DEMO CIRCUIT 1024
QUICK START GUIDE

LT3494 and LT3494A
Micropower Low Noise Boost Converters With Output Disconnect

DESCRIPTION

Demonstration circuits 1024A-A and 1024A-B are Micropower Low Noise Boost Converters With Output Disconnect featuring the LT3494 and LT3494A respectively. The demo circuits demonstrate small size and low component count in Boost configuration. Both demo versions are designed to convert a 3V-4.2V source to 15V. The only difference is in the load capability. The 1024A-A supplies 17mA at 3Vin while the 1024A-B supplies 27mA, also at 3Vin. The LT3494 features integrated Schottky diode, output disconnect function, dimming control, output sense resistor and non-audible switching frequency over the entire load range. A 2-3% improvement in efficiency can be achieved by adding an external CMDSH-3 diode. A place holder is available on the back of the board. These circuits are intended for space-conscious applications such as OLED power, MP3 Players, and Low Noise Bias Supplies.

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

PERFORMANCE SUMMARY DC1024A-A **Specifications are at TA = 25°C**

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN}	Input Supply Range		3		4.2	V
V_{OUT}	Output Voltage Range	V_{IN} = 3V, I_{LOAD} = 17mA	14.55	15	15.45	V
V_{OUT}	Output Voltage Range	V_{IN} = 3.6V, I_{LOAD} = 25mA	14.55	15	15.45	V
V_{OUT}	Output Voltage Range	V_{IN} = 4.2V, I_{LOAD} = 32mA	14.55	15	15.45	V
RIPPLE		V_{IN} = 3.6V, I_{LOAD} = 25mA		20		mV
EFFICIENCY	Load at Vout	V_{IN} = 3.6V, I_{LOAD} = 25mA		77		%
EFFICIENCY	Load at VCAP	V_{IN} = 3.6V, I_{LOAD} = 25mA		79		%

PERFORMANCE SUMMARY DC1024A-B **Specifications are at TA = 25°C**

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN}	Input Supply Range		3		4.2	V
V_{OUT}	Output Voltage Range	V_{IN} = 3V, I_{LOAD} = 27mA	14.55	15	15.45	V
V_{OUT}	Output Voltage Range	V_{IN} = 3.6V, I_{LOAD} = 35mA	14.55	15	15.45	V
V_{OUT}	Output Voltage Range	V_{IN} = 4.2V, I_{LOAD} = 44mA	14.55	15	15.45	V
RIPPLE		V_{IN} = 3.6V, I_{LOAD} = 35mA		20		mV
EFFICIENCY	Load at Vout	V_{IN} = 3.6V, I_{LOAD} = 35mA		74		%
EFFICIENCY	Load at VCAP	V_{IN} = 3.6V, I_{LOAD} = 35mA		77		%

QUICK START PROCEDURE

Demonstration circuit 1024 is easy to set up to evaluate the performance of the LT3494 and LT3494A. 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 jumpers in the following positions:

   JP1 Run

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

3. Turn on the power at the input.

4. Check for the proper output voltages. Vout1 = 14.55V to 15.45V.

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

5. 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.

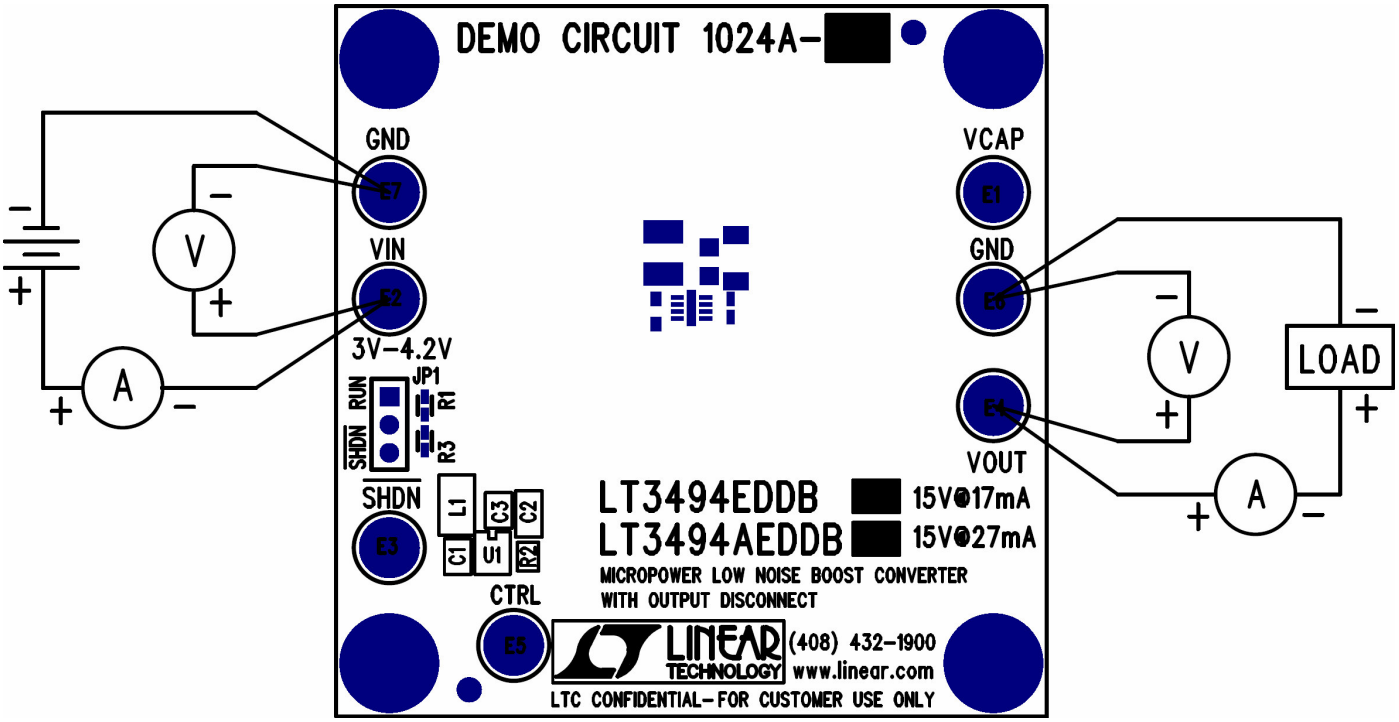


Figure 1. Proper Measurement Equipment Setup

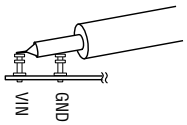
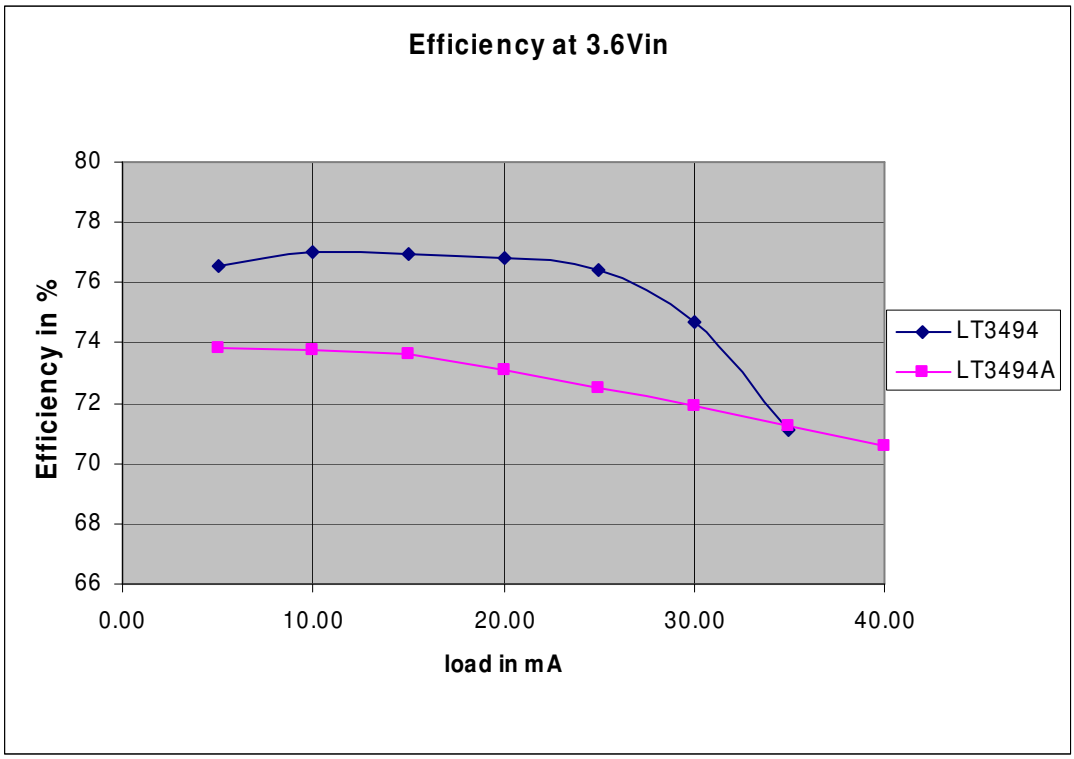
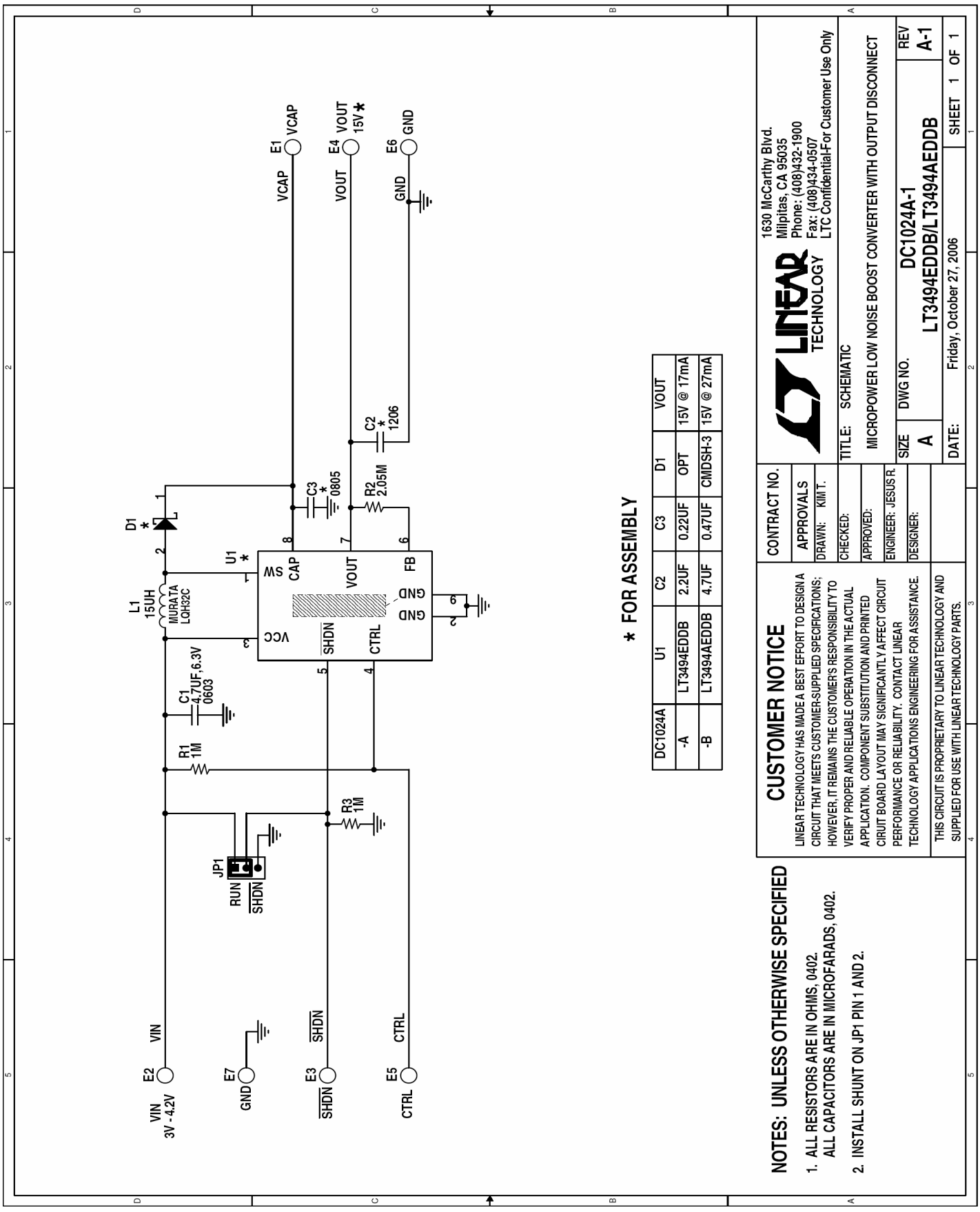


Figure 2. Measuring Input or Output Ripple



Efficiency Comparison Between LT3494 and LT3494A


E1 VCAP
E4 VOUT 15V*
E6 GND
D1 * L
L1 15UH MURATA LQH32C
U1 *
SW CAP VOUT FB VCC SHDN CTRL GND GND
C1 4.7UF,6.3V 0603
C2 * 1206
C3 * 0805
R1 1M
R2 2.05M
R3 1M
JP1 RUN SHDN
E2 VIN
VIN 3V - 4.2V
E7 GND
E3 SHDN
SHDN
E5 CTRL
CTRL
* FOR ASSEMBLY
DC1024A | U1 | C2 | C3 | D1 | VOUT
-A | LT3494EDDB | 2.2UF | 0.22UF | OPT | 15V @ 17mA
-B | LT3494AEDDB | 4.7UF | 0.47UF | CMDSH-3 | 15V @ 27mA
NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE IN OHMS, 0402.
ALL CAPACITORS ARE IN MICROFARADS, 0402.
2. INSTALL SHUNT ON JP1 PIN 1 AND 2.
CUSTOMER NOTICE
LINEAR TECHNOLOGY HAS MADE A BEST EFFORT TO DESIGN A CIRCUIT THAT MEETS CUSTOMER-SUPPLIED SPECIFICATIONS; HOWEVER, IT REMAINS THE CUSTOMER'S RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION IN THE ACTUAL APPLICATION. COMPONENT SUBSTITUTION AND PRINTED CIRUIT BOARD LAYOUT MAY SIGNIFICANTLY AFFECT CIRCUIT PERFORMANCE OR RELIABILITY. CONTACT LINEAR TECHNOLOGY APPLICATIONS ENGINEERING FOR ASSISTANCE.
THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.
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CHECKED:
APPROVED:
ENGINEER: JESUS R.
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LTC Confidential-For Customer Use Only
TITLE: SCHEMATIC
MICROPOWER LOW NOISE BOOST CONVERTER WITH OUTPUT DISCONNECT
SIZE A
DWG NO. DC1024A-1
LT3494EDDB/LT3494AEDDB
REV A-1
DATE: Friday, October 27, 2006
SHEET 1 OF 1