

DESCRIPTION

Demonstration circuit 1855A is a dual, micropower, low noise and low dropout voltage linear regulator featuring the **LT3030**. The input voltages are independent for each channel of DC1855A and can range from 2.2V to 20V. Each channel has a jumper that sets the output voltage to either 1.5V, 1.8V, 2.5V, 3.3V, 5V or a voltage that is user programmed by the installation of a resistor. For channel 1 and channel 2, the maximum output currents are 750mA and 250mA and the ceramic output capacitors are 22 μ F and 10 μ F respectively. The internal reference of each channel is bypassed with a 10nF capacitor for reduced output noise. Each channel has a jumper for shutdown and a terminal for PWRGD that is pulled up to the input supply. A resistor divider can be easily added that allows precise lockout at low input voltages.

The LT3030 is well suited to applications that require sequencing between dual regulator channels, particularly microprocessor systems and instrumentation that require low noise. Systems with batteries will benefit from the low dropout of the LT3030 and its micropower operation. DC1855A features the LT3030 in a 28-lead 4mm \times 5mm QFN package. The LT3030 data sheet must be read in conjunction with this demo manual to properly use or modify demo circuit DC1855A.

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

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PERFORMANCE SUMMARY

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

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Minimum Input Voltage, V_{IN}	$V_{OUT} = 1.8\text{V}$			2.2	V
Maximum Input Voltage, V_{IN}		20			V
Output Voltage, V_{OUT}	$V_{OUT\ SELECT} = 1.5\text{V}$	1.48		1.53	V
	$V_{OUT\ SELECT} = 1.8\text{V}$	1.77		1.83	V
	$V_{OUT\ SELECT} = 2.5\text{V}$	2.45		2.56	V
	$V_{OUT\ SELECT} = 3.3\text{V}$	3.21		3.37	V
	$V_{OUT\ SELECT} = 5\text{V}$	4.86		5.12	V
Maximum Channel 1 Output Current, I_{OUT1}	$V_{IN1} = 3.3\text{V}$, $V_{OUT1} = 1.8\text{V}$	750			mA
Maximum Channel 2 Output Current, I_{OUT2}	$V_{IN2} = 3.3\text{V}$, $V_{OUT2} = 1.8\text{V}$	250			mA

QUICK START PROCEDURE

It is easy to set up demonstration circuit DC1855A to evaluate the performance of the LT3030. Refer to Figure 1 for the proper measurement equipment setup and follow the procedure below:

1. With the input supplies and loads off and turned down, make all connections according to Figure 1. Set the output voltages for channels 1 and 2 with the VOUT SELECT jumpers. Make sure the VOUTEN jumpers are in the ON positions.
2. Turn on the input supplies and increase them to the desired input voltages.

NOTE WHEN SETTING THE INPUT VOLTAGE: An input voltage that is too close to the programmed output voltage (too low) may cause dropout operation and a loss of output voltage regulation. An input voltage that is too

high above the output may increase power dissipation to an unacceptable level. Finally, a protection feature within the LT3030 reduces output current capability at higher input voltages.

3. Increase the loads to the desired output current. Verify that the output voltages are as programmed by the VOUT SELECT jumpers.

NOTE: If an output voltage is low, temporarily disconnect the load to make sure that it is not set too high.

4. Once the proper output voltages are established, adjust the input voltage and load within the operating ranges and observe the output voltage regulation, low quiescent current, shutdown and PWRGD operation and other parameters.

QUICK START PROCEDURE

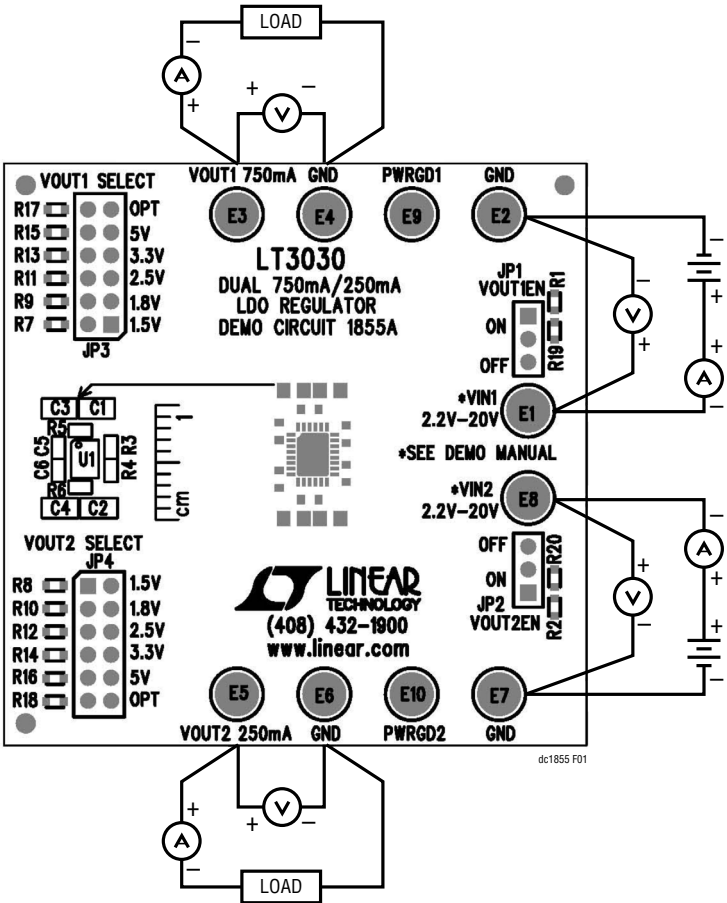


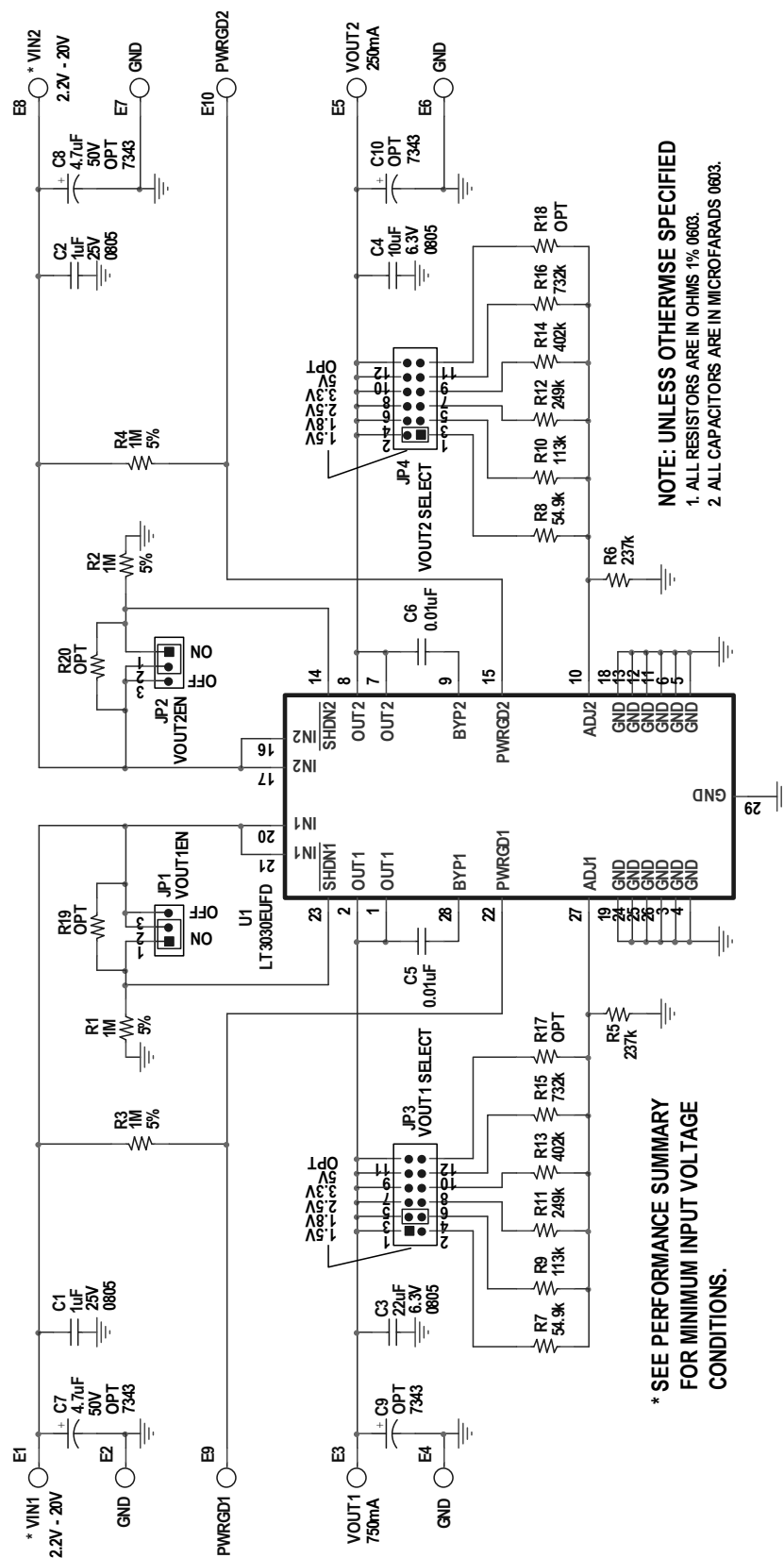
Figure 1: Proper Measurement Equipment Setup for DC1855A

DEMO MANUAL DC1855A

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	2	C1, C2	CAP, X7R, 1 μ F, 25V, 20%, 0805	TDK C2012X7R1E105M
2	1	C3	CAP, X5R, 22 μ F, 6.3V, 20%, 0805	TAIYO YUDEN, JMK212ABJ226M
3	1	C4	CAP, X5R, 10 μ F, 6.3V, 20%, 0805	AVX, 08056D106MAT
4	2	R5, R6	RES., CHIP., 237K, 1%, 1/16W, 0603	VISHAY, CRCW0603237KFKEA
5	1	R8	RES., CHIP., 54.9K, 1%, 1/16W, 0603	VISHAY, CRCW060354K9FKEA
6	1	R9	RES., CHIP., 113K, 1%, 1/16W, 0603	VISHAY, CRCW0603113KFKEA
7	1	U1	IC., LT3030EUFD, QFN28EUFD-4 \times 5	LINEAR, LT3030EUFD
Optional Demo Board Circuit Components				
1	0	C5, C6	CAP, X7R, 0.01 μ F, 25V, 10%, 0603	AVX, 06033C103KAT2A
2	0	C7, C8	CAP, OPT, TANT, 4.7 μ F, 50V, 10%, 7343	
3	0	C9, C10	CAP., OPT, 7343	
4	0	R1, R2, R3, R4	RES., 1M, 5%, 1/16W, 0603	VISHAY, CRCW06031M00JNEA
5	0	R7	RES., CHIP., 54.9k, 1%, 1/16W, 0603	VISHAY, CRCW060354K9FKEA
6	0	R10	RES., CHIP., 113k, 1%, 1/16W, 0603	VISHAY, CRCW0603113KFKEA
7	0	R11, R12	RES., CHIP., 249k, 1%, 1/16W, 0603	VISHAY, CRCW0603249KFKEA
8	0	R13, R14	RES., CHIP., 402k, 1%, 1/16W, 0603	VISHAY, CRCW0603402KFKEA
9	0	R15, R16	RES., CHIP., 732k, 1%, 1/16W, 0603	VISHAY, CRCW0603732KFKEA
10	0	R17, R18, R19, R20	RES., OPT, 0603	
Hardware: For Demo Board Only				
1	10	E1-E10	TESTPOINT, TURRET, .095"	MILL-MAX, 2501-2-00-80-00-00-07-0
2	2	JP1, JP2	3 PIN, 0.079 SINGLE ROW HEADER	SAMTEC, TMM103-02-L-S
3	2	JP3, JP4	2 \times 6, 0.079 DOUBLE ROW HEADER	SAMTEC, TMM106-02-L-D
4	4	XJP1-XJP4	SHUNT, .079" CENTER	SAMTEC, 2SN-BK-G

SCHEMATIC DIAGRAM



dc1855af

DEMO MANUAL DC1855A

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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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