

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT DC683

1.2MHZ BOOST DC/DC CONVERTER IN THINSOT WITH 2A SWITCH

LT1935ES5

DESCRIPTION

Demonstration circuit DC683 features LT1935 1.2MHz boost dc/dc converter with 2A switch. The circuit in DC683 is designed to generate 12V output from a 3.3V to 5.5V input voltage range. The maximum output current is listed on the DC683 silkscreen along with the input voltage range.

The boost converter circuit is enabled using JP1. Placing the jumper to “OFF” activates the SHDN pin of the boost converter. Jumper to “ON” en-

ables the boost converter and will bring the output up to 12V. The SHDN pin is also accessible via J5 (turret).

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

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Table 1. Performance Summary ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER FOR BOOST CONVERTER	CONDITION	VALUE
Minimum Input Voltage	For DC683 (IC datasheet spec. 2.3V)	3.3V
Maximum Input Voltage	For DC683 (IC datasheet spec. 16V)	5V
Maximum Output Current	12V output with 5V input	600mA
Typical Efficiency	5V input to 12V output with 200mA~600mA load	86%
Output voltage ripple	5V input to 12V output with 600mA load	75mV
Switching frequency	5V input to 12V output with 600mA load	1.2MHz

QUICK START PROCEDURE

Demonstration circuit 683 is easy to set up to evaluate the performance of the LT1935. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. With power off, connect the input power supply to **Vin** and **GND**. Make sure JP1 is set to “ON”.
2. Set the input supply between 3.3V to 5V. Turn on the power at the input and observe the output voltage across **VOUT** and **GND**. The output voltage should read $\approx 12\text{V}$.
3. Turn on the load (follow the chart on the demo board silkscreen for input voltage

and output current, 400mA maximum current with 3.3V input and 600mA maximum current with 5V input voltage). The output voltage should be regulating to $\approx 12\text{V}$ under varying load conditions.

4. Test the **SHDN** function by placing the jumper JP1 to “OFF”. The LT1935 should stop switching and the output voltage should read $\approx 0.3\text{V}$ below the input voltage. Enable the boost converter by placing the jumper (J1) back to “ON.” The output should now read $\approx 12\text{V}$.
5. Check the output ripple using the oscilloscope (refer to figure 2). The output ripple should not be greater than 100mV. Also check the switching frequency, it should be $\approx 1.2\text{MHz}$.

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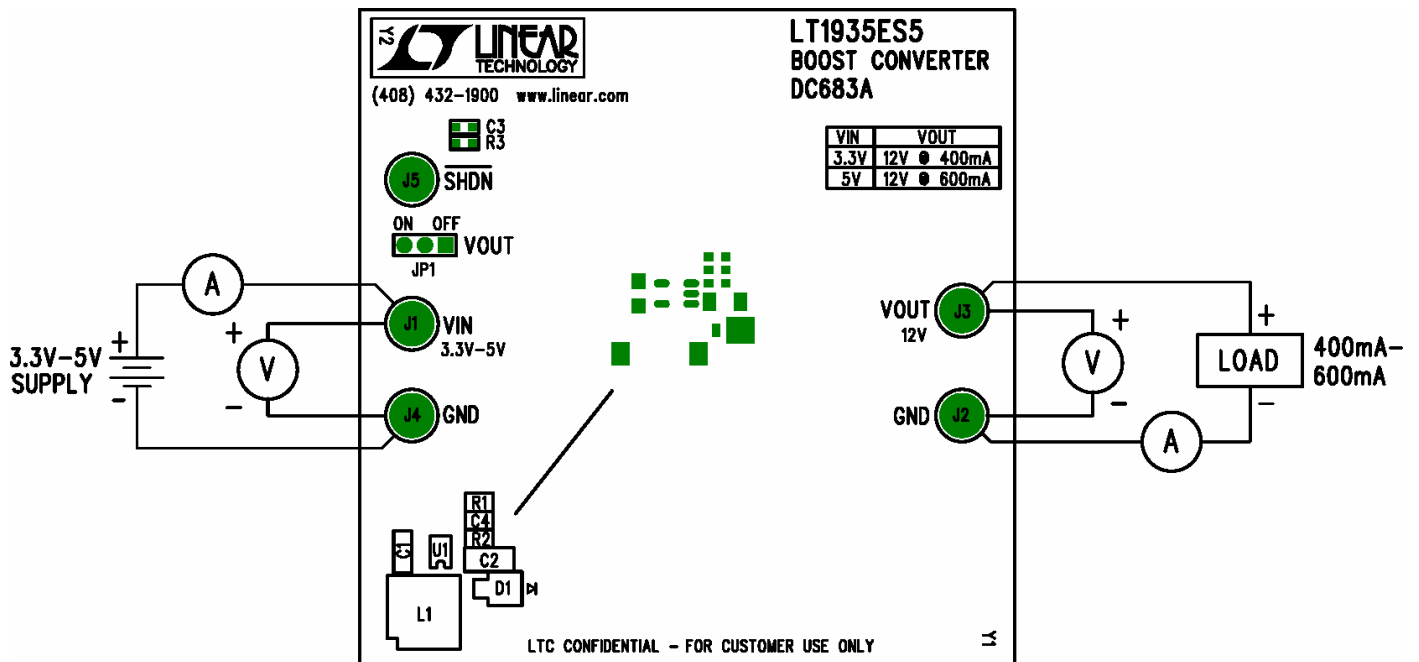


Figure 1. Proper Measurement Equipment Setup

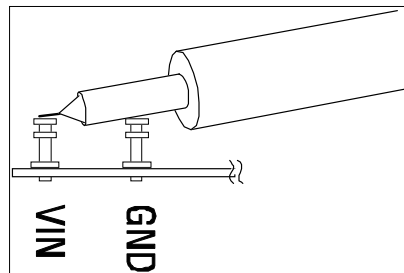


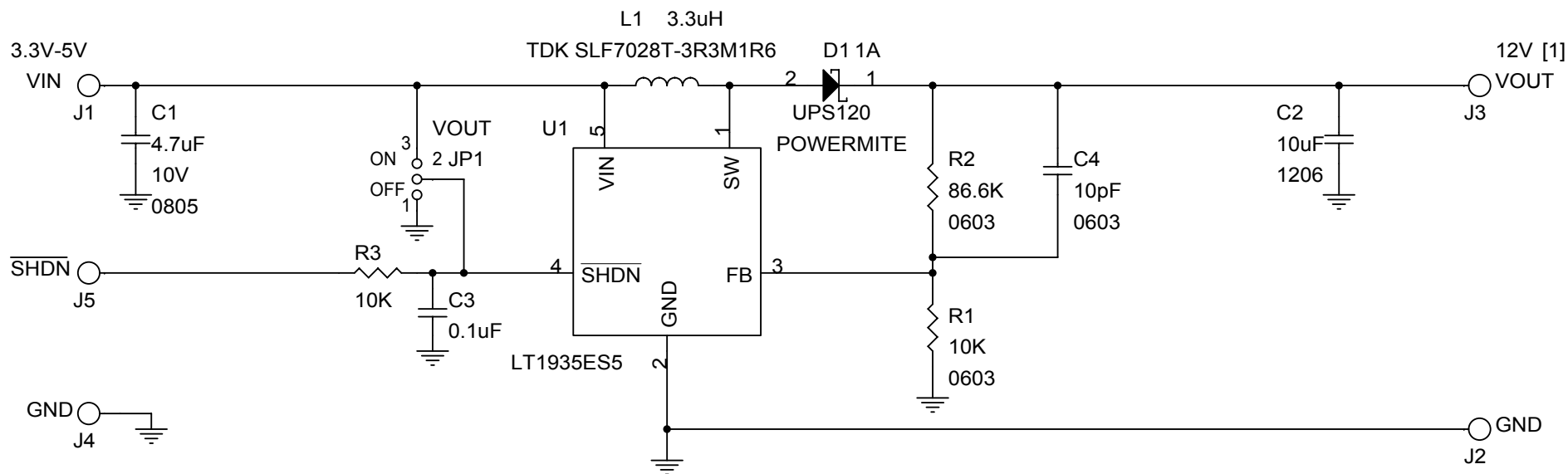
Figure2. Measuring Input or Output Ripple

This circuit is proprietary to Linear Technology and supplied for use with Linear Technology parts.

Customer Notice: Linear Technology has made a best effort to design a circuit that meets customer-supplied specifications; however, it remains the customers responsibility to verify proper and reliable operation in the actual application. Component substitution and printed circuit board layout may significantly affect circuit performance or reliability. Contact Linear Applications Engineering for assistance.

REVISION HISTORY

ECO	REV	DESCRIPTION	DATE	APPROVED
	2	PROTO	01/26/04	



[1]

VIN	VOUT
3.3V	12V @ 400mA
5V	12V @ 600mA

CONTRACT NO.

APPROVALS

DATE

DRAWN MEI 05/01/03

CHECKED

APPROVED

ENGINEER

DESIGNER

Friday, February 06, 2004



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Milpitas, CA 95035
Phone: (408)432-1900
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TITLE SCH, LT1935ES5 BOOST CONVERTER

SIZE

CAGE CODE

DWG NO

DC683A

REV

2

SCALE:

FILENAME: 683A-2.DSN

SHEET

1

OF

1

<i>Item</i>	<i>Qty</i>	<i>Ref</i>	<i>Desc</i>	<i>Manufacturer / Part #</i>
1	1	C1	CAP, X7R 4.7uF 10V 20% 0805	TDK C2012X7R1A475M
2	1	C2	CAP, X7R 10uF 16V 20% 1206	TDK C3216X7R1C106M
3	1	C3	CAP, X7R 0.1uF 10V 20% 0603	AVX 0603ZC104MAT
4	1	C4	CAP, COG 10pF 50V 5% 0603	AVX 06035A100JAT2A
5	1	D1	DIODE,SCHOTTKY 20V 1A	MICROSEMI UPS120
6	1	JP1	HEADER,3PIN, 2mm	COMM CON 2802S-03G2
7	5	J1,J2,J3,J4,J5	TURRET	MILL-MAX 2501-2
8	1	L1	IND, 3.3uH	TDK SLF7028T-3R3M1R6
9	1	R1	RES, 10K OHMS 1% 1/16W 0603	AAC CR16-1002FM
10	1	R2	RES, 86.6KK OHMS 1% 1/16W 0603	AAC CR16-8662FM
11	1	R3	RES, 10K OHMS 5% 1/16W 0603	AAC CR16-103JM
12	1	U1	IC, LT1935ES5	LINEAR TECH. LT1935ES5