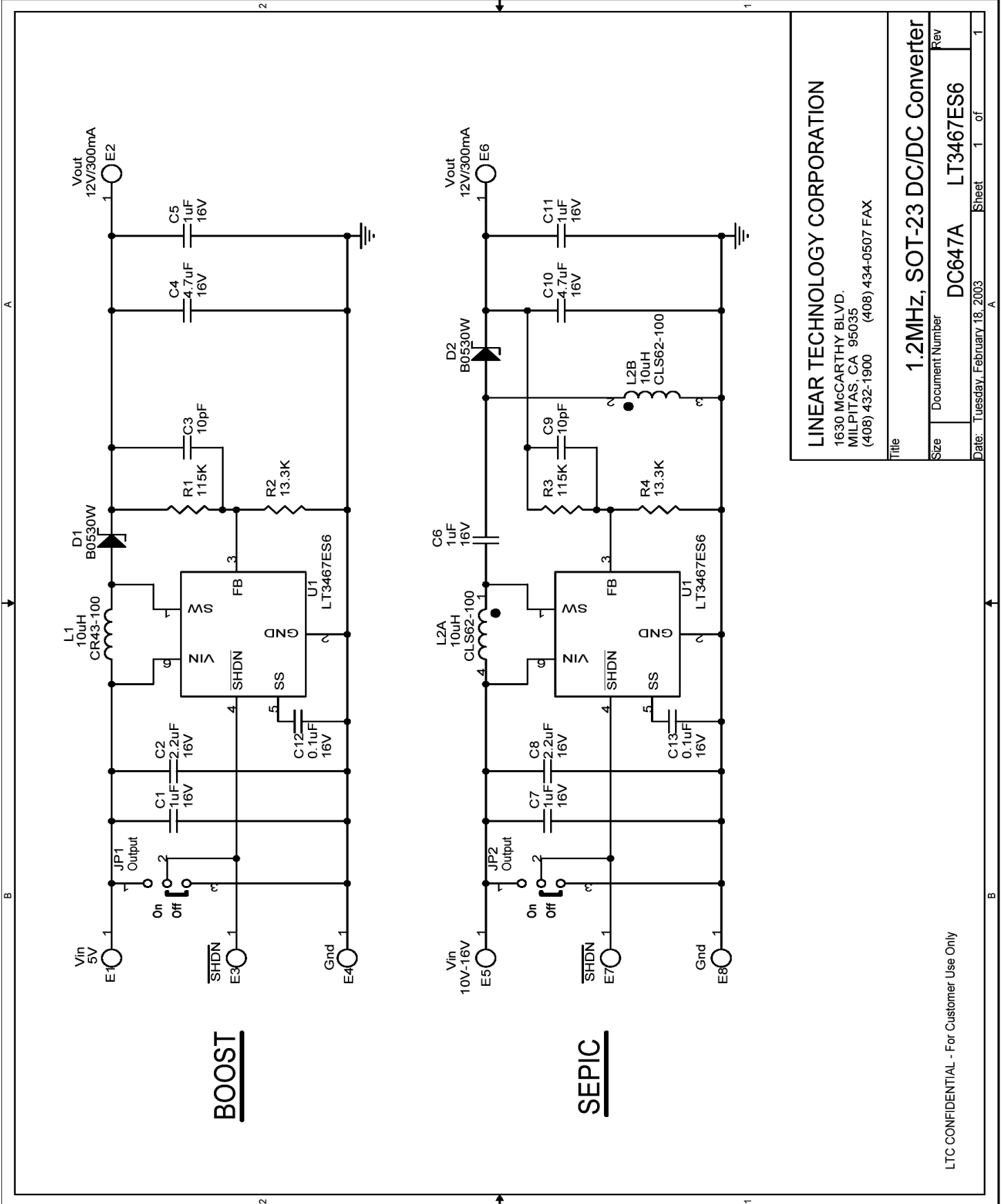

Figure 1. Proper Measurement Equipment setup

Figure 2. Measurement Input or Output Ripple

BOOST

Vin 5V E1
SHDN E3
Gnd E4

JP1 Output
On Off

C1 1uF 16V
C2 2.2uF 16V
C12 0.1uF 16V

L1 10uH CR43-100

U1 LT3467ES6
SW
VIN
SHDN
FB
GND
SS

D1 B0530W

R1 115K
R2 13.3K
C3 10pF

C4 4.7uF 16V
C5 1uF 16V

Vout 12V/300mA E2

SEPIC

Vin 10V-16V E5
SHDN E7
Gnd E8

JP2 Output
On Off

C7 1uF 16V
C8 2.2uF 16V
C13 0.1uF 16V

L2A 10uH CLS62-100

U1 LT3467ES6
SW
VIN
SHDN
FB
GND
SS

C6 1uF 16V

R3 115K
R4 13.3K
C9 10pF

D2 B0530W

L2B 10uH CLS62-100

C10 4.7uF 16V
C11 1uF 16V

Vout 12V/300mA E6

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