

LT8618C High Efficiency 65V, 100mA Synchronous Buck Regulator

DESCRIPTION

Demonstration circuit 3214A features the [LT®8618C](#), a high efficiency 65V, 100mA synchronous step-down regulator in 12-Lead 2mm × 2mm LQFN package. The demo board is designed for 100mA at 5V output from a 5.9V to 65V input, with the switching frequency programmed at 2MHz.

The LT8618C is a compact high efficiency, and high frequency synchronous monolithic step-down switching regulator, with internal soft-start capacitor, compensation network, BST and INTV_{CC} capacitors.

The operation mode can be configured via the SYNC/MODE pin for forced continuous mode, Burst Mode® operation, or spread spectrum mode. The low quiescent current and high efficiency in Burst Mode make it an ideal solution for applications requiring highest efficiency at

light load conditions, such as automotive housekeeping supplies, industrial sensors, flow meters, Internet of Things, and battery powered portable instruments.

The demo board DC3214A has an EMI filter installed. The EMI performance of the board running in spread spectrum mode is shown in Figure 2, where the red lines are CISPR25 Class 5 average limits. The circuit passes the average limit with a wide margin.

The LT8618/LT8618C data sheet gives a complete description of the part, operation, and application information. The data sheet must be read in conjunction with this demo manual. Contact ADI applications engineer for technical support.

[Design files for this circuit board are available.](#)

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PERFORMANCE SUMMARY Specifications are at T_A = 25°C

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V _{IN}	Input Supply Range		5.9	65	V	
V _{OUT}	Output Voltage		4.85	5	5.15	V
I _{OUT}	Maximum Output Current		100			mA
f _{SW}	Switching Frequency, FCM	V _{IN} = 12V, I _{OUT} = 100mA	1.85	2	2.15	MHz
EFF	Efficiency, FCM	V _{IN} = 12V, I _{OUT} = 100mA		89		%

DEMO MANUAL DC3214A

QUICK START PROCEDURE

DC3214A is easy to set up to evaluate the performance of the LT8618C. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. With power off, connect the DC power supply to VEMI or VIN and GND, and load from VOUT to GND.
2. By default, JP1 is connected to VOUT, and JP2 to FCM.
3. Turn on the power at the input. Check for the proper output voltage (5V).
4. Once the proper output voltage is established, adjust the line/load within the operating ranges and observe the output voltage regulation, ripple voltage, load transient, efficiency, and other parameters.

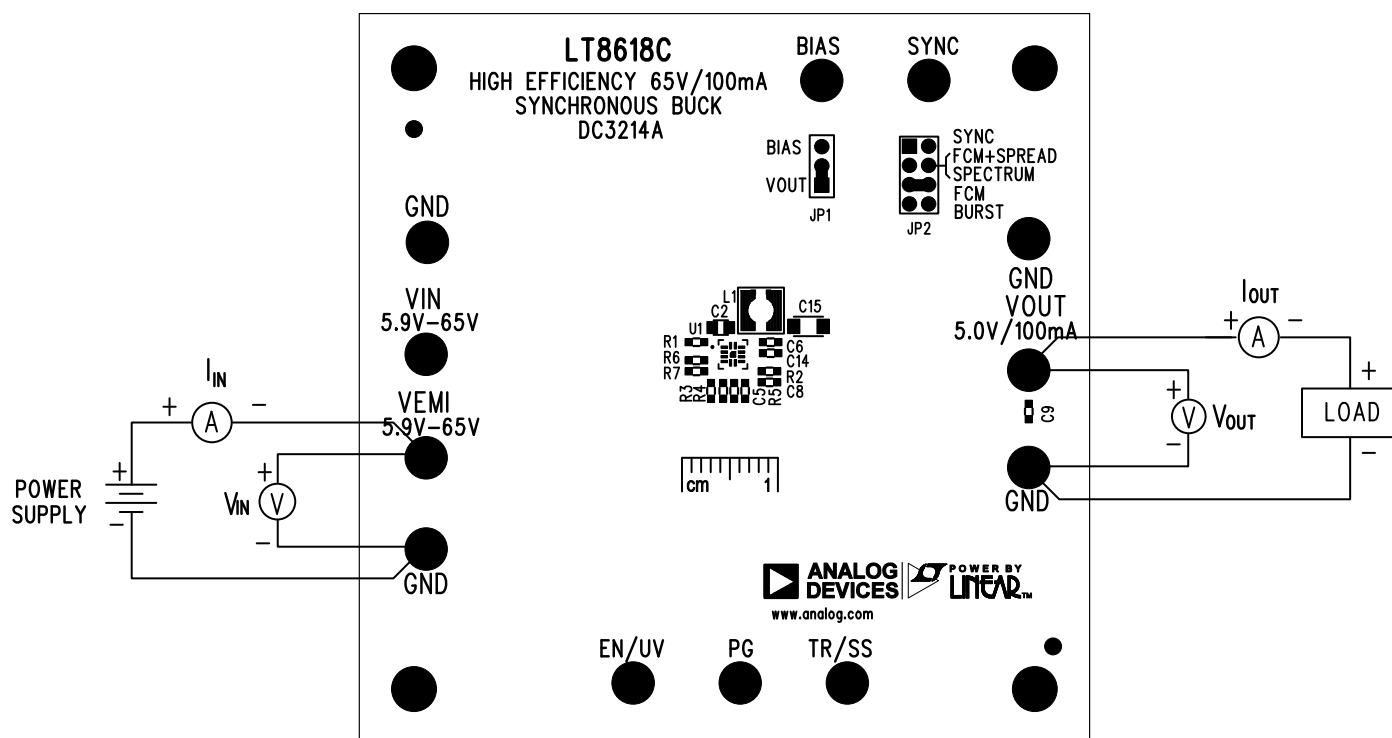


Figure 1. Proper Measurement Equipment Setup

QUICK START PROCEDURE

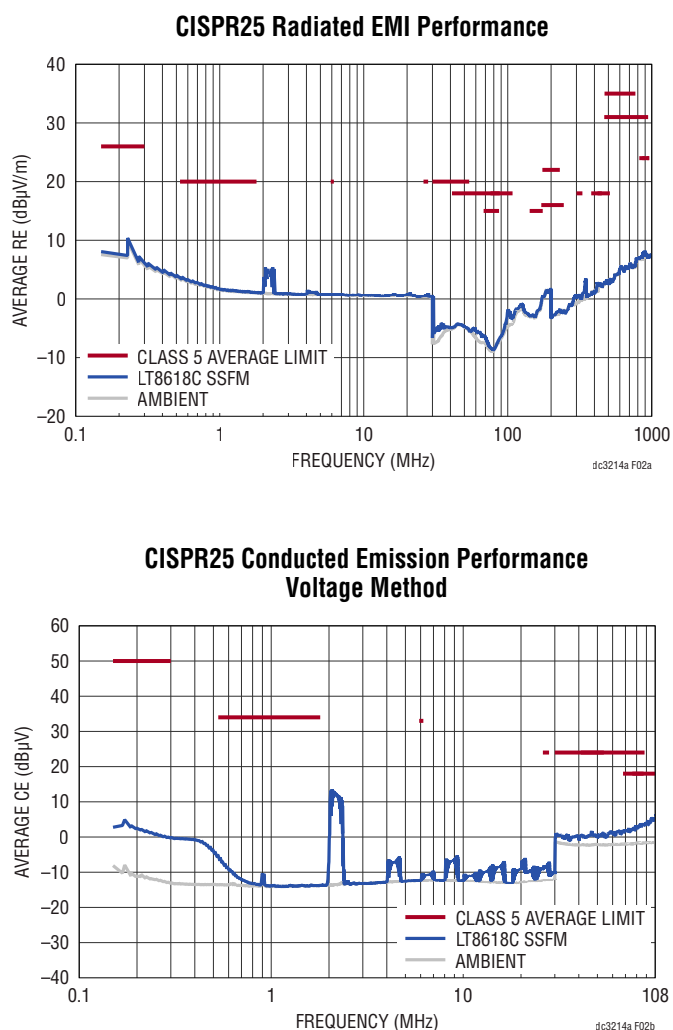


Figure 2. Conducted and Radiated EMI performance of the DC3214A. $V_{IN} = 14V$, $I_{OUT} = 100mA$, Spread Spectrum Mode

DEMO MANUAL DC3214A

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	C1	CAP., 22 μ F, ALUM. ELECT., 63V, 20%, 6.3x7.7mm, CE-BS	SUN ELECTRONIC INDUSTRIES CORP, 63CE22BS
2	3	C2, C3, C10	CAP., 1 μ F, X7S, 100V, 20%, 0805	MURATA, GRJ21BC72A105ME11L
3	1	C8	CAP., 0.01 μ F, X7R, 16V, 10%, 0603	AVX, 0603YC103KAT2A
4	1	C9	CAP., 4.7 μ F, X5R, 6.3V, 10%, 0603	KEMET, C0603C475K9PACTU
5	1	C12	CAP., 0.1 μ F, X7R, 100V, 10%, 0603	AVX, 06031C104KAT2A
6	1	C15	CAP., 22 μ F, X5R, 16V, 10%, 1206	AVX, 1206YD226KAT2A
7	1	FB1	IND., 300 Ω , FERRITE BEAD, 25%, 250mA, 0402, AEC-Q200	MMZ1005Y301CTD25
8	1	L1	IND., 47 μ H, PWR, SHIELDED, 30%, 0.39A, 940m Ω , 3816	WURTH ELEKTRONIK, 744031470
9	2	R1, R4	RES., 1M, 1%, 1/10W, 0603, AEC-Q200	VISHAY, CRCW06031M00FKEA
10	1	R2	RES., 18.2k, 1%, 1/10W, 0603, AEC-Q200	PANASONIC, ERJ3EKF1822
11	1	R3	RES., 49.9k, 1%, 1/10W, 0603	NIC, NRC06F4992TRF
12	1	R5	RES., 187k, 1%, 1/10W, 0603, AEC-Q200	PANASONIC, ERJ3EKF1873V
13	1	U1	HIGH EFFICIENCY 60V/100mA, LQFN-12	ANALOG DEVICES, LT8618CAV#TRMPBF
Additional Demo Board Circuit Components				
1	0	C5, C14	CAP., 10pF, C0G, 16V, 5%, 0603, OPT	
2	0	C6	CAP., 10 μ F, X5R, 6.3V, 20%, 0603, OPT	
5	0	R6, R7	RES., OPTION, 0603	
Hardware: For Demo Board Only				
1	12	E1-E12	TEST POINT, TURRET, 0.094" MTG. HOLE, PCB 0.062" THK	MILL-MAX, 2501-2-00-80-00-00-07-0
2	1	JP1	CONN., HDR, MALE, 1x3, 2mm, VERT, ST, THT, NO SUBS. ALLOWED	WURTH ELEKTRONIK, 62000311121
3	1	JP2	CONN., HDR, MALE, 2x4, 2mm, VERT, ST, THT	WURTH ELEKTRONIK, 62000821121
4	1	XJP1, XJP2	CONN., SHUNT, FEMALE, 2 POS, 2mm	WURTH ELEKTRONIK, 60800213421
5	4	MP1-MP4	STANDOFF, NYLON, SNAP-ON, 0.50"	WURTH ELEKTRONIK, 702935000



1. ALL RESISTORS ARE 0603.
ALL CAPACITORS ARE 0603.

CUSTOMER NOTICE



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TITLE: SCHEMATIC

IC NO.	LT8618C	SCHEMATIC NO. AND REVISION: 710-DC3214A_REV02
SKU NO.	DC3214A	

THIS CIRCUIT IS PROPRIETARY TO ANALOG DEVICES AND SUPPLIED FOR USE WITH ANALOG DEVICES PARTS.

DEMO MANUAL DC3214A



ESD Caution

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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Rev. 0