

## DESCRIPTION

Demonstration circuit 865 is an ultra-low input voltage and dropout voltage supply using the LT3021 linear regulator, which comes in a 16-pin DFN package. The DC865 has an input voltage range from 1V to 10V, an output voltage range between 0.2V and 10V minus the dropout voltage, and is capable of delivering 500mA max. Due to the 0.2V reference of the LT3021, the DC865 is capable of supplying power to very low voltage applications, such as (relatively)

high current voltage references. DC865 is assembled with ceramic capacitors and demonstrates the LT3021 ability to maintain stability even with the low ESR of ceramic output capacitors.

**Design files for this circuit board are available. Call the LTC factory.**

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## QUICK START PROCEDURE

The DC865 is easy to set up to evaluate the performance of the LT3021. For proper measurement equipment configuration, set up the circuit according to the diagram in **Figure 1**.

Please follow the procedure outlined below for proper operation.

1. Before proceeding to test, insert jumper JP1 into the OFF position, and insert the output voltage select jumper into the JP2 position (0.8V output voltage option).
2. Apply 1V across  $V_{in}$  (to Gnd). Insert jumper JP1 into the ON position. Draw 10mA of load current. Measure  $V_{out}$ ; it should be 0.8V +/- 2% (0.784V to 0.816V).
3. Vary the input voltage from 1V to 10V and the load current from no load to 100mA.  $V_{out}$  should measure 0.8V +/- 4% (0.768V to 0.832V).
4. Insert jumper JP1 into the OFF position and move jumper JP2 into any of the remaining output voltage options: 1.2V, 1.5V, or 1.8V. Re-insert jumper JP1 into the ON position. Just as in the 0.8V output test, the output voltage should read  $V_{out}$  +/- 2% tolerance under static line and load conditions, and +/- 4% tolerance under dynamic line and load conditions.
5. When finished evaluating, insert jumper JP1 into the OFF position.

**Warning** - if long leads are used to power the demo circuit, the input voltage at the part could “ring”. This ringing could affect the operation of the circuit or even exceed the maximum voltage rating of the IC. To eliminate this, insert a small tantalum capacitor (for instance, an AVX part # TAJW336M016R) on the pads between the input power and return terminals on the bottom of the demo board. The (greater) ESR of the tantalum will dampen the (possible) ringing voltage due to the use of long input leads. On a normal, typical PCB, with short traces, the capacitor is not needed.

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 865

## LOW VOLTAGE VLDO LINEAR REGULATOR

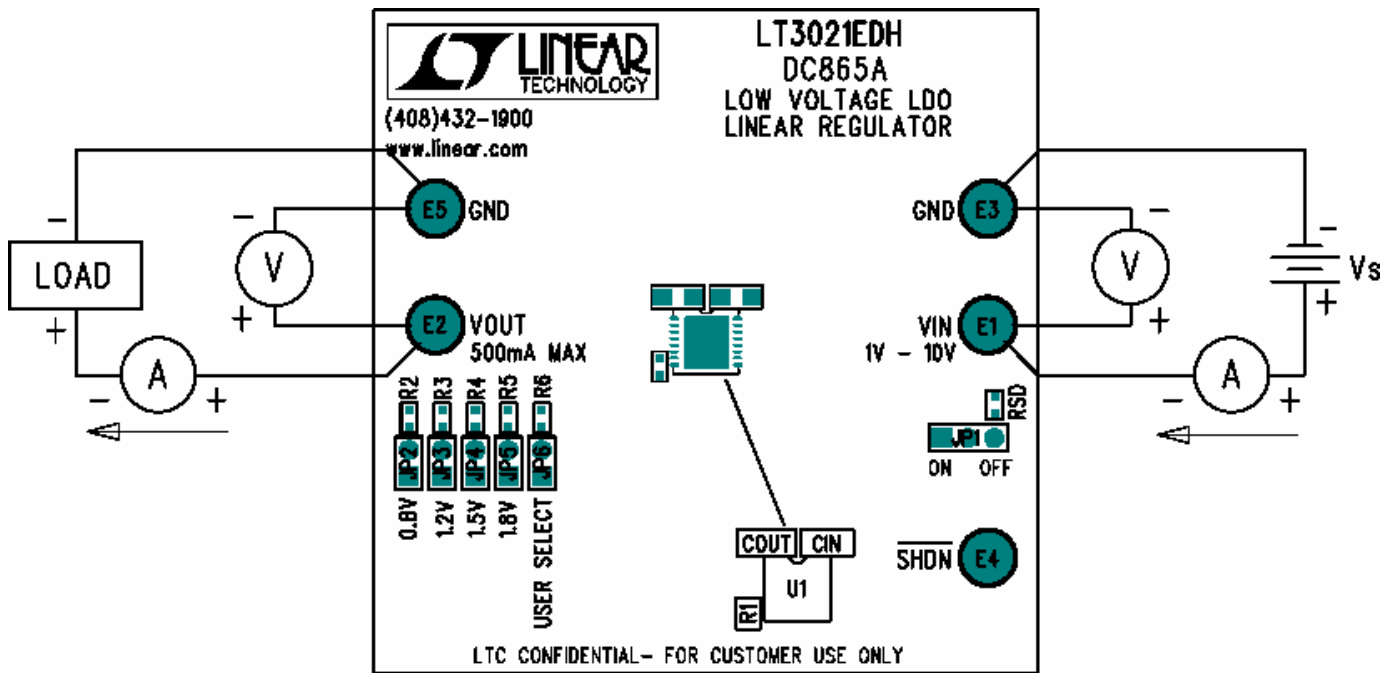


Figure1. Proper Measurement Equipment Setup

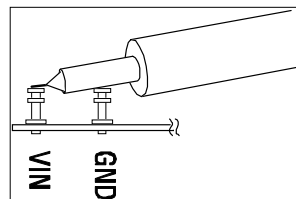


FIGURE 2. MEASURING INPUT OR OUTPUT RIPPLE

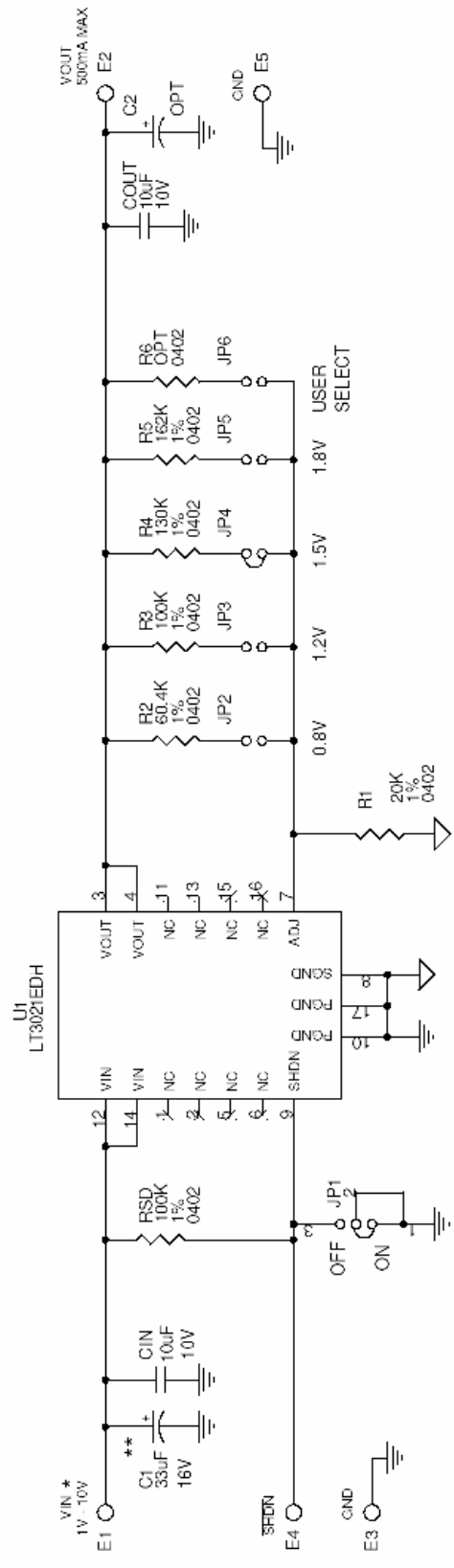
# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 865

## LOW VOLTAGE VLDO LINEAR REGULATOR

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REVISION HISTORY				
ECC	REV	DESCRIPTION	DATE	APPROVED
	2	PROTO	04/01/05	

This circuit is proprietary to Linear Technology and supplied for use with Linear Technology parts.  
**Customer Notice:** Linear Technology has made a best effort to design a circuit that meets customer-supplied specifications; however, it remains the customer's responsibility to verify proper and reliable operation in the actual application. Component substitution and printed circuit board layout may significantly affect circuit performance or reliability. Contact Linear Applications Engineering for assistance.



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APPROVALS	DATE	TITLE	
DRAWN: MEI	12/01/04	SCH, LT3021EDH, LOW VOLTAGE LDO LINEAR REGULATOR	
CHECKED:		SIZE	DWG NO
APPROVED:			DC865A
ENGINEER:		SCALE:	FILENAME: 856A.2.DSN
DESIGNER:			SHEET 1 OF 1
Wednesday, May 18, 2005			

\* 1V IS THE MINIMUM INPUT VOLTAGE THAT LT3021EDHC WILL OPERATE AT. THE MINIMUM VOLTAGE FOR A SPECIFIC REGULATOR CIRCUIT DEPENDS ON THE OUTPUT VOLTAGE (PLUS THE DROPOUT VOLTAGE).  
 \*\* FOR DEMO BOARD PURPOSES ONLY. CAPACITOR C1 IS AN OPTIONAL PART. IT WAS INSERTED ON THE DC865A TO DAMPEN THE (POSSIBLE) RINGING VOLTAGE DUE TO THE USE OF LONG INPUT LEADS. ON A NORMAL, TYPICAL PCB, WITH SHORT TRACES, THE CAPACITOR IS NOT NEEDED.

