DESCRIPTION

Demonstration circuit 612 features the LT3464ETS8 in two boost converter circuits, one configured for small size and the other for high performance. The small size circuit demonstrates the LT3464's ability to operate with a small 10µH chip inductor and a 0.22µF output capacitor. The high performance circuit uses a 47µH inductor and 1.0µF output capacitor and provides higher output current and efficiency. Refer to Tables 1 and 2 for the performance summary. The Burst Mode Operation of the LT3464 allows the circuits to have a low input current at no load and high efficiency over a broad current range making it an ideal part for LCD bias applications as well as cellular phones, digital cameras and handheld computers. In addition, the LT3464's integrated schottky reduces parts count, its integrated PNP disconnect switch removes the load from the input during shutdown and provides short circuit protection, and its CNTL pin allows the output voltage to be externally controlled.

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

Table 1. Performance Summary for the Small Size Circuit

PARAMETER	CONDITION	VALUE
Input Voltage Range		2.3V to 10.0V
V_{OUT}	0mA to $I_{OUT(MAX)}$	20.0V ±4%
$I_{OUT(MAX)}$	V_{IN} = 3.6V V_{IN} = 5.0V V_{IN} = 8.4V	3mA 4mA 6mA
Typical output ripple	V_{IN} = 3.6V, I_{OUT} = 3mA	100mV p-p
Typical efficiency	V_{IN} = 3.6V, I_{OUT} = 3mA	60%
Typical no load input current	V_{IN} = 3.6V, I_{OUT} = 0mA	85µA

Table 2. Performance Summary for the High Performance Circuit

PARAMETER	CONDITION	VALUE
Input Voltage Range		2.3V to 10.0V
V_{OUT}	0mA to $I_{OUT(MAX)}$	15.0V ±4%
$I_{OUT(MAX)}$	V_{IN} = 3.6V V_{IN} = 5.0V V_{IN} = 8.4V	9mA 14mA 25mA
Typical output ripple	V_{IN} = 3.6V, I_{OUT} = 9mA	100mV p-p
Typical efficiency	V_{IN} = 3.6V, I_{OUT} = 9mA	77%
Typical no load input current	V_{IN} = 3.6V, I_{OUT} = 0mA	60µA

QUICK START PROCEDURE

Demonstration circuit 612 is easy to set up to evaluate the performance of the LT3464ETS8. 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. Make sure the $\overline{\text{SHDN}}$ jumper is in the ON position and the CNTL jumper is in the INT REF position.
2. Turn on the input voltage source and set it to 3.6V.
3. Monitor the output voltage. For the small size circuit, the output voltage should be 20.0V ±4% and for the high performance circuit, the output voltage should be 15.0V ±4%.
4. Apply the full rated load to the output for an input voltage of 3.6V. For the small size circuit, this is 3mA and for the high performance circuit, this is 9mA. The output voltage should still be within regulation.
5. With full rated load applied and with the input voltage still at 3.6V, measure the input current. For the small size circuit, the input current should be less than 31.0mA. For the high performance circuit, the input current should be less than 54.0mA.
6. 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.

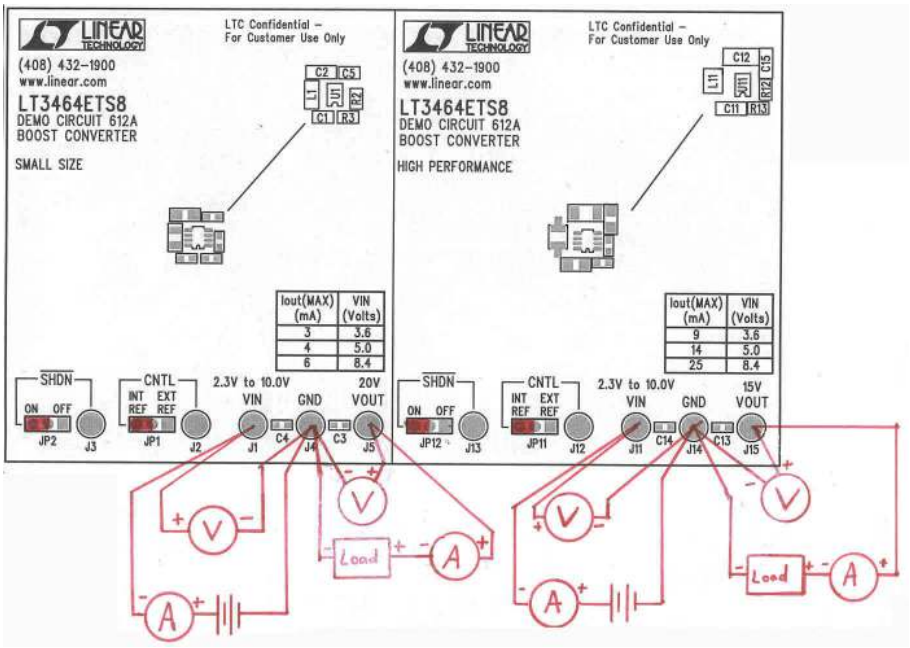


Figure 1. Proper Measurement Equipment Setup

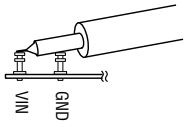
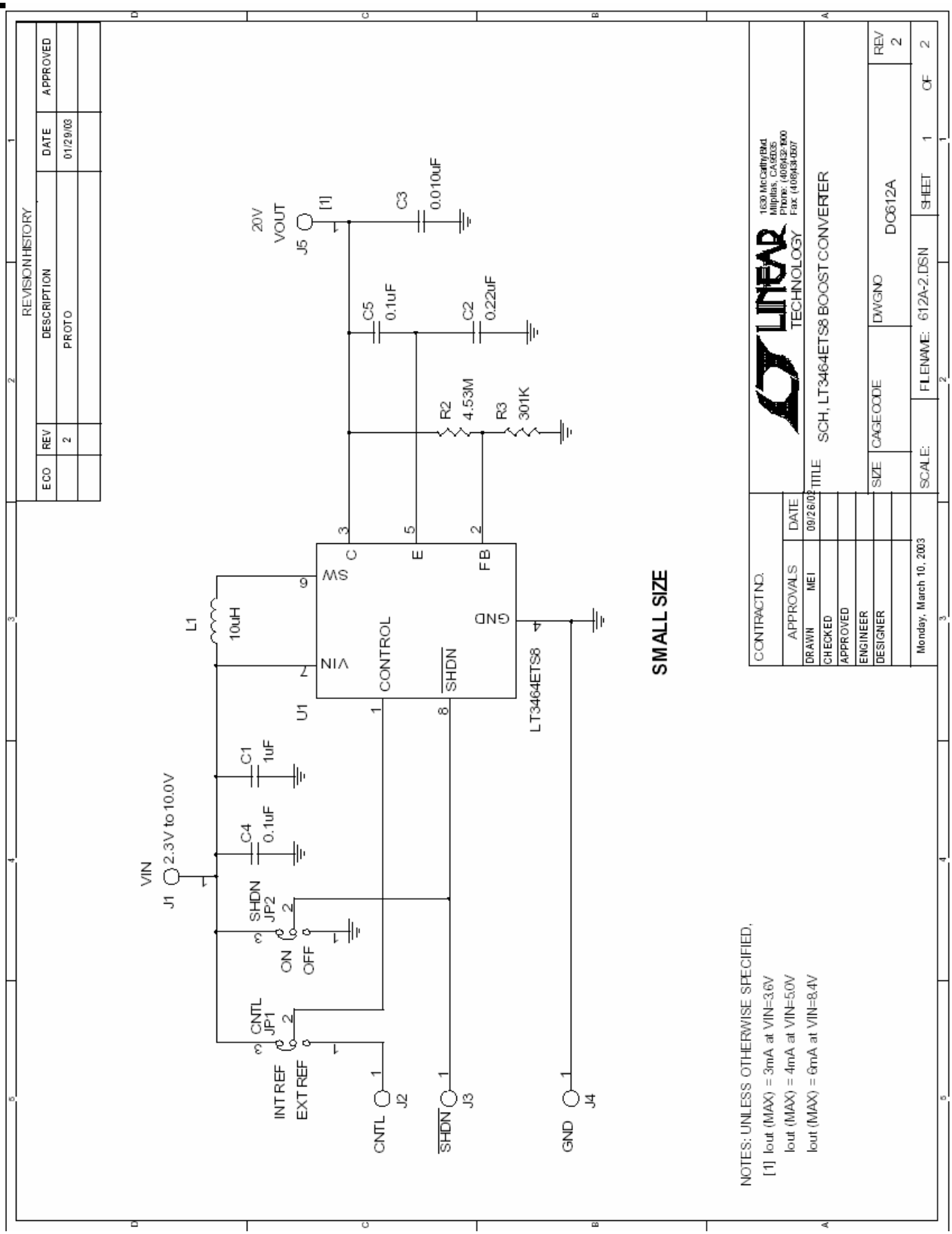
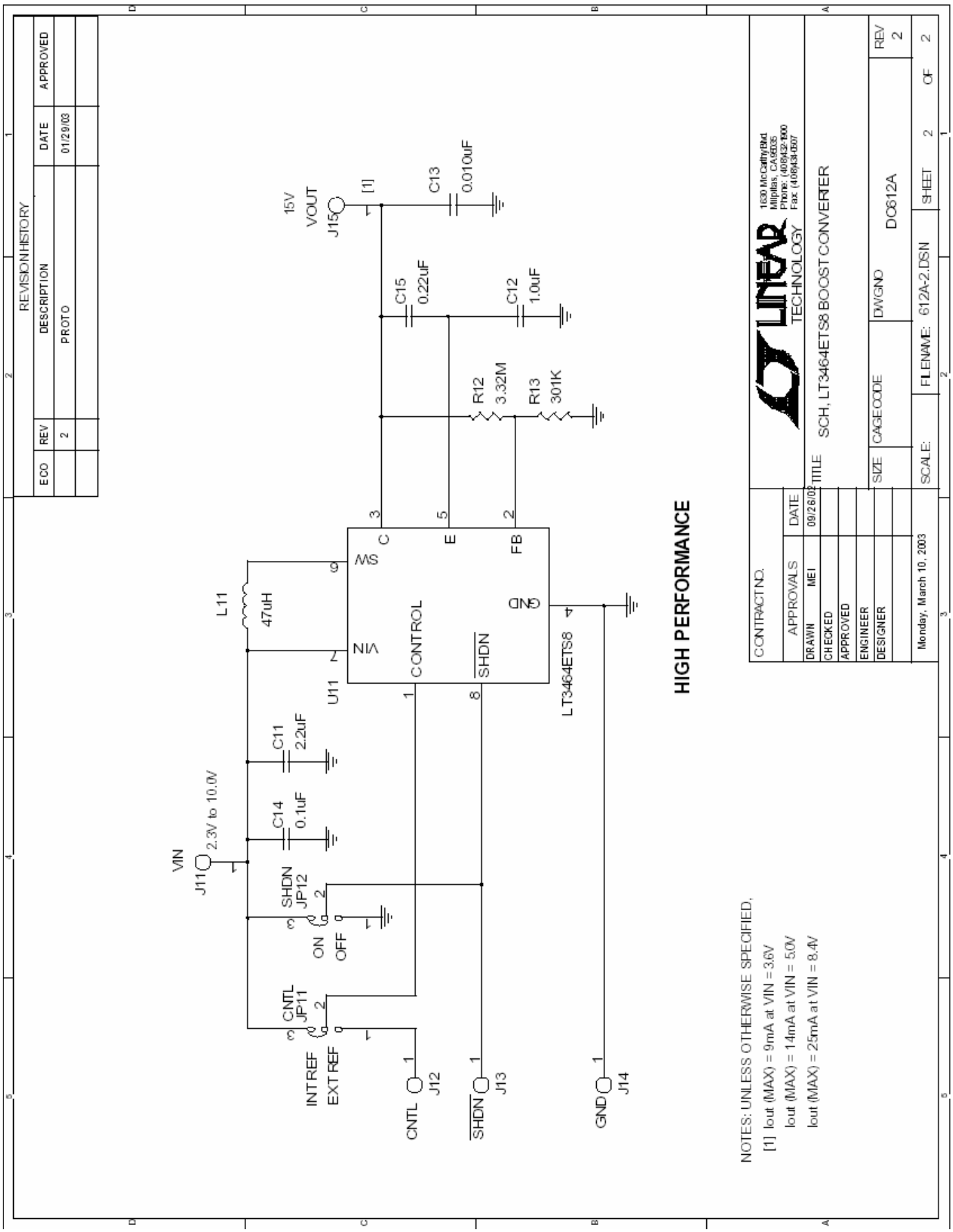


Figure 2. Measuring Input or Output Ripple


REVISION HISTORY
ECO
REV
DESCRIPTION
DATE
APPROVED
2
PROTO
01/29/03
VIN
2.3V to 10.0V
J1
L1
10uH
C1
1uF
C4
0.1uF
SHDN
JP2
ON
OFF
CNTL
JP1
INT REF
EXT REF
CNTL
J2
SHDN
J3
GND
J4
U1
LT3464ETS8
SW
VIN
CONTROL
SHDN
GND
C
E
FB
20V
VOUT
J5
[1]
C3
0.010uF
C5
0.1uF
C2
0.22uF
R2
4.53M
R3
301K
SMALL SIZE
NOTES: UNLESS OTHERWISE SPECIFIED,
[1] Iout (MAX) = 3mA at VIN=3.6V
Iout (MAX) = 4mA at VIN=5.0V
Iout (MAX) = 6mA at VIN=8.4V
CONTRACT NO.
APPROVALS
DATE
DRAWN MEI
09/26/03
CHECKED
APPROVED
ENGINEER
DESIGNER
TITLE
SCH, LT3464ETS8 BOOST CONVERTER
LINEAR TECHNOLOGY
1630 McCarthy Blvd.
Milpitas, CA 95035
Phone: (408)432-1900
Fax: (408)434-0507
SIZE
CAGECODE
DWGNO
DC612A
REV
2
SCALE:
FILENAME: 612A-2.DSN
SHEET 1 OF 2
Monday, March 10, 2003


REVISION HISTORY
ECO
REV
DESCRIPTION
DATE
APPROVED
2
PROTO
01/29/03
HIGH PERFORMANCE
VIN
2.3V to 10.0V
J11
L11
47uH
C11
2.2uF
C14
0.1uF
SHDN
JP12
ON
OFF
CNTL
JP11
INTREF
EXTREF
CNTL
J12
SHDN
J13
GND
J14
U11
CONTROL
VIN
SW
SHDN
GND
FB
C
E
LT3464ETS8
15V
VOUT
J15
[1]
C13
0.010uF
C15
0.22uF
C12
1.0uF
R12
3.32M
R13
301K
CONTRACT NO.
APPROVALS
DRAWN MEI
CHECKED
APPROVED
ENGINEER
DESIGNER
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09/26/03
TITLE
SCH, LT3464ETS8 BOOST CONVERTER
LINEAR TECHNOLOGY
1630 McCarthy Blvd.
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Phone: (408)432-1900
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SIZE
CAGECODE
DWGNO
DC612A
REV
2
SCALE:
FILENAME: 612A-2.DSN
SHEET 2 OF 2
Monday, March 10, 2003
NOTES: UNLESS OTHERWISE SPECIFIED,
[1] Iout (MAX) = 9mA at VIN = 3.6V
Iout (MAX) = 14mA at VIN = 5.0V
Iout (MAX) = 25mA at VIN = 8.4V