LTM8057
Isolated µModule DC/DC Converter

DESCRIPTION

The Demo circuit 1987A is a 2kV AC isolated flyback µModule® DC/DC converter featuring the LTM8057. The demo circuit is designed for a 5V flyback output from a 4.5V to 29V input. The typical current capability of the 5V flyback output varies with input voltage from about 110mA at $4.5V_{IN}$ to about 350mA at $29V_{IN}$. Figure 1 shows the typical maximum output current on V_{OUT}. R1 provides the necessary minimum load current to keep the V_{OUT} in regulation throughout the entire input voltage range. Please see the typical performance characteristic curves in the LTM8057 data sheet to determine the minimum load current for other input/output configurations.

The LTM8057 data sheet gives complete description of the device, operation and application information. The data sheet must be read in conjunction with this quick start guide prior to using demo circuit 1987A.

Design files for this circuit board are available at http://www.linear.com/demo/DC1987A

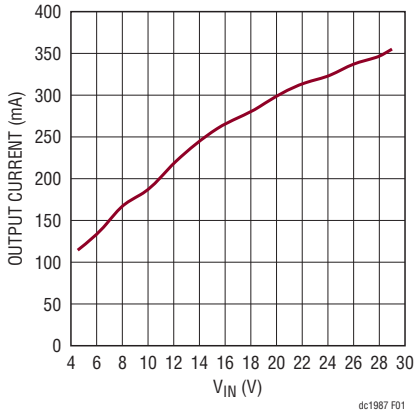


Figure 1. V_{OUT} Typical Maximum Output Current vs V_{IN}

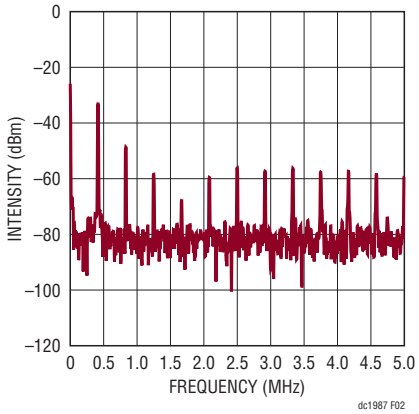
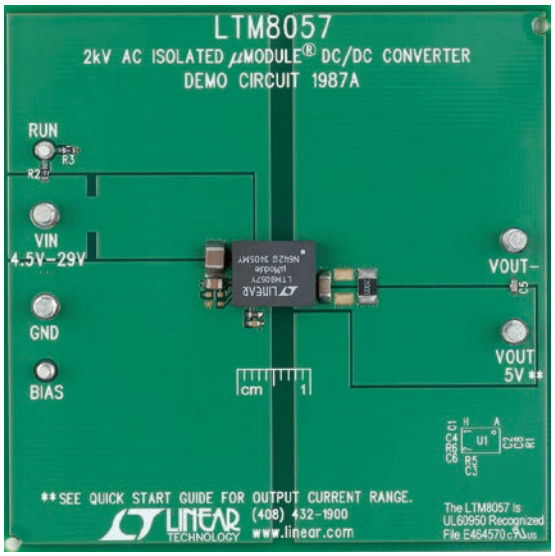


Figure 2. V_{OUT} Output Noise Spectrum with I_{OUT} at 100mA and V_{IN} at 12V

BOARD PHOTO



PERFORMANCE SUMMARY

Specifications are at T_A = 25°C

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Minimum Input Voltage				4.5	V
Maximum Input Voltage		29			V
Output Voltage V_{OUT}	V_{IN} = 4.5V – 29V	4.75		5.25	V
Voltage Ripple V_{OUT}	V_{IN} = 12V, I_{OUT} = 100mA		10		mV

QUICK START PROCEDURE

Demo circuit 1987A provides an easy method to evaluate the performance of the LTM8057. Refer to Figure 3 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 4 for proper scope probe technique.

1. With power off, connect the input power supply to VIN and GND.
2. Turn on the power at the input.

   NOTE. Make sure that the input voltage does not exceed 29V.
3. Check for the proper output voltage. (For V_{OUT}, check the voltage between VOUT and VOUT–)

   NOTE. If there is no output, temporarily disconnect the load to make sure that the load is not set too high.
4. Once the proper output voltages are established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

QUICK START PROCEDURE

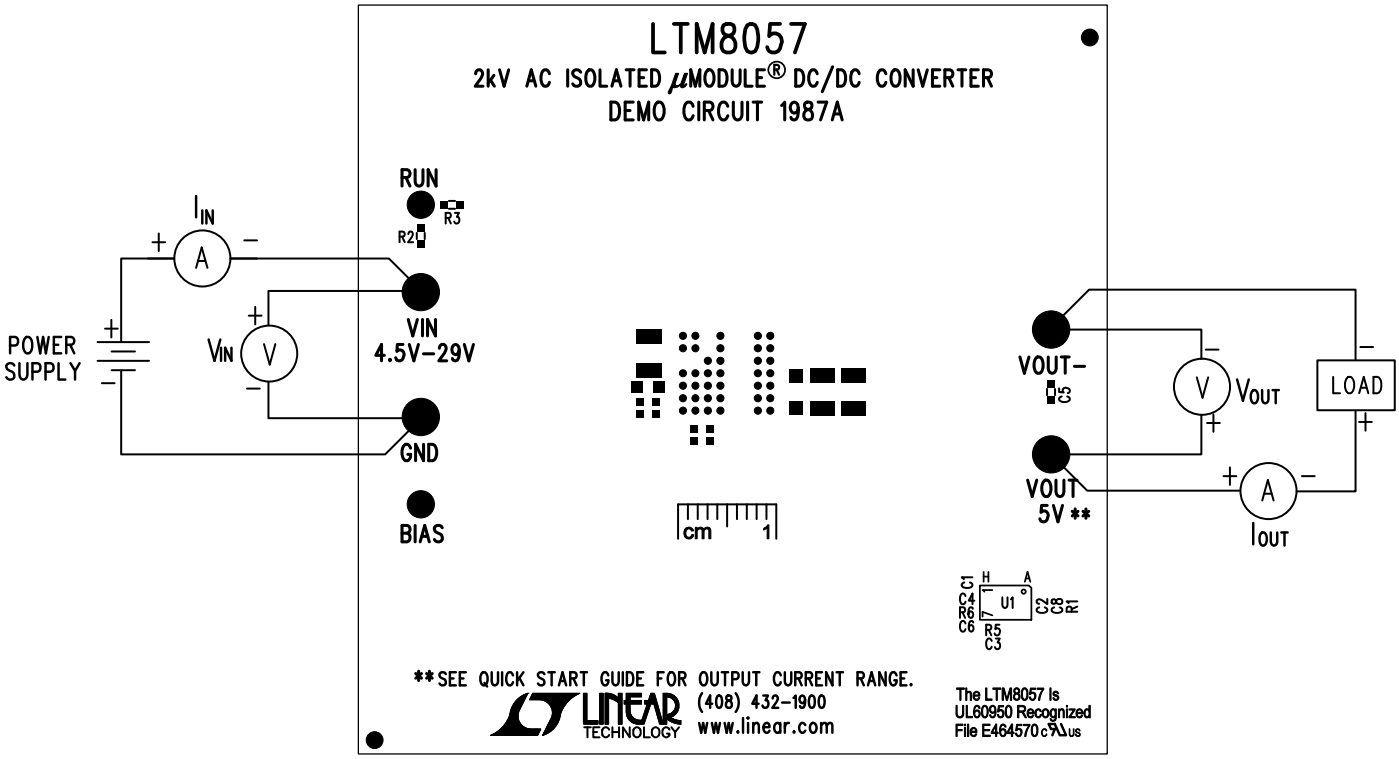


Figure 3. DC1987A Proper Equipment Setup

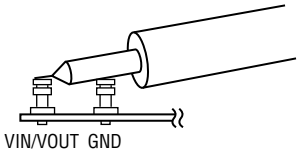
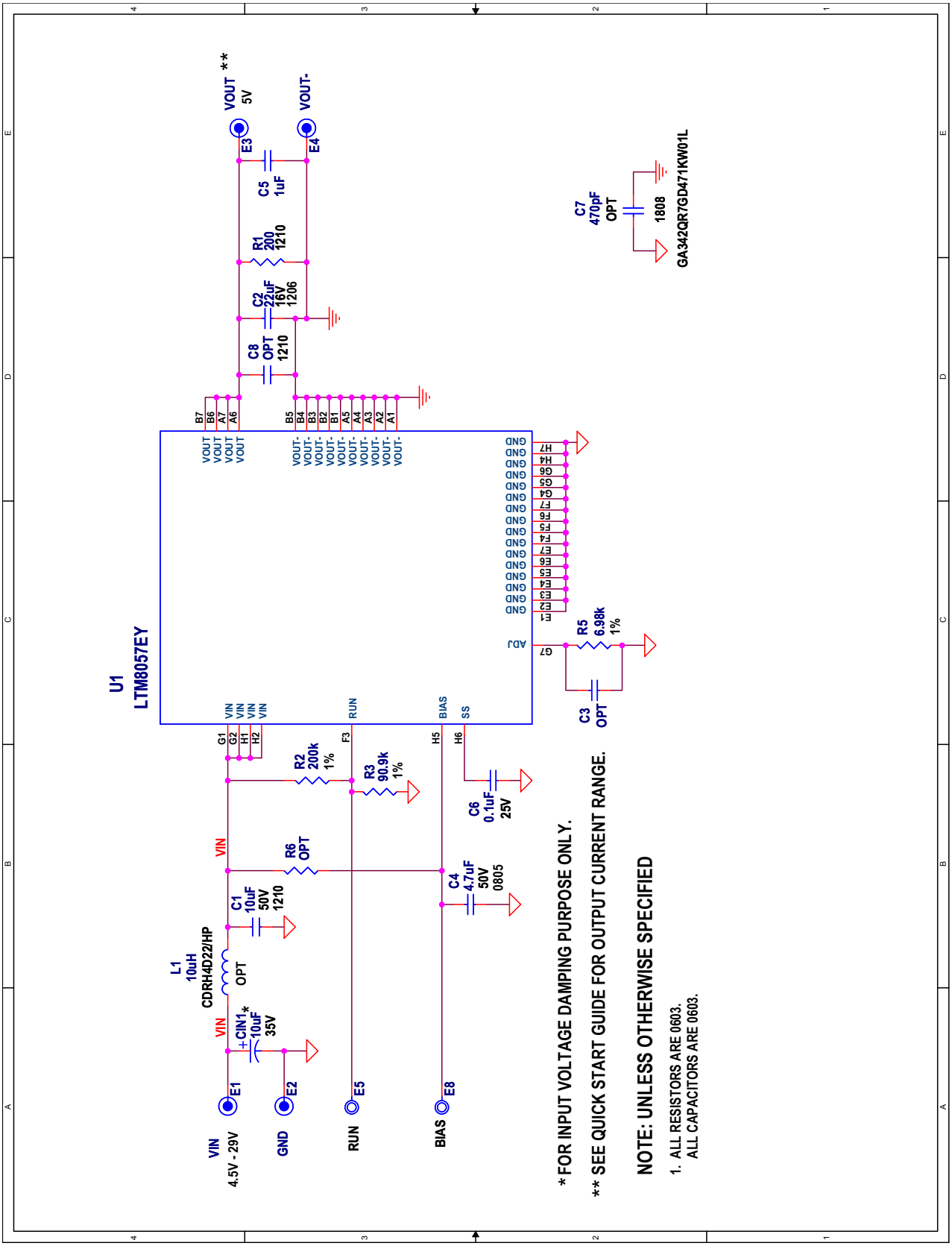


Figure 4. Measuring Input or Output Ripple

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	C1	CAP., CHIP, X5R, 10µF, 50V, 10% 1210	MURATA, GRM32ER71H106KA12L
2	1	C2	CAP., CHIP, X5R, 22µF, 16V, 10% 1206	AVX, 1206YD226KAT2A
3	1	C4	CAP., CHIP, X5R, 4.7µF, 50V, 20% 0805	TDK, C2012X5R1H475M
4	1	C6	CAP., CHIP, X7R, 0.1µF, 25V, 10% 0603	AVX, 06033C104KAT2A
5	1	R1	RES., CHIP, 200Ω, 1W, 1% 1210	VISHAY, CRCW1210200RFKEA
6	1	R2	RES., CHIP, 200k, 1/10W, 1% 0603	VISHAY, CRCW0603200KFKEA
7	1	R3	RES., CHIP, 90.9k, 1/10W, 1% 0603	VISHAY, CRCW060390K9FKEA
8	1	R5	RES., CHIP, 6.98k, 1/10W, 1% 0603	VISHAY, CRCW06036K98FKEA
9	1	U1	IC., LINEAR LTM8057EY#PBF	LINEAR TECH., LTM8057EY#PBF
Additional Demo Board Circuit Components				
1	0	C3 (OPT)	CAP., 0603	
2	1	C5	CAP., CHIP, X7R, 1µF, 16V, 10% 0603	AVX, 0603YC105KAT2A
3	0	C8 (OPT)	CAP., 1210	
4	1	CIN1	CAP., TANT. 10µF, 35V, CASE-C	AVX, TAJC106K035R
5	0	C7 (OPT)	CAP., 1808	
6	0	L1	OPT.	
7	0	R6	OPT. 0603	
Hardware: For Demo Board Only				
1	4	E1-E4	TESTPOINT, TURRET, 0.094"	MILL-MAX 2501-2-00-80-00-00-07-0
1	2	E5, E8	TESTPOINT, TURRET, 0.064"	MILL-MAX 2308-2-00-80-00-00-07-0

SCHEMATIC DIAGRAM



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

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