

**LT3758AEMSE**  
High Efficiency SEPIC Converter**DESCRIPTION**

Demonstration circuit 1342B features the **LT<sup>®</sup>3758AEMSE** in a 300kHz SEPIC converter circuit, designed for a 24V output from a 18V to 72V input.

The LT3758A operates over an input range of 5.5V to 100V, suitable for automotive, telecom and industrial applications. It also exhibits a low shutdown current of 1 $\mu$ A, making it ideal for battery-operated systems. Thanks to a novel FBX pin architecture, the LT3758A can be connected directly to a resistor divider from either a positive output voltage or a negative output voltage to ground. It also packs many popular features such as soft-start, input undervoltage

lockout, adjustable frequency and clock synchronization in a small 10-lead MSOP package or a 3mm  $\times$  3mm QFN package.

The LT3758A data sheet gives a complete description of the part, operation and application information. The data sheet must be read in conjunction with this quick start guide for demo circuit 1342B.

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

LT, LT, LTC, LTM, Linear Technology and the Linear logo are registered trademarks of Linear Technology Corporation. All other trademarks are the property of their respective owners.

**PERFORMANCE SUMMARY** 300kHz SEPIC Regulator. Specifications are at  $T_A = 25^\circ\text{C}$ 

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Supply Range		18		72	V
Output Voltage		23.28	24	24.72	V
Maximum Output Current				1	A
Switching Frequency			300		kHz

## QUICK START PROCEDURE

Demonstration circuit 1342B is easy to set up to evaluate the performance of the LT3758AEMSE. 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.

1. Place JP1 on the ON position.
2. With power off, connect the input power supply to  $V_{IN}$  and GND.

3. Turn on the power at the input.

NOTE. Make sure that the input voltage does not exceed the maximum input voltage.

4. Check for the proper output voltages.

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

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.

**QUICK START PROCEDURE**

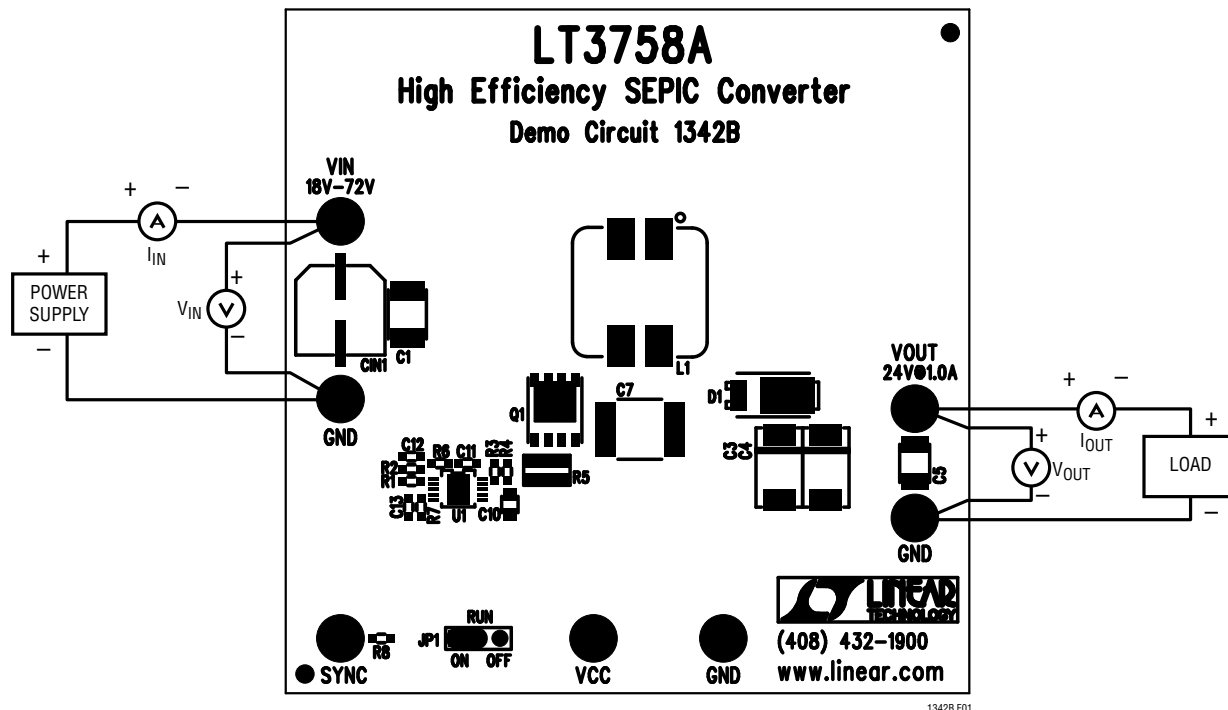


Figure 1. Proper Measurement Equipment Setup

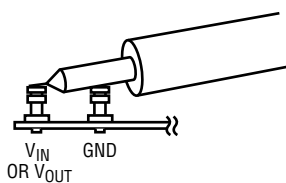


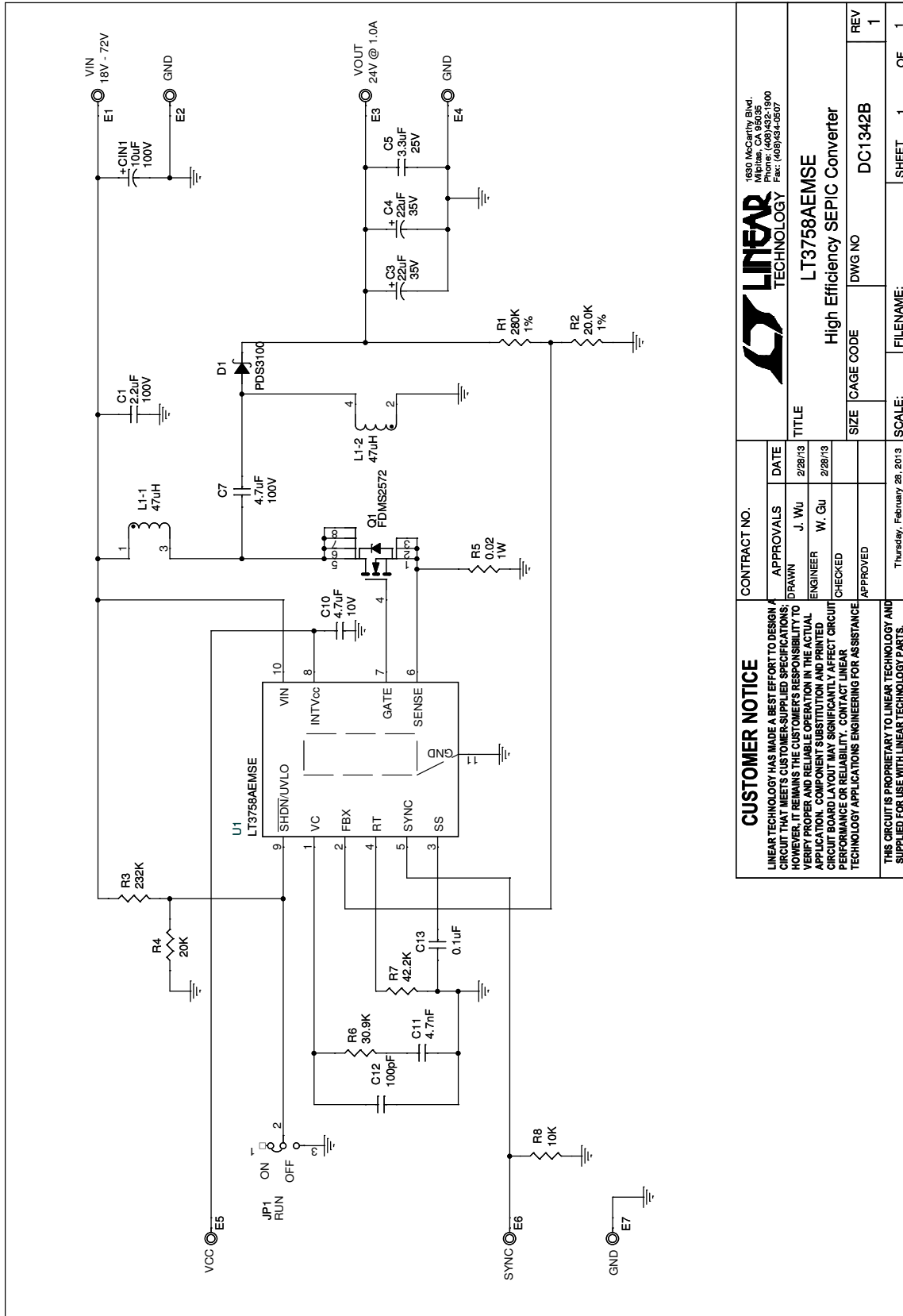
Figure 2. Measuring Input or Output Ripple

# DEMO MANUAL DC1342B

## PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
<b>Required Circuit Components</b>				
1	1	C1	CAP., X7R, 2.2 $\mu$ F, 100V, 10% 1812	TDK, C4532X7R2A225K
2	2	C3, C4	CAP., TANT, 22 $\mu$ F, 35V, 20% 7343	AVX, TPSD226M035R0125
3	1	C5	CAP., X7R, 3.3 $\mu$ F, 25V, 20% 1210	Taiyo Yuden, TMK325BJ335MN
4	1	C7	CAP., X7R, 4.7 $\mu$ F, 100V, 20% 2220	TDK, C5750X7R2A475M
5	1	C10	CAP., X5R, 4.7 $\mu$ F, 10V, 20% 0805	Taiyo Yuden, LMK212BJ475MG-T
6	1	C11	CAP., X7R, 4.7nF, 50V, 10% 0603	TDK, C1608X7R1H472K
7	1	C12	CAP., COG, 100pF, 50V, 5% 0603	TDK, C1608COG1H101J
8	1	C13	CAP., X7R, 0.1 $\mu$ F, 25V, 10% 0603	TDK, C1608X7R1E104K
9	1	D1	Diodes Inc., PDS3100-13	Diodes Inc., PDS3100-13
10	1	L1	IND., Dual, 47 $\mu$ H	Würth Elektronik, 744870470
11	1	Q1	N-MOSFET, FDMS2572, Power 56	FAIRCHILD, FDMS2572
12	1	R1	RES., CHIP, 280k, 1/10W, 1% 0603	VISHAY, CRCW0603280KFKEA
13	2	R2, R4	RES., CHIP, 20.0k, 1/10W, 1% 0603	VISHAY, CRCW060320K0FKEA
14	1	R3	RES., CHIP, 232k, 1/10W, 1% 0603	VISHAY, CRCW0603232KFKEA
15	1	R5	RES., CHIP, 0.02, 1W, 1%, 0815	THIN FILM, RL3720WTR02F-C
16	1	R6	RES., CHIP, 30.9k, 1/10W, 1% 0603	VISHAY, CRCW060330K9FKEA
17	1	R7	RES., CHIP, 42.2k, 1/10W, 1% 0603	VISHAY, CRCW060342K2FKEA
18	1	R8	RES., CHIP, 10k, 1/10W, 5% 0603	VISHAY, CRCW060310K0JNEA
19	1	U1	I.C. LT3758AEMSE, MSOP10/Exposed Pad	LINEAR TECH., LT3758AEMSE#TRPBF
<b>Additional Demo Board Circuit Components</b>				
1	1	CIN1	CAP., Alum., 10 $\mu$ F, 100V, E Size Code	
<b>Hardware: For Demo Board Only</b>				
1	7	E1, E2, E3, E4, E5, E6, E7	TESTPOINT, TURRET, .094" PBF	MILL-MAX, 2501-2-00-80-00-00-07-0
2	1	JP1	3 PIN, 0.079 SINGLE ROW HEADER	SAMTEC, TMM103-02-L-S
3	1	XJP1	SHUNT, .079" CENTER	SAMTEC, 2SN-BK-G

**SCHEMATIC DIAGRAM**



Information furnished by Linear Technology Corporation is believed to be accurate and reliable. However, no responsibility is assumed for its use. Linear Technology Corporation makes no representation that the interconnection of its circuits as described herein will not infringe on existing patent rights.

# DEMO MANUAL DC1342B

---

## 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

Copyright © 2004, Linear Technology Corporation

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А