LT3479
General Purpose Positive/ Negative Converters

DESCRIPTION

Demonstration circuit 765B is a general purpose 1MHz, positive and negative converters featuring the LT3479EDE. The demo circuit demonstrates small size and low component count in a boost circuit and an inverting circuit. The boost converter is set up to convert a 2.5V to 4.2V input to 7V output at 600mA. The inverting circuit generates a –5V output at 600mA from an input of 2.5V to 12V.

Both circuits demonstrate the capacitor programmable soft-start feature, advantages of the 1MHz constant switching frequency and the internal 42V switches. Both outputs on this demo circuit can be modified for higher voltages. These circuits are intended for space-conscious applications such as high power LED drivers, DSL modems and distributed power.

Design files for this circuit board are available at http://www.linear.com/demo/DC765B

PERFORMANCE SUMMARY

Specifications are at T_A = 25°C

PARAMETERS FOR BOOST CIRCUIT	CONDITION	VALUE
Minimum Input Voltage		2.5V
Maximum Input Voltage		4.2V
Output Voltage V_{OUT}	V_{IN} = 2.5V to 4.2V	7V ±3%
Typical Efficiency	V_{IN} = 3.3V, V_{OUT} = 7V at 600mA	85%
Typical Output Ripple V_{OUT} as Regular Boost Converter	V_{IN} = 3.3V, V_{OUT} = 7V at 600mA	60mV
PARAMETERS FOR INVERTING CIRCUIT		**VALUE**
Output Voltage V_{OUT}	V_{IN} = 2.5V, I_{OUT} = 0mA to 600mA	–5V ±3%
Output Voltage V_{OUT}	V_{IN} = 12V, I_{OUT} = 0mA to 600mA	–5V ±3%
Typical Output Ripple V_{OUT}	V_{IN} = 3.3V, I_{OUT} = 600mA	10mV_{P-P}
Typical Efficiency	V_{IN} = 7V, V_{OUT} = –5 at 600mA	74%

Input capacitors C16 and C17 used only for operation with long inductive input leads.

QUICK START PROCEDURE

Demonstration circuit 765B is easy to set up to evaluate the performance of the LT3479EDE. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

- 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 1 for proper scope probe technique.

For boost converter circuit:

1. Place jumper in the ON position.
2. With power off, connect the input power supply to V_{IN} and GND.
3. Turn input supply on and apply 2.5V to 4.2V to the input.
4. Once the proper output voltages are established, adjust the input voltage within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

For inverter circuit:

1. Place jumper in the ON position.
2. With power off, connect the input power supply to V_{IN} and GND.
3. Turn input supply on and apply 2.5V to 12V to the input.
4. Once the proper output voltages are established, adjust the input and load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

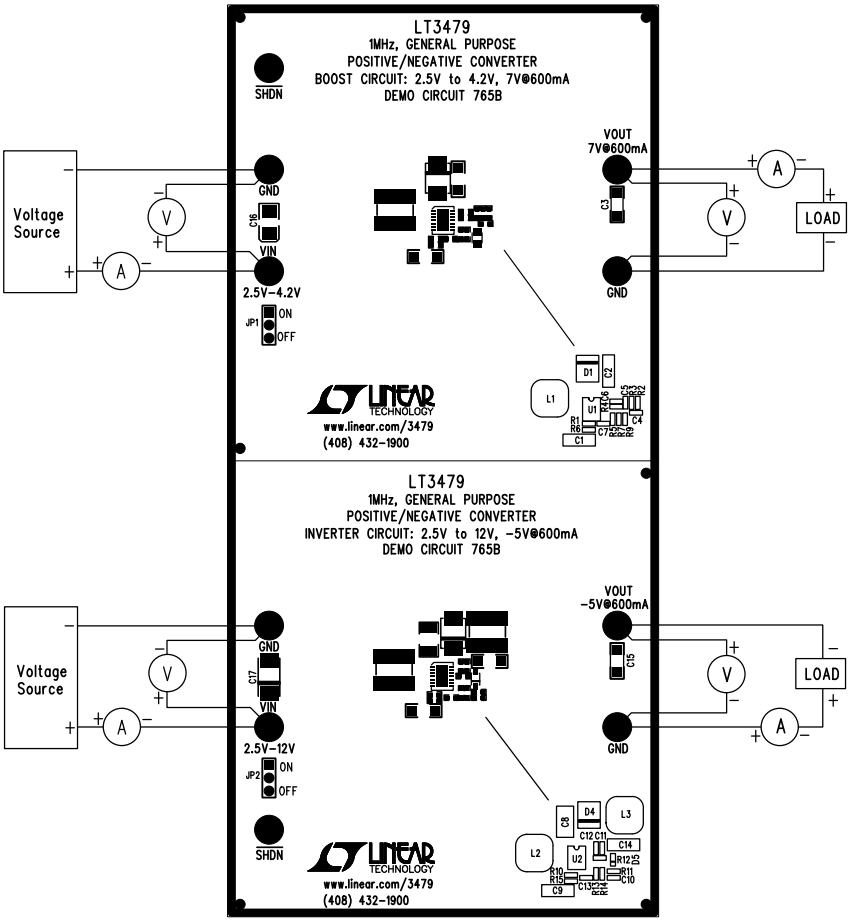


Figure 1. DC765B Proper Equipment Setup

QUICK START PROCEDURE

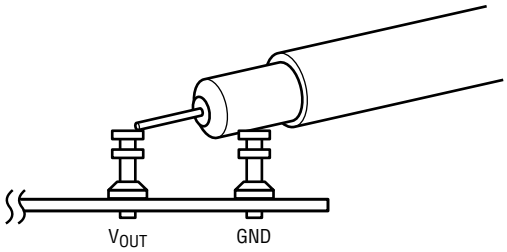


Figure 2. Measuring Input or Output Ripple

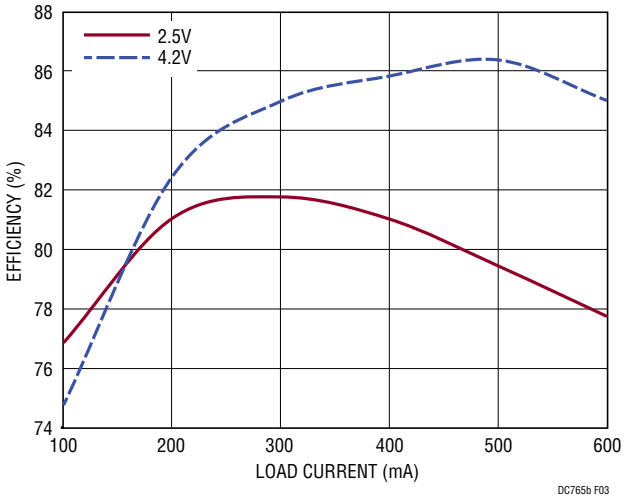


Figure 3. Efficiency vs Load Current (Boost Circuit)

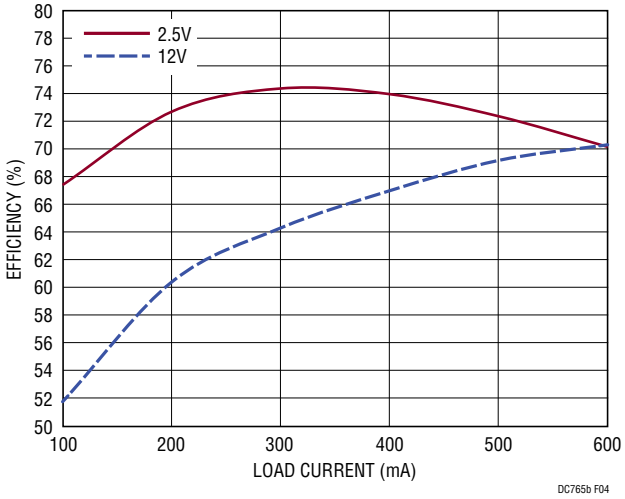
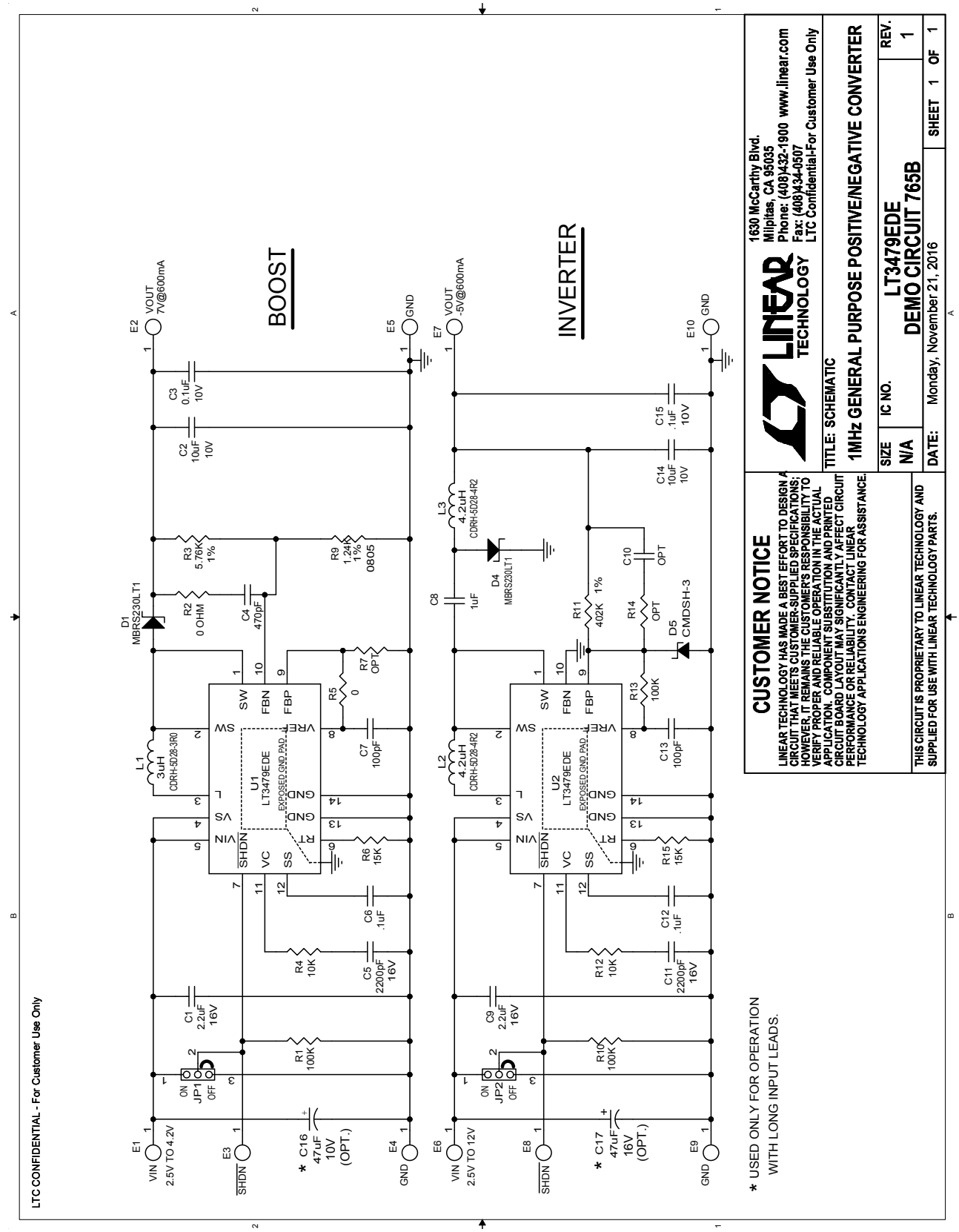


Figure 4. Efficiency vs Load Current (Inverter Circuit)

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	C4	CAP, X7R, 470pF, 16V, 10%, 0402	AVX 0402YC471KAT2A
2	2	C2, C14	CAP, X5R, 10µF, 10V, 10%, 1206	AVX 1206ZD106KAT2A
3	2	C5, C11	CAP, X7R, 2200pF, 16V, 10%, 0402	AVX 0402YC222KAT2A
4	2	C3, C15	CAP, X7R, 0.1µF, 10V, 10%, 1206	AVX 1206ZC104KAT2A
5	2	C1, C9	CAP, X5R, 2.2µF, 16V, 10%, 1206	AVX 1206YD225KAT2A
6	2	C6, C12	CAP, X7R, 0.1µF, 16V, 10%, 0402	MURATA GRM155R71C104KA01
7	2	C7, C13	CAP, X7R, 100pF, 16V, 10%, 0402	AVX 0402YC101KAT2A
8	1	C8	CAP, X5R, 1µF, 25V, 10%, 1210	AVX 12103D105KAT2A
9	2	D1, D4	DIODE, MBRS230LT1	ONSEMI MBRS230LT1
10	1	D5	DIODE,	CENTRAL SEMI CMDSH-3-LTC
11	1	L1	INDUCTOR, 3µH	SUMIDA CDRH5D28-3R0
12	2	L2, L3	INDUCTOR, 4.2µH	SUMIDA CDRH5D28-4R2
13	3	R1, R10, R13	RES, CHIP, 100k, 1/16W, 5%, 0402	VISHAY, CRCW0402100KJNED
14	2	R2, R5	RES, CHIP, 0Ω 0402	VISHAY, CRCW04020000Z0ED
15	1	R3	RES, CHIP, 5.76k, 1/16W, 1%, 0402	VISHAY, CRCW04025K76FKED
16	2	R4, R12	RES, CHIP, 10k, 1/16W, 5%, 0402	VISHAY, CRCW040210K0JNED
17	1	R9	RES, CHIP, 1.24k, 1/16W, 1%, 0805	VISHAY, CRCW08051K24FKEA
18	1	R11	RES, CHIP, 402k, 1/16W, 1%, 0402	VISHAY, CRCW0402402KFKED
19	2	R6, R15	RES, CHIP, 15k, 1/16W, 1%, 0402	VISHAY CRCW040215K0FKED
20	2	U1, U2	IC, LT3479EDE, 14 PIN DFN	LINEAR LT3479EDE#PBF
Additional Demo Board Circuit Components				
1	0	C10 (OPT)	CAP, 0402	
2	1	C16 (OPT)	CAP, TANT, 47µF, 10V, 20%, (B-SIZE)	AVX, TAJB476M010R
3	1	C17 (OPT)	CAP, TANT, 47µF, 16V, 20%, (C-SIZE)	AVX, TAJC476M016R
4	0	R7, R14 (OPT)	RES, CHIP, 0402	OPT
Hardware: For Demo Board Only				
1	10	E1 TO E10	TURRETS, TERMINAL	MILL-MAX 2501-2
2	2	XJP1, XJP2	SHUNT, 2PIN, 3MM	COMM CON CCIJ2MM-138-GW
3	2	JP1, JP2	CONN, HDR, 3 PIN. 0.079 2MM	COMM CON CONN 2802S-03G2

SCHEMATIC DIAGRAM



DEMONSTRATION BOARD IMPORTANT NOTICE

Linear Technology Corporation (LTC) provides the enclosed product(s) under the following **AS IS** conditions:

This demonstration board (DEMO BOARD) kit being sold or provided by Linear Technology is intended for use for **ENGINEERING DEVELOPMENT OR EVALUATION PURPOSES ONLY** and is not provided by LTC for commercial use. As such, the DEMO BOARD herein may not be complete in terms of required design-, marketing-, and/or manufacturing-related protective considerations, including but not limited to product safety measures typically found in finished commercial goods. As a prototype, this product does not fall within the scope of the European Union directive on electromagnetic compatibility and therefore may or may not meet the technical requirements of the directive, or other regulations.

If this evaluation kit does not meet the specifications recited in the DEMO BOARD manual the kit may be returned within 30 days from the date of delivery for a full refund. THE FOREGOING WARRANTY IS THE EXCLUSIVE WARRANTY MADE BY THE SELLER TO BUYER AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. EXCEPT TO THE EXTENT OF THIS INDEMNITY, NEITHER PARTY SHALL BE LIABLE TO THE OTHER FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

The user assumes all responsibility and liability for proper and safe handling of the goods. Further, the user releases LTC from all claims arising from the handling or use of the goods. Due to the open construction of the product, it is the user's responsibility to take any and all appropriate precautions with regard to electrostatic discharge. Also be aware that the products herein may not be regulatory compliant or agency certified (FCC, UL, CE, etc.).

No License is granted under any patent right or other intellectual property whatsoever. **LTC assumes no liability for applications assistance, customer product design, software performance, or infringement of patents or any other intellectual property rights of any kind.**

LTC currently services a variety of customers for products around the world, and therefore this transaction **is not exclusive**.

Please read the DEMO BOARD manual prior to handling the product. Persons handling this product must have electronics training and observe good laboratory practice standards. **Common sense is encouraged**.

This notice contains important safety information about temperatures and voltages. For further safety concerns, please contact a LTC application engineer.

Mailing Address:

Linear Technology
1630 McCarthy Blvd.
Milpitas, CA 95035

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Power Management IC Development Tools ***category:***

Click to view products by Analog Devices ***manufacturer:***

Other Similar products are found below :

EVAL-ADM1168LQEBZ EVB-EP5348UI MIC23451-AAAYFL EV MIC5281YMME EV DA9063-EVAL ADP122-3.3-EVALZ ADP130-0.8-EVALZ ADP130-1.2-EVALZ ADP130-1.5-EVALZ ADP130-1.8-EVALZ ADP1714-3.3-EVALZ ADP1716-2.5-EVALZ ADP1740-1.5-EVALZ ADP1752-1.5-EVALZ ADP1828LC-EVALZ ADP1870-0.3-EVALZ ADP1871-0.6-EVALZ ADP1873-0.6-EVALZ ADP1874-0.3-EVALZ ADP1882-1.0-EVALZ ADP199CB-EVALZ ADP2102-1.25-EVALZ ADP2102-1.875EVALZ ADP2102-1.8-EVALZ ADP2102-2-EVALZ ADP2102-3-EVALZ ADP2102-4-EVALZ ADP2106-1.8-EVALZ ADP2147CB-110EVALZ AS3606-DB BQ24010EVM BQ24075TEVM BQ24155EVM BQ24157EVM-697 BQ24160EVM-742 BQ24296MEVM-655 BQ25010EVM BQ3055EVM NCV891330PD50GEVB ISLUSBI2CKIT1Z LM2744EVAL LM2854EVAL LM3658SD-AEV/NOPB LM3658SDEV/NOPB LM3691TL-1.8EV/NOPB LM4510SDEV/NOPB LM5033SD-EVAL LP38512TS-1.8EV EVAL-ADM1186-1MBZ EVAL-ADM1186-2MBZ