

Isolated  $\mu$ Module DC/DC Converter

## DESCRIPTION

The Demo circuit 2357A is a 2kV AC isolated flyback  $\mu$ Module® DC/DC converter featuring the [LTM8067](#). The demo circuit is designed for a 5V flyback output from a 4.5V to 40V input. The typical current capability of the 5V flyback output varies with input voltage from about 200mA at 4.5V<sub>IN</sub> to about 500mA at 40V<sub>IN</sub>. Figure 1 shows the maximum output current on V<sub>OUT</sub>. R1 provides the necessary minimum load current to keep the output voltage in regulation throughout the entire input voltage range. Please see the typical performance characteristic curves

in the LTM8067 data sheet to determine the minimum load current for other input/output configurations.

The LTM8067 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 for demo circuit 2357A.

**Design files for this circuit board are available at**  
<http://www.linear.com/demo/DC2357A>

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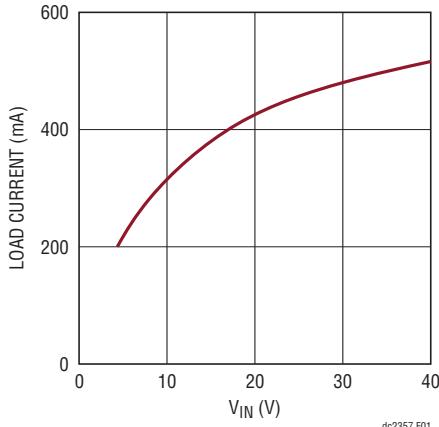


Figure 1. V<sub>OUT</sub> Maximum Output Current vs V<sub>IN</sub>

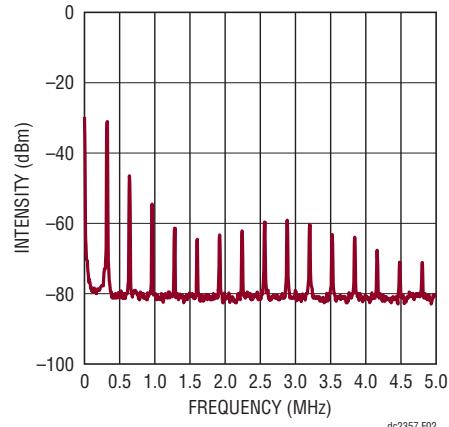
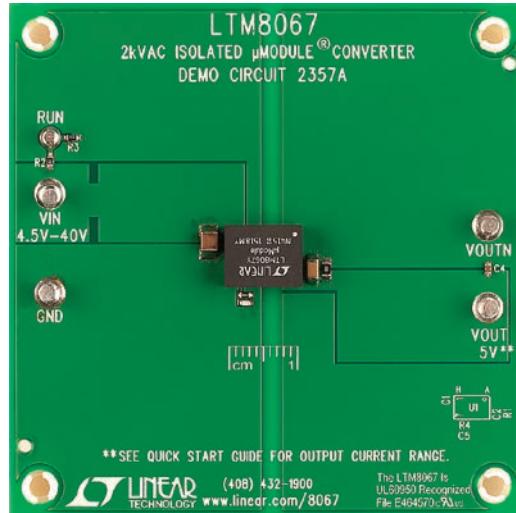


Figure 2. V<sub>OUT</sub> Output Noise Spectrum with I<sub>OUT</sub> at 200mA and V<sub>IN</sub> at 12V

## BOARD PHOTO



dc2357af

# DEMO MANUAL DC2357A

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## PERFORMANCE SUMMARY

Specifications are at  $T_A = 25^\circ\text{C}$

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Minimum Input Voltage				4.5	V
Maximum Input Voltage		40			V
Output Voltage $V_{\text{OUT}}$	$V_{\text{IN}} = 4.5\text{V to } 40\text{V}$	4.75	5	5.25	V
Voltage Ripple $V_{\text{OUT}}$	$V_{\text{IN}} = 12\text{V, } I_{\text{OUT}} = 200\text{mA}$		25		mV

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## QUICK START PROCEDURE

Demo circuit 2357A is easy to set up to evaluate the performance of the LTM8067. 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  $V_{\text{IN}}$  and  $\text{GND}$  or  $V_{\text{OUT}}$  and  $V_{\text{OUTN}}$  terminals. See Figure 4 for proper scope probe technique.

1. With power off, connect the input power supply to  $V_{\text{IN}}$  and  $\text{GND}$ .

2. Turn on the power at the input.

NOTE. Make sure that the input voltage does not exceed 40V.

3. Check for the proper output voltage. (For  $V_{\text{OUT}}$ , check the voltage between  $V_{\text{OUT}}$  and  $V_{\text{OUTN}}$ )

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

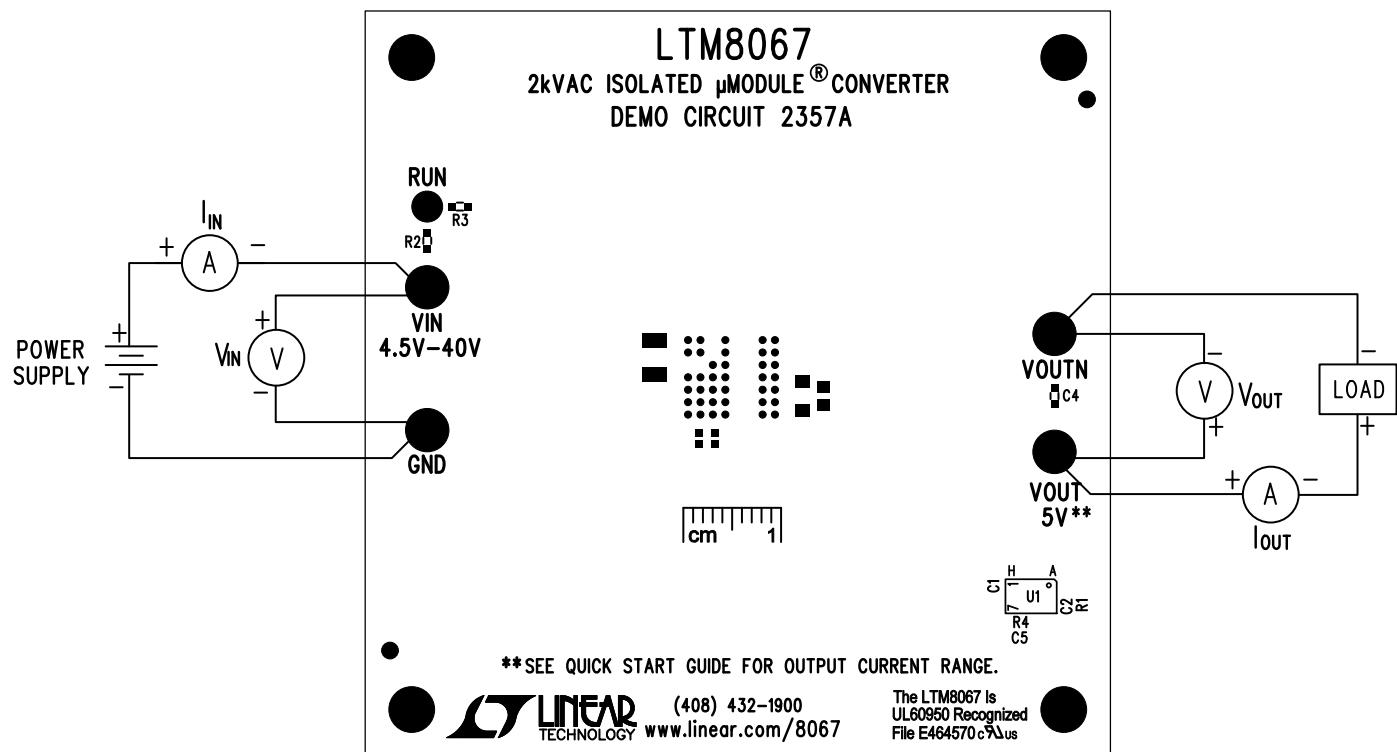


Figure 3. DC2357A Proper Equipment Setup

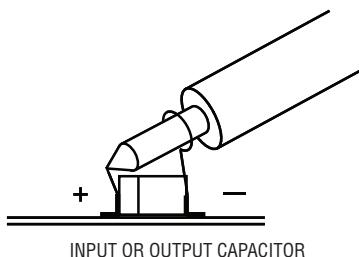


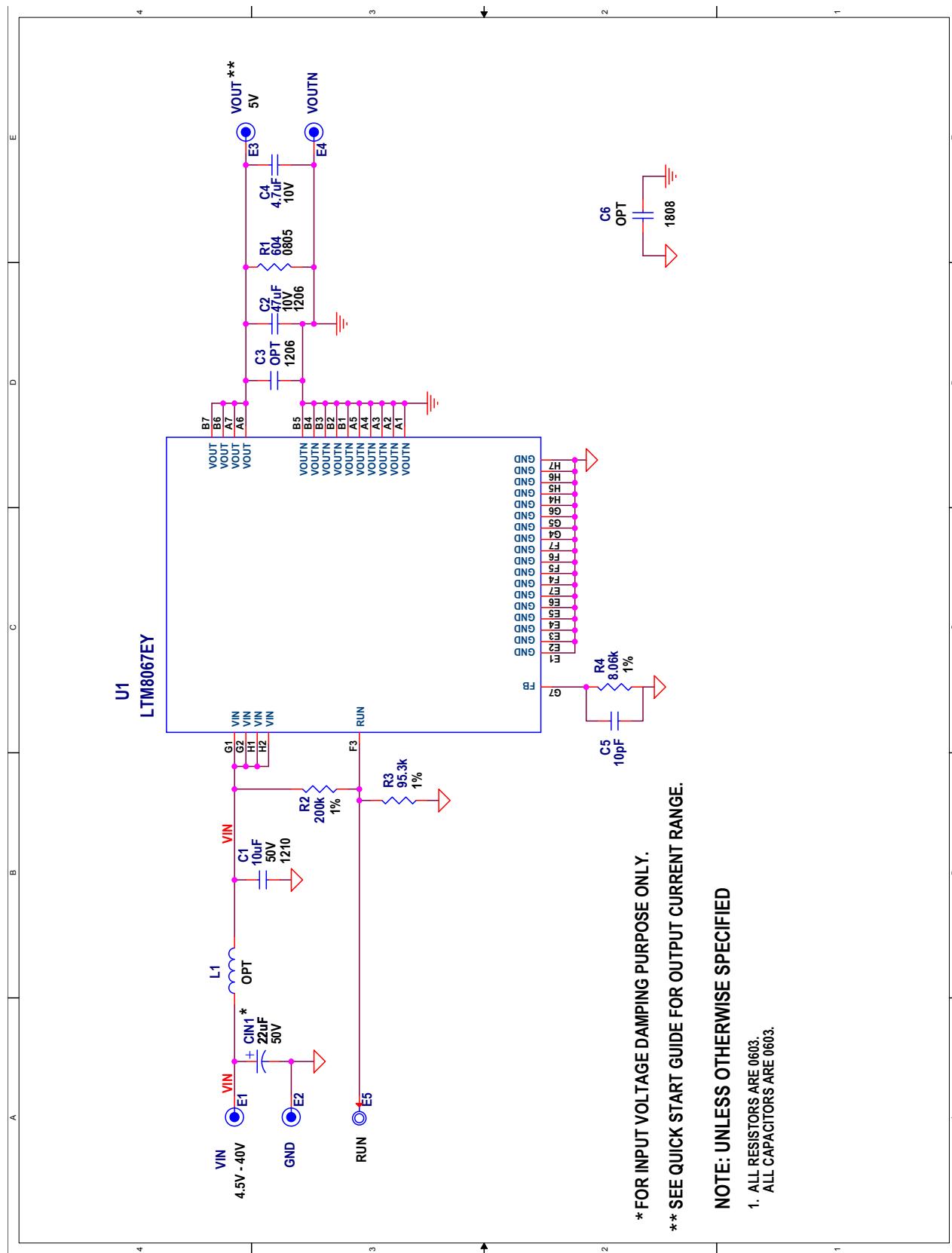
Figure 4. Measuring Input or Output Ripple

# DEMO MANUAL DC2357A

## PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
<b>Required Circuit Components</b>				
1	1	CIN1	CAP, ALUM, 22µF, 50V, 6.6x6.6mm	UNITED CHEMI-CON, EMZA500ADA220MF61G
2	1	C1	CAP, CER., 10µF, X7R, 50V, 10%, 1210	MURATA, GRM32ER71H106KA12L
3	1	C2	CAP, CER., 47µF, X5R, 10V, 10%, 1206	MURATA, GRM31CR61A476KE15L
4	1	C4	CAP, CER., 4.7µF, X5R, 10V, 10%, 0603	MURATA, GRM188R61A475KE15D
5	1	C5	CAP, CER., 10pF, NPO, 50V, 5%, 0603	MURATA, GRM1885C1H100JA01D
6	1	R1	RES, 604Ω, 1/8W, 1%, 0805	VISHAY, CRCW0805604RFKEA
7	1	R2	RES, 200k, 1/10W, 1%, 0603	VISHAY, CRCW0603200KFKEA
8	1	R3	RES, 95.3k, 1/10W, 1%, 0603	VISHAY, CRCW060395K3FKEA
9	1	R4	RES, 8.06k, 1/10W, 1%, 0603	VISHAY, CRCW06038K06FKEA
10	1	U1	I.C., LTM8067EY#PBF 9 × 11.25 × 4.92 BGA	LINEAR TECH., LTM8067EY#PBF
<b>Additional Demo Board Circuit Components</b>				
1	0	C3 (OPT)	CAP, 1206 (OPT)	
2	0	C6 (OPT)	CAP, 1808 (OPT)	
3	0	L1 (OPT)	IND., XFL3012 (OPT)	
<b>Hardware: For Demo Board Only</b>				
1	4	E1-E4	TESTPOINT, TURRET, 0.094" PBF	MILL-MAX, 2501-2-00-80-00-00-07-0
2	1	E5	TEST POINT, TURRET, 0.064" MTH HOLE	MILL-MAX, 2308-2-00-80-00-00-07-0
3	4	MH1-MH4	STAND-OFF, NYLON 0.375" SNAP ON	KEYSTONE, 8832

## SCHEMATIC DIAGRAM



\* FOR INPUT VOLTAGE DAMPING PURPOSE ONLY.

\* SEE QUICK START GUIDE FOR OUTPUT CURRENT RANGE.

NOTE: INI ESS OTHERWISE SPECIFIED

1. ALL RESISTORS ARE 0603.  
ALL CAPACITORS ARE 0603.

# DEMO MANUAL DC2357A

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