DEMO MANUAL DC1802A

LTC3245EMSE
Wide V_{IN} Range, Low Noise 250mA Buck-Boost Charge Pump

DESCRIPTION

Demonstration circuit DC1802A is a wide V_{IN} range, low noise, 250mA buck-boost charge pump featuring the LTC®3245EMSE.

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

PERFORMANCE SUMMARY

Specifications are at T_A = 25°C

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN}	Input Voltage Range		2.7		38	V
V_{OUT1}	Output Voltage	SEL2 = HIGH, SEL1 = LOW	4.80		5.20	V
V_{OUT2}	Output Voltage	SEL2 = HIGH, SEL1 = HIGH	3.168		3.432	V
V_{FB}	Feedback Voltage	SEL2 = LOW SEL1 = HIGH	1.176	1.200	1.224	V
I_{VOUT}	Output Current	V_{IN} > 5V, V_{OUT} ±4%, Burst Mode® Operation V_{IN} > 5V, V_{OUT} ±4%, Low Noise Mode			250 200	mA mA

ASSEMBLY TEST PROCEDURE

Refer to Figure 1 for the proper measurement equipment setup and jumper settings 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 VBUS or VOUT(x) and GND terminals. See Figure 2 for proper scope probe technique.

1. Set PS1 = 13V, LD1 = 0A, SEL2 = HIGH, and SEL1 = HIGH. Observe VOUT (VM2).
2. Set LD1 = 250mA. Observe VOUT (VM2).
3. Set SEL1 = LOW, LD1 = 0A. Observe VOUT (VM2).
4. Set LD1 to 250mA. Observe VOUT (VM2).
5. The value of V_{OUT} can be programmed to any desired value by populating R1 and R2.

ASSEMBLY TEST PROCEDURE

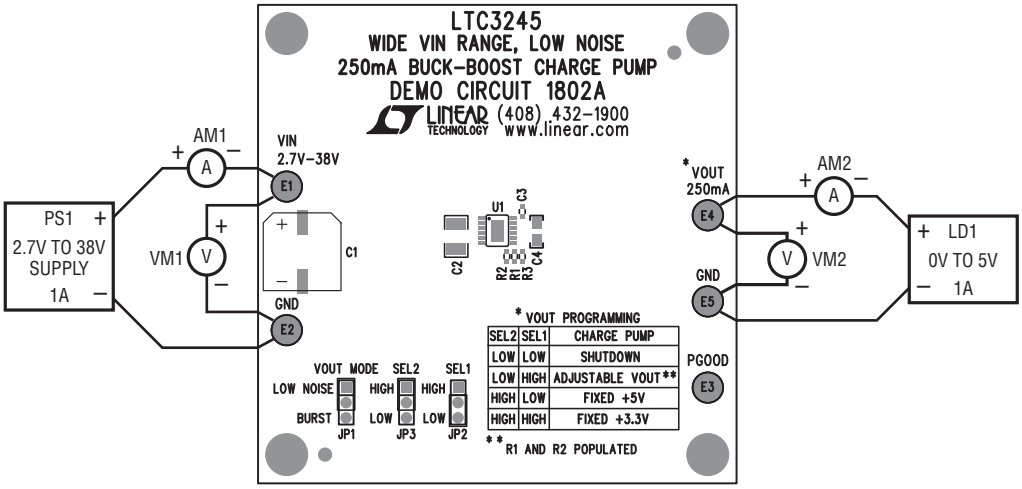


Figure 1. Proper Measurement Equipment Setup for DC1802A

Note: All connections from equipment should be Kelvin connected directly to the board pins which they are connected on this diagram and any input or output leads should be twisted pair.

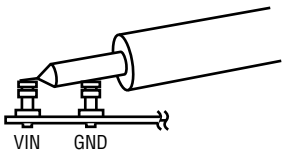


Figure 2. Measuring Input or Output Ripple

ASSEMBLY TEST PROCEDURE

Figures 3 and 4 are CISP25 radiated and conducted emissions respectively. The data were collected in a GTEM chamber and using a CISPR25 LISN for conducted emissions.

Linear Technology has made every effort to provide useful and accurate EMI data, but it remains the responsibility of the customer to ensure product compliance with applicable rules and regulations.

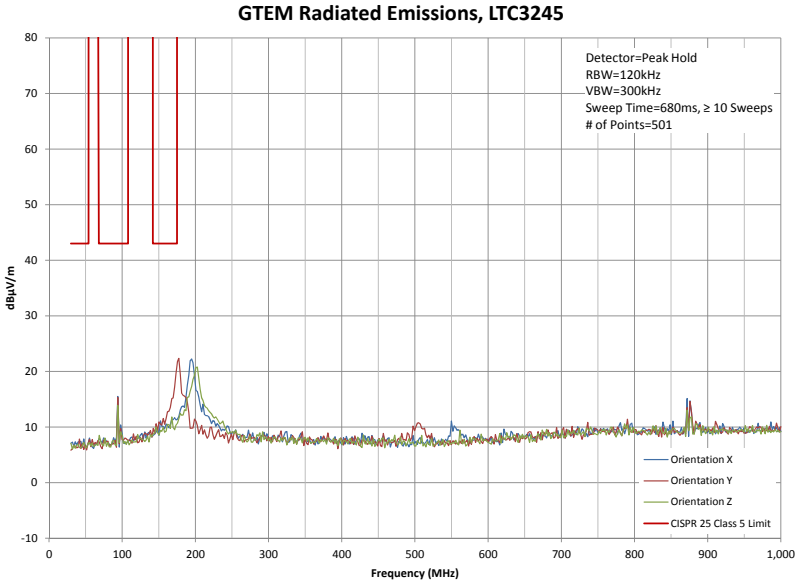


Figure 3. CISPR25 Radiated Emissions

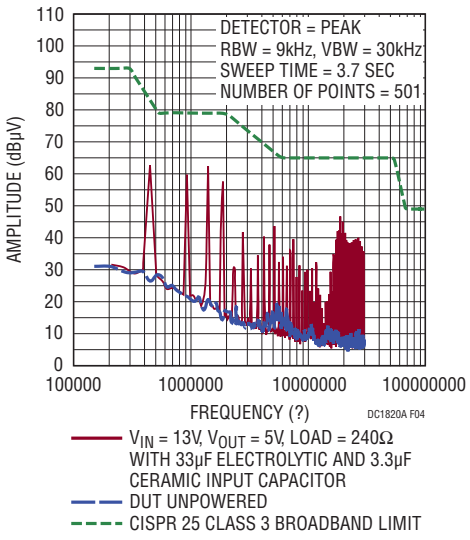
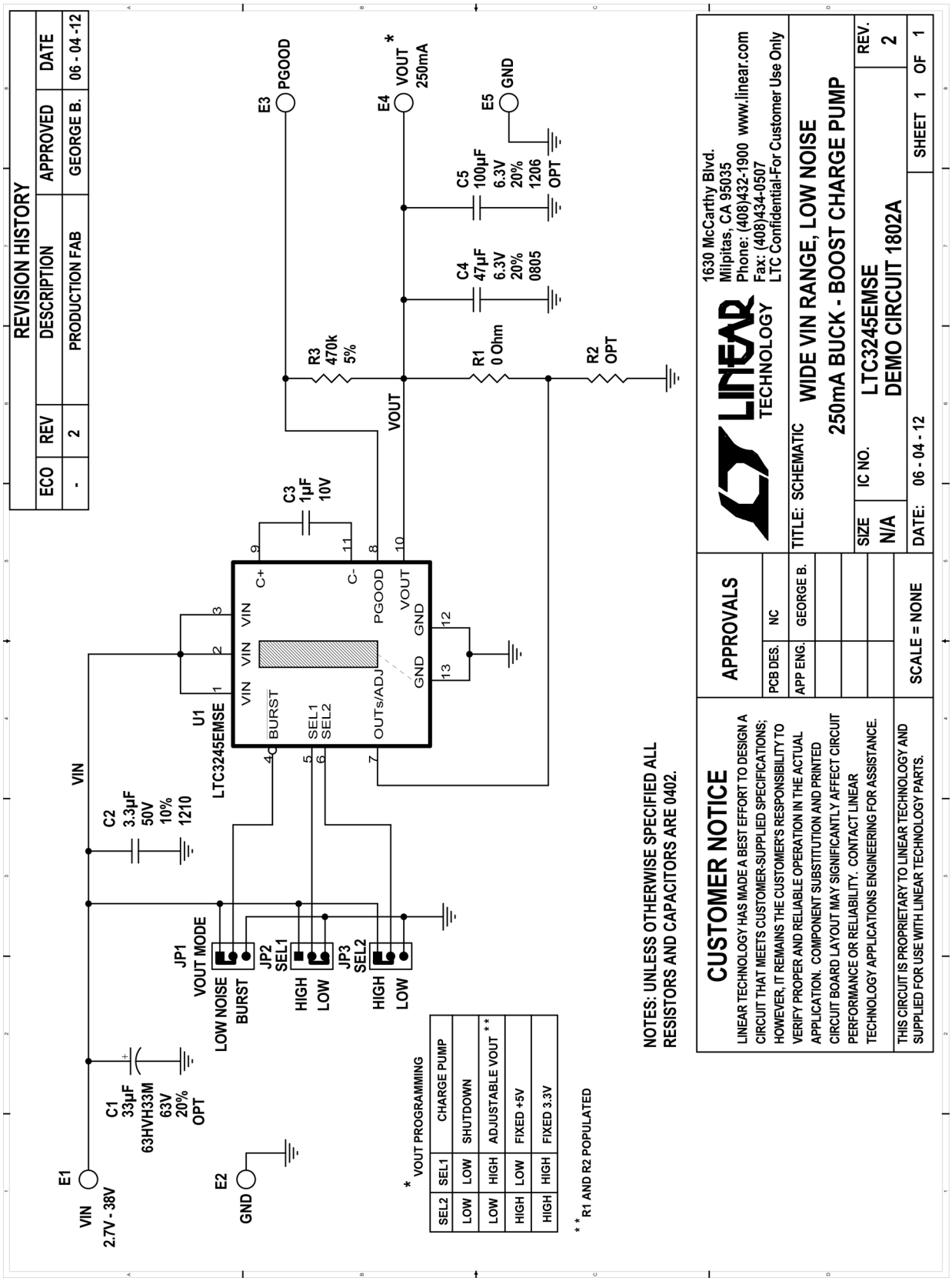


Figure 4. CISPR25 Conducted Emissions

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURE / PART #
Required Circuit Components				
1	0	C1-OPT	CAP, ELECTROLYTIC, 33µF, ±20%, 63V, 10mmX10.5mm	SUNCON, 63HVH33M
2	1	C2	CAP, CHIP, X7R, 3.3µF, ±10%, 50V, 1210	TDK, C3225X7R1H335K
3	1	C3	CAP, CHIP, X5R, 1µF, ±10%, 10V, 0402	TDK, C1005X5R1A105K
4	1	C4	CAP, CHIP, X5R, 47µF, ±20%, 6.3V, 0805	SAMSUNG, CL21A476MQYNNNB
4	0	C5-OPT	CAP, CHIP, X5R, 100µF, ±20%, 6.3V, 1206	MURATA, GRM31CR60J107ME39L
5	1	R1	RES, CHIP, 0Ω JUMPER, 1/16W, 0402	VISHAY, CRCW04020000Z0ED
6	1	U1	IC, SMT, WIDE VIN RANGE, LOW NOISE 250mA BUCK-BOOST CHARGE PUMP	LINEAR TECH., LTC3245EMSE
Additional Demo Board Circuit Components				
1	0	R2-OPT	RES, CHIP, ±1%, 1/16W, 0402	USER SUPPLIED
2	1	R3	RES, CHIP, 470k, ±5%, 1/16W, 0402	VISHAY, CRCW0402470KJNED
Hardware For Demo Board Only				
1	4	E1-E2, E4-E5	TURRET, 0.09 DIA	MILL-MAX, 2501-2-00-80-00-00-07-0
2	1	E3	TURRET, 0.061 DIA	MILL-MAX, 2308-2-00-80-00-00-07-0
3	3	JP1 JP3	3-Pin JUMPER, 2mm	SAMTEC, TMM-103-02-L-S
4	3	XJP1-XJP3	SHUNT, 2mm	SAMTEC, 2SN-KB-G
5	4		STAND-OFF, NYLON, 0.375"	KEYSTONE, 8832

SCHEMATIC DIAGRAM



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