QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 646
STROBE CAPACITOR CHARGER, HIGH VOLTAGE SUPPLY
LT3420

DESCRIPTION

Demonstration circuit 646 is a DC-DC flyback converter using the LT®3420EMS to rapidly charge an output capacitor to 300V for photoflash applications. It demonstrates a simple application circuit operating in high efficiency and shows appropriate layout techniques for the LT3420EMS. The circuit uses small surface mount components and has very small board space compared to conventional solutions. This demonstration circuit is particularly useful for applications such as digital cameras and high voltage supplies that require high efficiency and small size.

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

LT is a trademark of Linear Technology Corporation.

QUICK START PROCEDURE

Demonstration circuit 646 is easy to set up to evaluate the performance of the LT3420EMS. 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: For safe operation, always shield the circuit when power is on, and always discharge the high voltage output capacitor after power is off.

Warning: Operate by high voltage trained personnel only

1. With power off, connect input power source Vbatt to the Vbatt and GND terminals. Input voltage is limited to between 1.8V to 6V.
2. Set JP1 to DISCONNECT position for separate input power operation. Connect input power source Vcc to the Vcc and GND terminals, and limit the input voltage from 2.3V to 6V.
3. Connect load (a 220uF, 350V photoflash capacitor) between the +Strobe Cap and –Strobe Cap terminals.
4. Set JP2 to ON position to enable Charge operation.
5. Slowly turn on power source Vbatt and Vcc. Check for the proper output voltages. V_{OUT}= 300V.

   NOTE: If there is no output, temporarily disconnect the load and make sure that JP2 is set to ON position.
6. For single source operation, set the input source selector Jumper JP1 to CONNECT position. Remove the connection of power source Vcc. Limit the input voltage from 2.3V to 6V. Vcc will be powered from Vbatt.
7. To shut down the circuit, connect the JP2 to OFF position. The output capacitor charging is disabled.

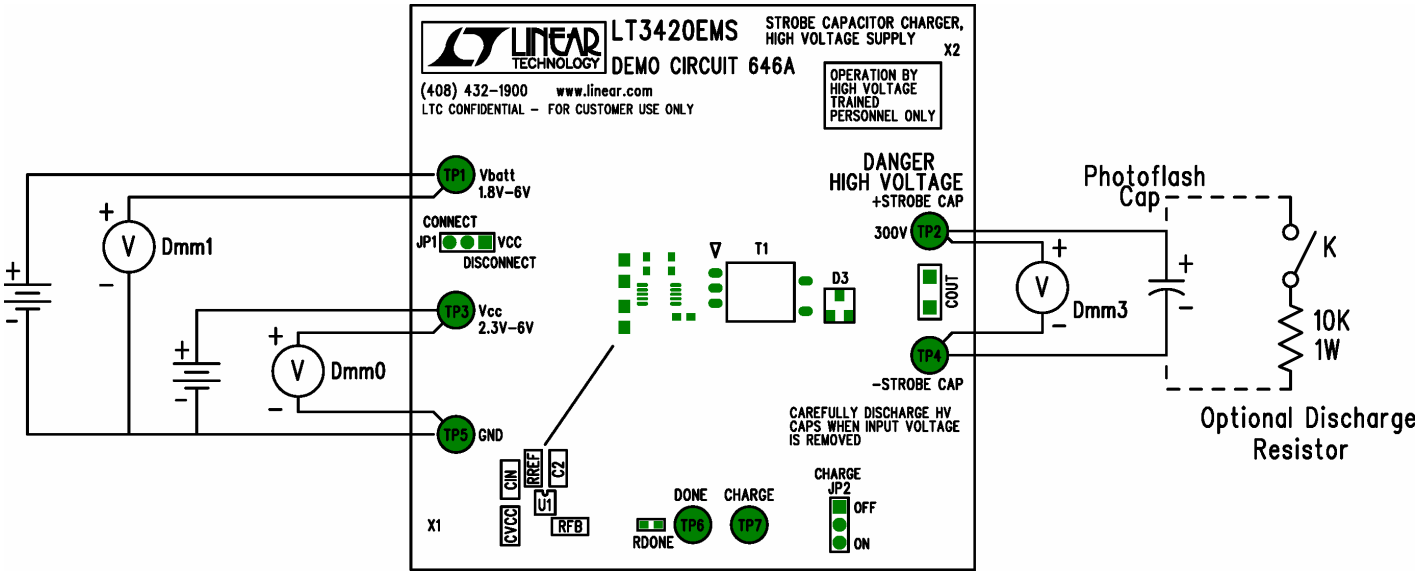


Figure 1. Proper Measurement Equipment Setup

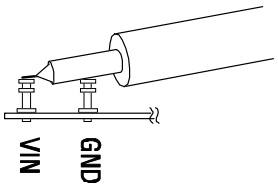
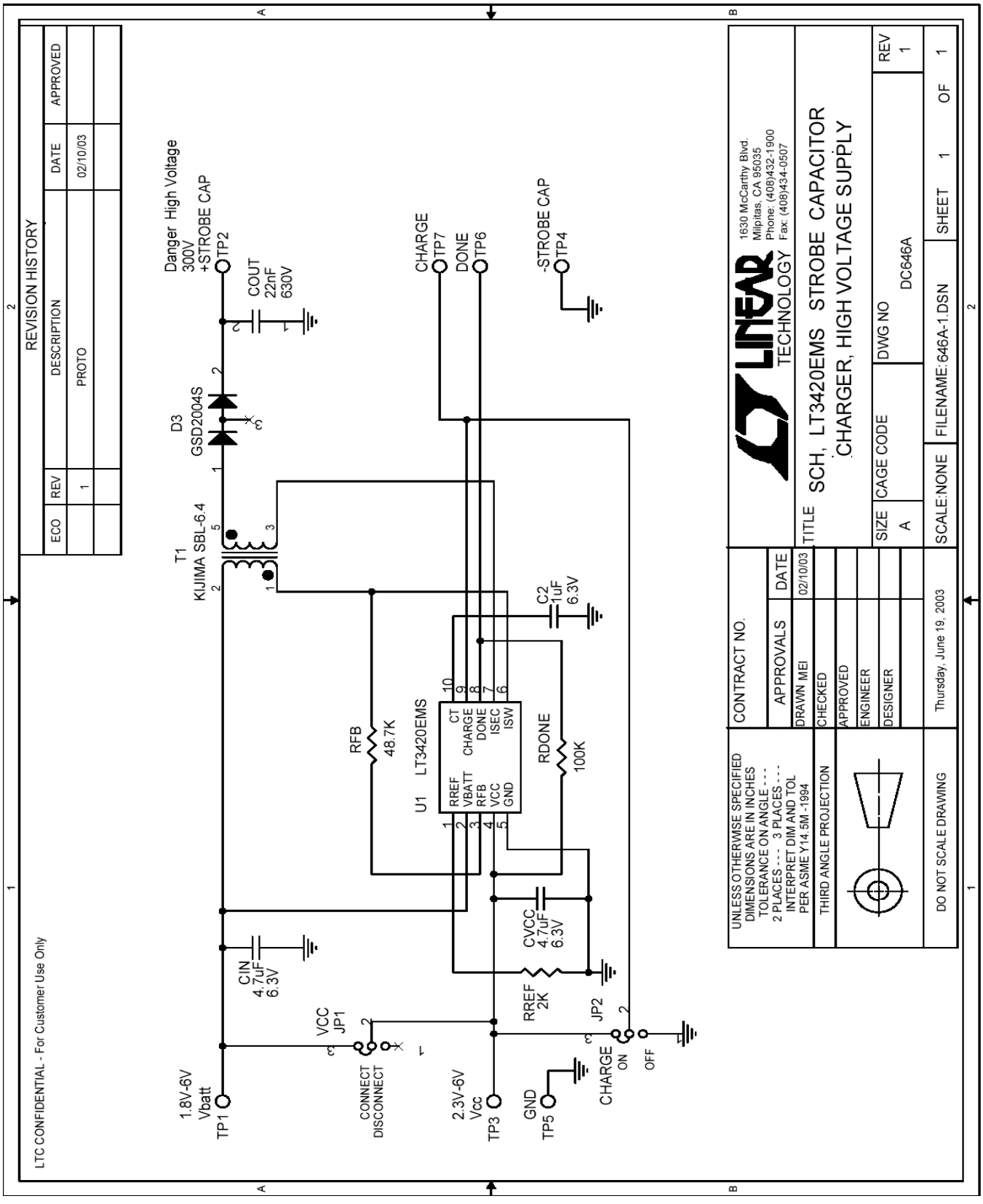


Figure 2. Measuring Input or Output Ripple


REVISION HISTORY
ECO
REV
DESCRIPTION
DATE
APPROVED
1
PROTO
02/10/03
LTC CONFIDENTIAL - For Customer Use Only
Danger High Voltage
300V
+STROBE CAP
TP2
COUT
22nF
630V
D3
GSD2004S
T1
KIJIMA SBL-6.4
CHARGE
TP7
DONE
TP6
-STROBE CAP
TP4
C2
1uF
6.3V
RFB
48.7K
U1 LT3420EMS
RREF
VBATT
RFB
VCC
GND
CT
CHARGE
DONE
ISEC
ISW
RDONE
100K
CVCC
4.7uF
6.3V
CIN
4.7uF
6.3V
VCC
JP1
CONNECT
DISCONNECT
RREF
2K
JP2
CHARGE
ON
OFF
1.8V-6V
Vbatt
TP1
2.3V-6V
Vcc
TP3
GND
TP5
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCE ON ANGLE - - -
2 PLACES - - - 3 PLACES - - -
INTERPRET DIM AND TOL
PER ASME Y14.5M -1994
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
CONTRACT NO.
APPROVALS
DATE
DRAWN MEI
02/10/03
CHECKED
APPROVED
ENGINEER
DESIGNER
Thursday, June 19, 2003
LINEAR TECHNOLOGY
1630 McCarthy Blvd.
Milpitas, CA 95035
Phone: (408)432-1900
Fax: (408)434-0507
TITLE
SCH, LT3420EMS STROBE CAPACITOR
CHARGER, HIGH VOLTAGE SUPPLY
SIZE
A
CAGE CODE
DWG NO
DC646A
REV
1
SCALE:NONE
FILENAME: 646A-1.DSN
SHEET 1 OF 1

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