DESCRIPTION

Demonstration Circuit 1394A is a 38V, 2A, 2.4MHz Step-Down Switching Regulator with 70µA Quiescent Current. The LT3480EDD is available in a 10-pin (3mm × 3mm) DFN surface mount package.

PERFORMANCE SUMMARY Specifications are at $T_A = 25°C$

| SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
HVIN	High Voltage Input Voltage Range	Input disabled from 38-60V	8		60	V
5V ADAPTOR	5V Adaptor Input Voltage Range		4.5		5.5	V
HVBUCK	Output Voltage Range	Range is mode and load dependant	3.5		5.5	V
I_{HVBUCK}	Output Current				2	A

QUICK START PROCEDURE

Using short twisted pair leads for any power connections, with all loads and power supplies off, refer to Figures 1 & 2 for the proper measurement and equipment setup.

A companion PMIC demo board is required for this check out procedure. The DC1303A (LTC4098EPDC) board is recommended, and will be used for the following procedure. Please refer to the DC1303A Quick Start Guide for further information.

Follow the procedure below:

1. Set PS1 to 8V, PS2 to 0V, and PS3 to 3.6V. Set Load1 to 0A. Ensure that jumpers are configured as per Figure 1, except the "D2" jumper (JP3) on the DC1303A should be set to "1".

2. Observe that 4.60V < VOUT (VM3) < 4.80V. The LT3480 HV Buck regulator is running with its control loop closed locally. The nominal HVBUCK voltage is 4.75V, and the LTC4098EPDC on the DC1303A board has connected HVBUCK to VOUT.

3. Set Load1 to 2A. Observe that 4.60V < VOUT (VM3) 4.80V. Set Load1 to 0A. The 2A load on VOUT loads HVBUCK, so the LT3480EDD is supplying 2A.

4. Set PS1 to 38V. Observe that 4.60V < VOUT (VM3) < 4.80V. The LT3480 is designed to operate from HVIN = 8V to 38V.

5. Set Load1 to 2A. Observe that 4.60V < VOUT (VM3) < 4.80V. Set Load1 to 0A. The LT3480 is now supplying 2A, while operating from 38V.

6. Set "COMP" jumper (JP2) to "REMOTE". Observe that 3.80V < VOUT (VM3) < 4.10V. The LTC4098EPDC is now controlling the LT3480 output voltage to approximately V(BAT) + 0.3V.

7. Set Load1 to 2A. Observe that 3.80V < VOUT (VM3) < 4.10V. Set Load1 to 0A. LT3480 is supplying 2A, while under LTC4098 control.

8. Set PS1 to 8V. Observe that 3.80V < VOUT (VM3) < 4.10V.

9. Set Load1 to 2A. Observe that 3.80V < (VM3) < 4.10V. Set Load1 to 0A.

10. Set PS2 to 4.5V, and "WALL" jumper (JP3) to "5V ADAPTOR". Observe that 4.40 < VOUT (VM3) < 4.50V. The LT3480 is not supplying power to VOUT. This verifies that the LTC4098 recognizes the 5V Adapator input, and connects it to VOUT.

11. Set Load1 to 1A. Observe that 4.40V < VOUT (VM3) < 4.50V. Set Load1 to 0A.

12. Set PS2 to 5.5V. Observe that 5.40V < VOUT (VM3) < 5.50V.

13. Set Load1 to 1A. Observe that 5.40V < VOUT (VM3) < 5.50V.
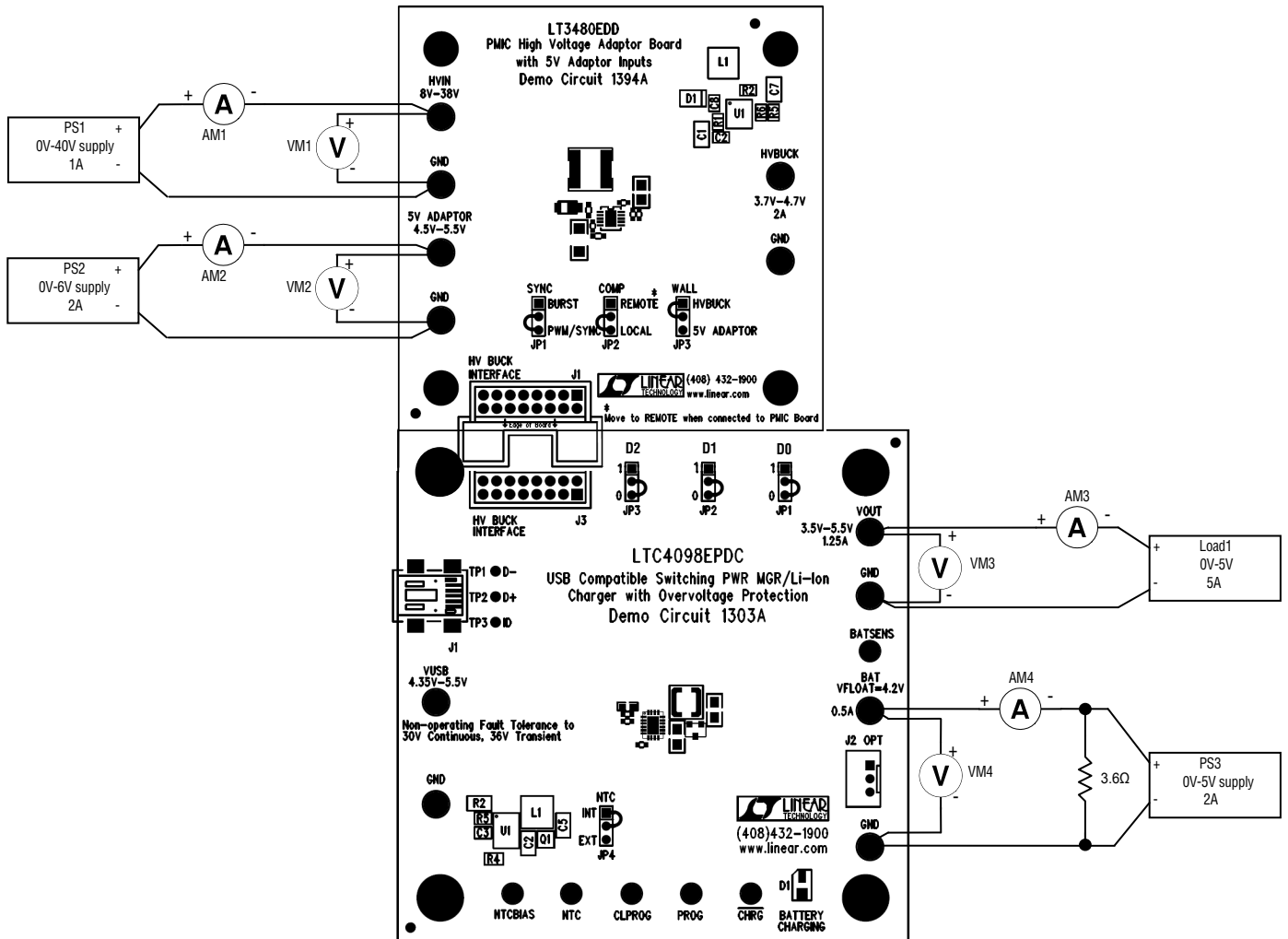
Note: All connections from equipment should be Kelvin connected directly to the Board PINS which they are connected to on this diagram and any input, or output, leads should be twisted pair

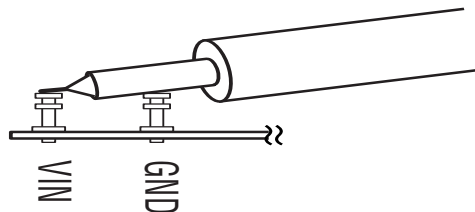**Figure 1. Proper Measurement Equipment Setup for DC1394A**

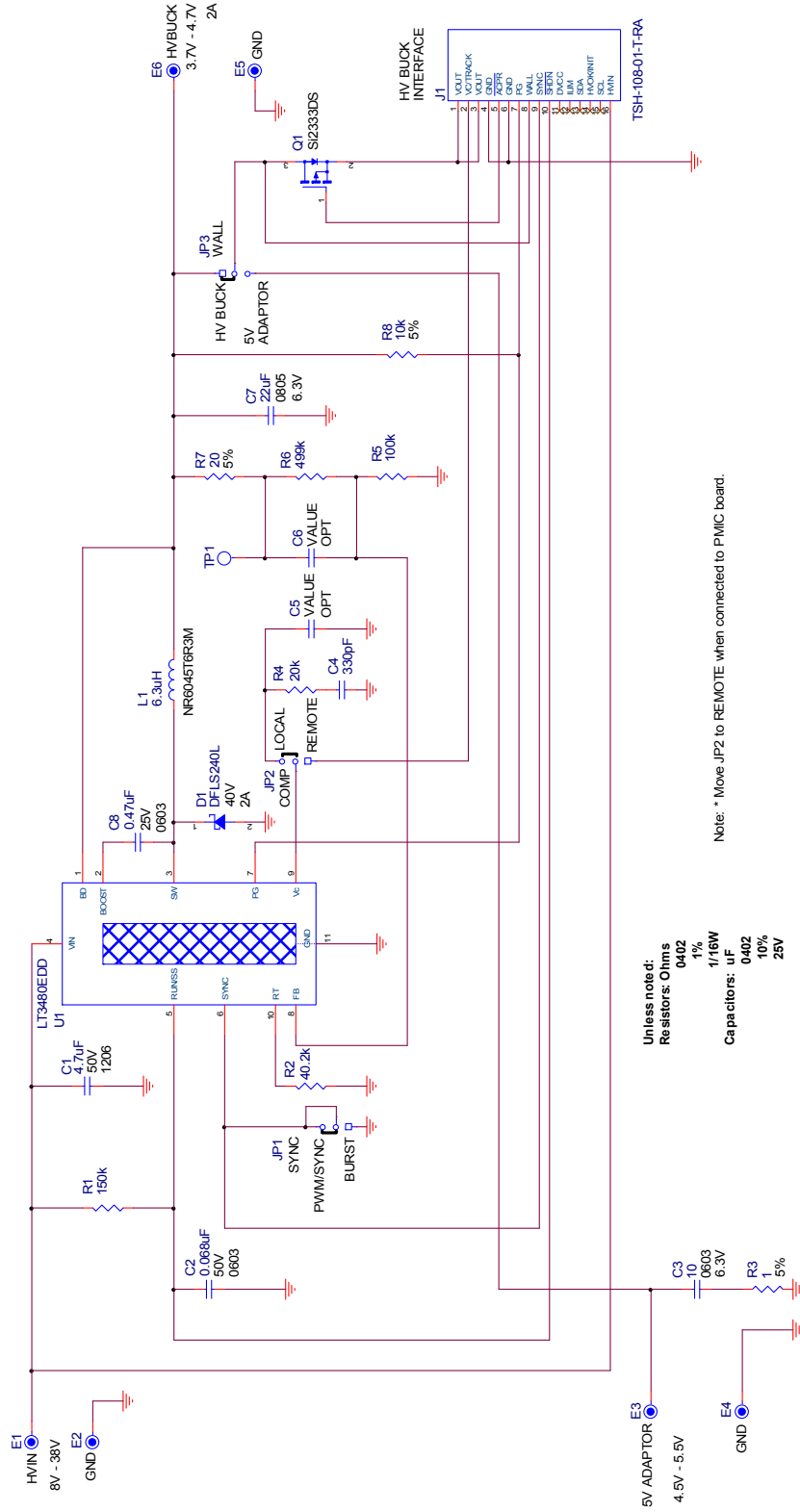**Figure 2. Measuring Input or Output Ripple**

Figure 3. DC1394A Schematic

	Qty	Reference	Part Description	Manufacture / Part #
		REQUIRED CIRCUIT COMPONENTS:		
1	1	C1	CAP, CHIP, X5R, 4.7µF, ±10%, 50V, 1206	MURATA, GRM31CR71H475KA12L
2	1	C2	CAP, CHIP, X5R, 0.068µF, ±10%, 50V, 0603	MURATA, GRM188R71H683K
3	1	C4	CAP, CHIP, BX, 330pF, 50V, 5%, 0402	VISHAY, VJ0402X331JXAA
4	1	C7	CAP, CHIP, X5R, 22µF, ±20%, 6.3V, 0805	TAIYO-YUDEN, JMK212BJ226MG
5	1	C8	CAP, CHIP, X7R, 0.47µF, ±10%, 25V, 0603	MURATA, GRM188R71E474K
6	1	D1	DIODE, SCHOTTKY, 2A, 40V, SMB	DIODES INC., DFLS240L
7	1	L1	IND, SMT, 6.3µH, 38mΩ, ±30%, 2.8A, 6.0mmX6.0mm	TAIYO-YUDEN, NR6045T6R3
8	1	Q1	MOSFET, -12V, 35mΩ, -5.3A, SOT-23	VISHAY, Si2333DS
9	1	R1	RES, CHIP, 150kΩ, 1/16W, ±1%, 0402	VISHAY, CRCW0402150KFKED
10	1	R2	RES, CHIP, 40.2kΩ, 1/16W, ±1%, 0402	VISHAY, CRCW040240K2FKED
11	1	R4	RES, CHIP, 20kΩ, 1/16W, ±1%, 0402	VISHAY, CRCW040220K0FKED
12	1	R5	RES, CHIP, 100kΩ, 1/16W, ±1%, 0402	VISHAY, CRCW0402100KFKED
13	1	R6	RES, CHIP, 499kΩ, 1/16W, ±1%, 0402	VISHAY, CRCW0402499KFKED
14	1	U1	LT3480EDD, PMIC 38V, 2A, 2.4MHz Step-Down Switching Regulator with 70µA Quiescent Current	LINEAR TECH., LT3480EDD
		ADDITIONAL DEMO BOARD CIRCUIT COMPONENTS:		
1	1	C3	CAP, CHIP, X5R, 10µF, ±10%, 6.3V, 0603	TDK, C1608X5R0J106K
2	0	C5-OPT, C6-OPT	None	User determined
3	1	R3	RES, CHIP, 1.0Ω, 1/16W, 5%, 0402	VISHAY, CRCW04021R00JNED
4	1	R7	RES, CHIP, 20Ω, 1/16W, ±5%, 0402	VISHAY, CRCW040220R0JNED
5	1	R8	RES, CHIP, 10kΩ, 1/16W, 5%, 0402	VISHAY, CRCW040210K0JNED
		HARDWARE FOR DEMO BOARD ONLY:		
1	6	E1,E2,E3,E4,E5,E6	Turret, 0.09"	MILL-MAX, 2501-2
2	1	J1	CONN, HV interface	SAMTEC, TSH-108-01-T-RA
3	3	JP1,JP2,JP3	3 Pin Jumper, 2mm	SAMTEC, TMM-103-02-L-S
4	3	JP1,JP2,JP3	2mm SHUNT	SAMTEC, 2SN-BK-G
5	4		STAND-OFF, NYLON 0.375" tall (SNAP ON)	KEYSTONE, 8832 (SNAP ON)

Figure 4. DC1394A BOM