

## **LTC3412 DC456 Description**

DC456 is a high efficiency, high frequency buck converter, incorporating the LTC3412 monolithic synchronous regulator. The DC456 has an input voltage range of 2.5V to 5.5V and an output voltage range from 0.8V to 5V. The operating frequency range of the DC456 is either set with an external resistor or synchronized to an external clock, with a range between 100 kHz and 1.5 MHz. Due to these features, the DC456 is ideal for Li-Ion battery voltage (2.7V to 4.2V) applications, such as PDAs, cellular phones, and digital cameras. The DC456 can deliver high(er) power – up to 2A of output current – in a relatively small circuit, because of the high current power switches (80 mΩ of on-state resistance) on the LTC3412. The LTC3412 also incorporates OPTI-LOOP compensation, so that the DC456 can be optimized to provide fast transient response over a wide range of line and load conditions. All these features make the DC456 perfectly suited for battery-powered, hand-held applications. **Design files for this circuit are available. Call the LTC Factory.**

## **LTC3412 DC456 Quick Start Guide**

Demonstration circuit 456 is easy to set up to evaluate the performance of the LTC3412. Please follow the procedure outlined below for proper operation.

1. Select the desired output voltage using jumpers JP1 thru JP4. The fixed output voltages are 1.8V, 2.5V, and 3.3V (as shown). There is also an option to set the output voltage to a custom value by inserting a resistor into the R6 pads next to jumper JP4. Refer to figure 1 for the proper circuit setup.
2. Connect the input power supply to the Vin and GND terminals on the top right-side of the board. Do not hot-plug Vin or increase Vin over the rated maximum supply voltage of 5.5V, or the part may be damaged. Refer to figure 1 for the proper measurement equipment setup.
3. Connect the load between the Vout and GND terminals on the bottom right-side of the board.
4. Select the desired operating mode using J1. To select Force Continuous mode, tie the SYNC/Mode pin to Vin by inserting the jumper into the lower position. Inserting the jumper into the upper position selects Burst Mode™ operation.
5. To shut down the circuit, connect the Run pin to GND by inserting a jumper into the upper position of J2.



<u>Item</u>	<u>Qty</u>	<u>Reference</u>	<u>Part Description</u>	<u>Manufacture / Part #</u>
1	1	CFF1	Cap., NPO 22pF 25V 10%	AVX 04023A220KAT2A
2	1	C1	Cap., NPO 100pF 25V 10%	AVX 04023A101KAT2A
3	2	CIN1,CIN2	Cap., X5R 22uF 6.3V 10%	MURATA GRM32DR60J226KA01
4	0	CIN4,COU23 (Optional)	Cap., Tant. 100uF 10V 20%	AVX TPSD107M010R0100
5	1	CITH1	Cap., X7R 1000pF 25V 10%	AVX 04023C102KAT2A
6	1	COU1	Cap., X5R 100uF 6.3V 20%	TDK C4532X5R0J107M
7	0	COU2 (Optional)	Cap., X7R 1uF 16V 20%	Taiyo Yuden EMK316BJ105ML
8	1	CSS1	Cap., X7R 470pF 25V 20%	AVX 04023C471MAT2A
9	0	D1 (Optional)	Schottky Rect., 40V/3Amp	Diodes Inc. B340A
10	4	JP1,JP2,JP3,JP4	Jumper, 2pins 2mm Ctrs.	CommConn Con. Inc. 2802S-02G2
11	2	J1,J2	Headers, 3 Pins 2mm Ctrs.	CommConn Con. Inc. 2802S-03G2
12	3	XJ1,XJ2,XJP1	Shunt, 2 Pins 2mm Ctrs.	CommConn Con Inc. CCIJ2MM-138G
13	1	L1	Inductor, 1uH	TOKO A920CY-1R0M
14	1	RITH1	Res., Chip 15K 0.06W 1%	AAC CR05-1502FM
15	1	ROSC1	Res., Chip 309K 1/16W 1%	AAC CR05-3093FM
16	1	RPG1	Res., Chip 100K 0.06W 5%	AAC CR05-104JM
17	1	RSS1	Res., Chip 4.7M 1/16W 5%	AAC CR05-475JM
18	1	R1	Res., Chip 110K 1/16W 1%	AAC CR05-1103FM
19	1	R2	Res., Chip 232K 1/16W 1%	AAC CR05-2323FM
20	1	R3	Res., Chip 75.0K 1/16W 1%	AAC CR05-7502FM
21	1	R4	Res., Chip 392K 1/16W 1%	AAC CR05-3923FM
22	1	R5	Res., Chip 576K 1/16W 1%	AAC CR05-5763FM
23	0	R6 (Optional)	Jumper, Chip O 1/16W 5%	AAC CJ05-000M
24	6	TP1-TP6	Turret, Testpoint	Mill Max 2501-2
25	1	U1	I.C., Step-Down Reg.	Linear Tech. Corp. LTC3412EFE
26	4		SCREW, #4-40, 1/4"	ANY
27	4		STANDOFF, #4-40 1/4"	MICRO PLASTICS 14HTSP101
28	1		PRINTED CIRCUIT BOARD	DEMO BOARD 456A
29	1		STENCIL	STENCIL DC456A