

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT DC455

HIGH EFFICIENCY DUAL PHASE 2-OUTPUT POWER SUPPLY

LTC3707EGN

DESCRIPTION

Demonstration circuit DC455 is a dual output, step-down, synchronous buck converter featuring the 150kHz to 300kHz LTC3707EGN controller. This controller can operate with input voltages from 7V to 21V. Output 1 is

5V with loads up to 5A and output 2 is 3.3V with loads up to 5A. **Design files for this circuit board are available. Call the LTC factory.**

Table 1. Performance Summary

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		7V
Maximum Input Voltage		21V
V _{OUT1}	V _{IN} = 7V to 21V, I _{OUT1} = 0A to 5A	5V%
V _{OUT2}	V _{IN} = 7V to 24V, I _{OUT1} = 0A to 5A	3.3V%
Switching Frequency	Jumper selectable	150kHz–300kHz

QUICK START PROCEDURE

Demonstration circuit DC455 is easy to set up to evaluate the performance of the LTC3707EGN. Refer to Figure 1 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 Vin or Vout and GND terminals. See Figure 2 for proper scope probe technique.

1. With the power off, place the jumpers as shown in Figure 1.
2. Connect the desired loads to Vout1 and Vout2. The loads can be as high as 5A for Vout1 and 5A for Vout2. Pre-set the load current to 0A.
3. Set Vin to 7V (recommended). The rated input voltage range is 7V to 21V.

4. Switch on the Vout1 channel by removing the RUN1 jumper. Vout1 should be 5V ±0.1V.
5. Increase the load current of Vout1 to 5A. At 7V input voltage, the input current should be less than 4A. Slowly increase the input voltage up to 21V. At 21V input voltage, the input current should be less than 1.5A.
6. Decrease Vout1 load current to 0A. Reduce the input voltage to 7V. Switch on the Vout2 channel by removing the RUN2 jumper. The output voltage of Vout2 should be 3.3V ±0.05V.
7. Increase the load current of Vout2 to 5A. At 7V input, the input current should be less than 3A. Slowly increase the input voltage to 21V. At 21V input, the input current should be less than 1.0A.

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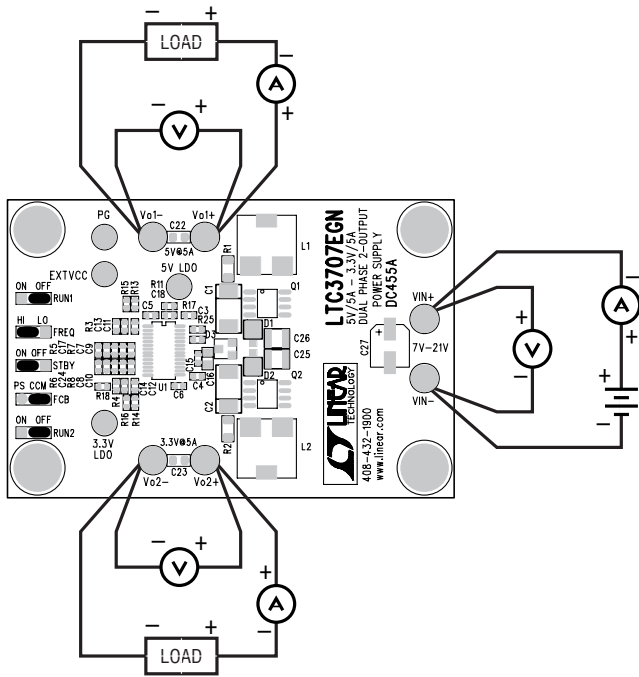


Figure 1. Proper Measurement Equipment Setup

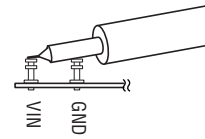
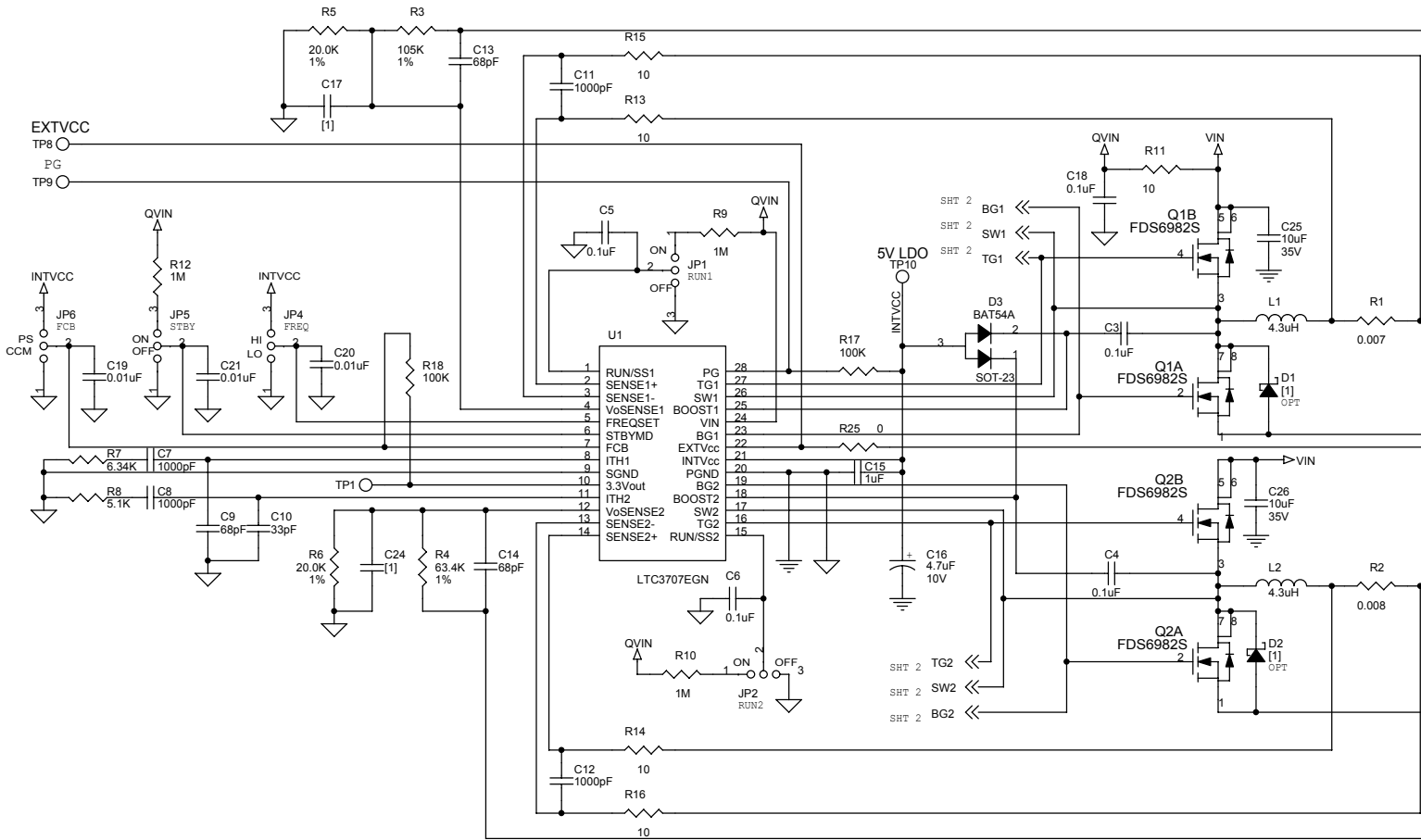

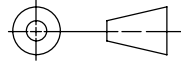


Figure 2. Scope Probe Placement for Measuring Input or Output Ripple

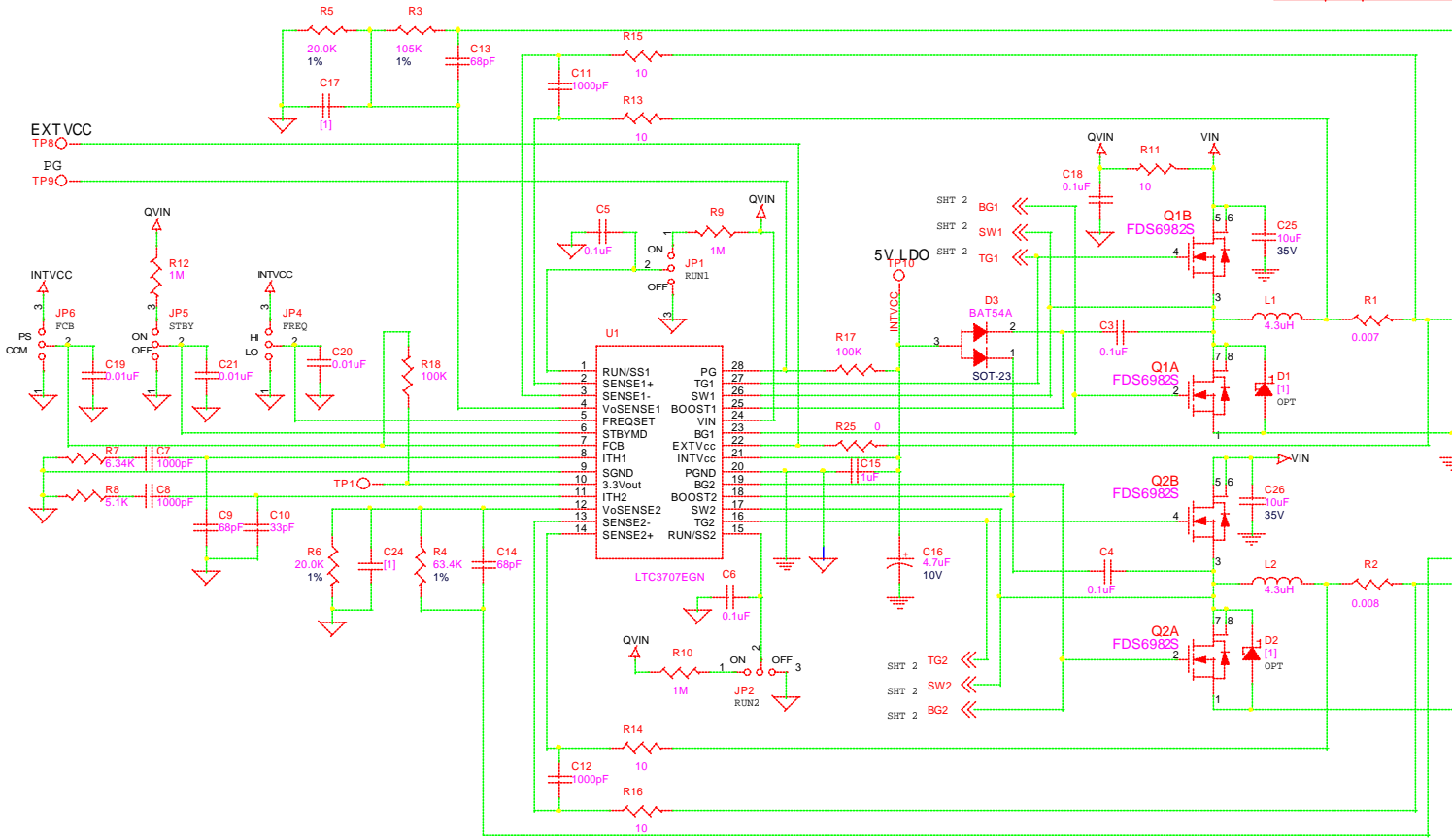
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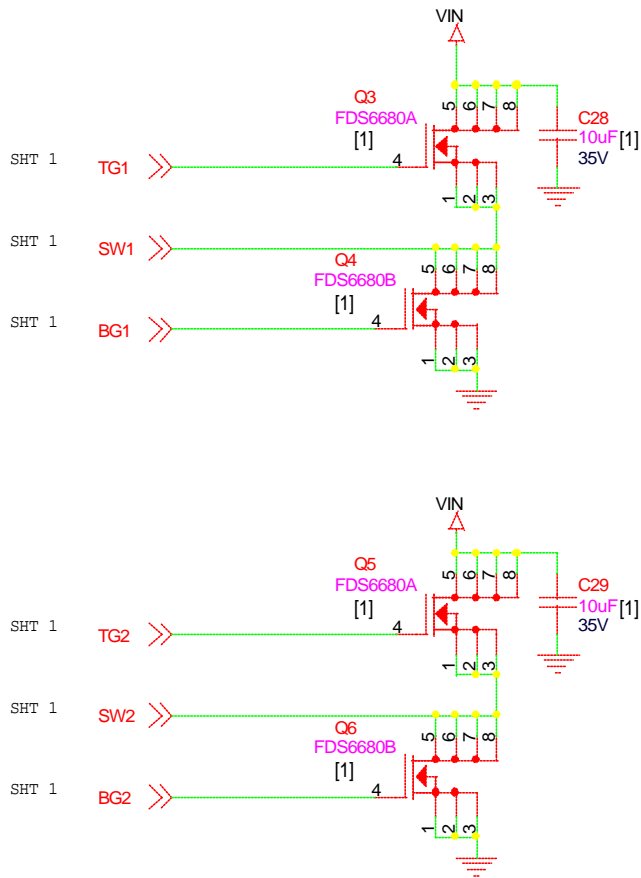
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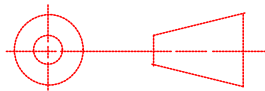
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REVISION HISTORY

ECO	REV	DESCRIPTION
	3	PRODUCTION RELEASE



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 POWER SUPPLY

SIZE A	CAGE CODE	DWG NO DC455
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Linear Technology Corporation
LTC3707EGN

Parts List

Item	Qty	Ref	Desc	
1	1	C1	CAP, SPCL PLYMR 150uF 6.3V 20% 7343	PA
2	1	C2	CAP, SPCL PLYMR 180uF 4V 20% 7343	PA
3	5	C3,C4,C5,C6,C18	CAP, X7R 0.1uF 10V 20% 0603	AV
5	3	C9,C13,C14	CAP, NPO 68pF 50V 5% 0603	AV
6	1	C10	CAP, NPO 33pF 50V 5% 0603	AV
7	4	C7,C8,C11,C12	CAP, NPO 1000pF 25V 5% 0603	AV
8	1	C15	CAP, X5R 1uF 6.3V 10% 0603	AV
9	1	C16	CAP, TANT 4.7uF 10V 20% 0805	AV
10	0	C24,C17,C28,C29	DO NOT STUFF	OP
11	3	C19,C20,C21	CAP, X7R 0.01uF 10V 10% 0603	AV
12	2	C23,C22	CAP, X5R 4.7uF 6.3V 20% 0805	TA
13	2	C25,C26	CAP, Y5V 10uF 35V 1210	MU
14	1	C27	CAP, ELECTROLYTIC 33uF 25V 20%	SA
15	0	D1,D2	DIODE, MBRM140T3 SCHOTTKY DO-216AA (OPTIONAL)	MC
16	1	D3	DIODE, BARRIER DOUBLE DIODES BAT54A SOT-23	DI
17	5	JP1,JP2,JP4,JP5,JP6	HEADER, 3PIN, 2mm	CC
18	2	L1,L2	IND, 4.3uH	SU
20	2	Q2,Q1	XSTR, FDS6982S DUAL N-FET 6.3A SO8	FA
21	0	Q3,Q5	XSTR, FDS6680A N-CHANNEL POWER MOSFET SO8 (OPTIONAL)	FA
22	0	Q4,Q6	XSTR, FDS6680B N-CHANNEL POWER MOSFET SO8 (OPTIONAL)	FA
23	1	R1	RES, 0.007 OHM 5% 1/4W 1206	IR
24	1	R2	RES, 0.008 OHM 5% 1/4W 1206	IR
25	1	R3	RES, 105K OHM 1% 1/16W 0603	AA
26	1	R4	RES, 63.4K OHM 1% 1/16W 0603	AA
27	2	R5,R6	RES, 20.0K OHM 1% 1/16W 0603	AA
28	1	R7	RES, 6.34K OHM 1% 1/16W 0603	AA
29	1	R8	RES, 5.1K OHM 5% 1/16W 0603	AA
30	3	R9,R10,R12	RES, 1M OHM 5% 1/16W 0603	AA
31	5	R11,R13,R14,R15,R16	RES, 10 OHM 5% 1/16W 0603	AA
32	2	R18,R17	RES, 100K OHM 5% 1/16W 0603	AA
33	1	R25	RES, 0 OHM 1/16W JUMPER 0603	AA
34	4	TP1,TP8,TP9,TP10	TURRET, .061	MI
35	6	TP2,TP3,TP4,TP5,TP6,TP7	TURRET, .090	MI
36	1	U1	IC, LTC3707EGN DUAL PHASE DUAL OUTPUT SYNC BUCK CONTROLLER	LIM
	4		SCREW, 4-40 1/4"	AN
	4		STANDOFF, NYLON 4-40 1/4"	?

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