

National Semiconductor
Application Note 1339
Clinton Jensen
July 2004

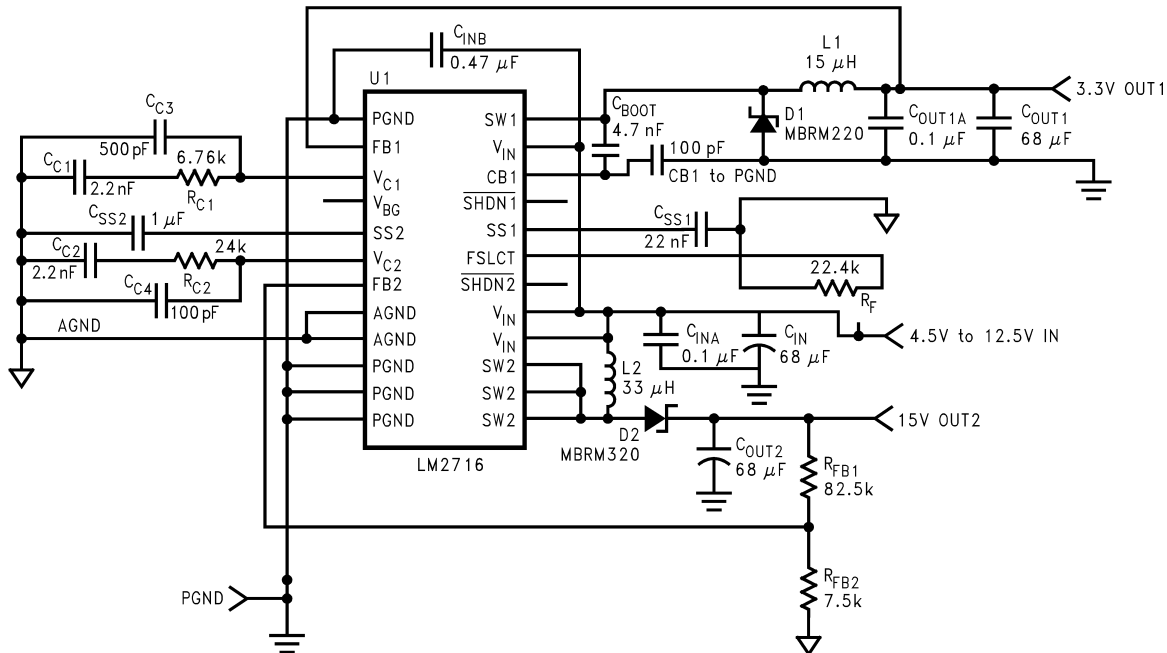


Introduction

The LM2716 is composed of two high current PWM DC/DC converters. The buck (step-down) converter provides a fixed 3.3V output at up to 1.6A. The boost (step-up) converter contains a 3.6A switch and is adjustable up to 20V output. The LM2716 evaluation board is designed for 3.3V output at up to 1.6A and 15V output with an input voltage range of

4.5V to 12.5V. The 15V output is capable of supplying approximately 800mA at 5V input and approximately 2A at 12V input. The board is ideally set up for TFT display power applications or any other application requiring 3.3V and 15V. The 15V output may be changed to fit other applications as desired. The schematic, layout, and bill of materials used follows:

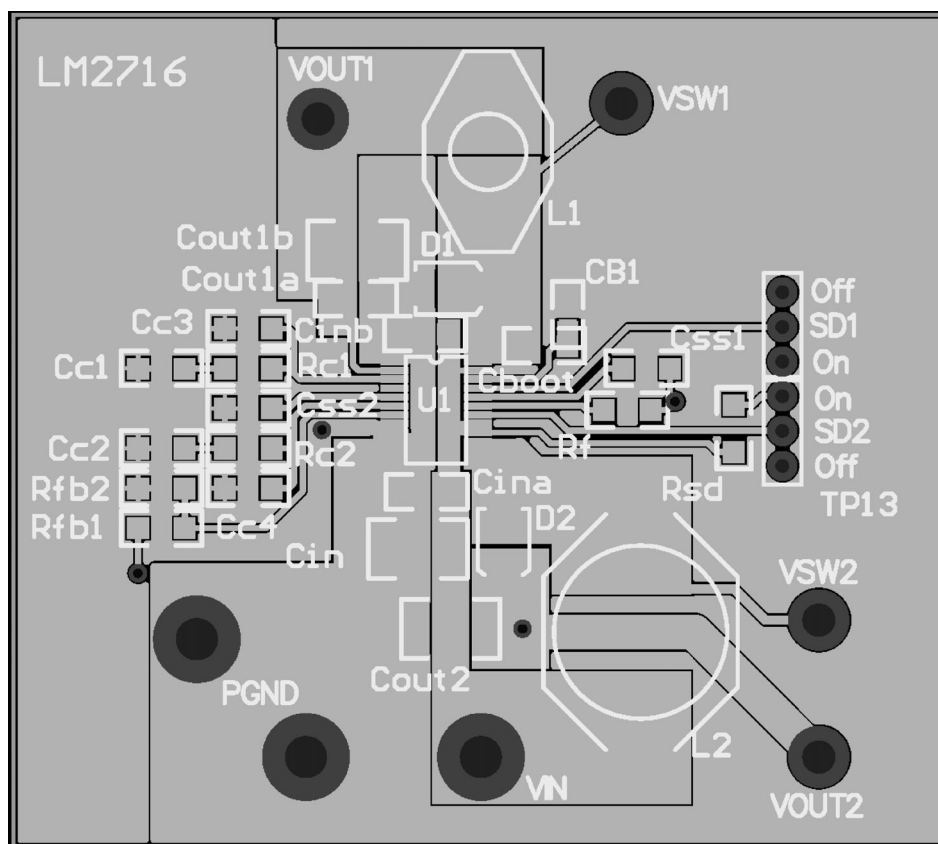
Schematic and Layout



Schematic

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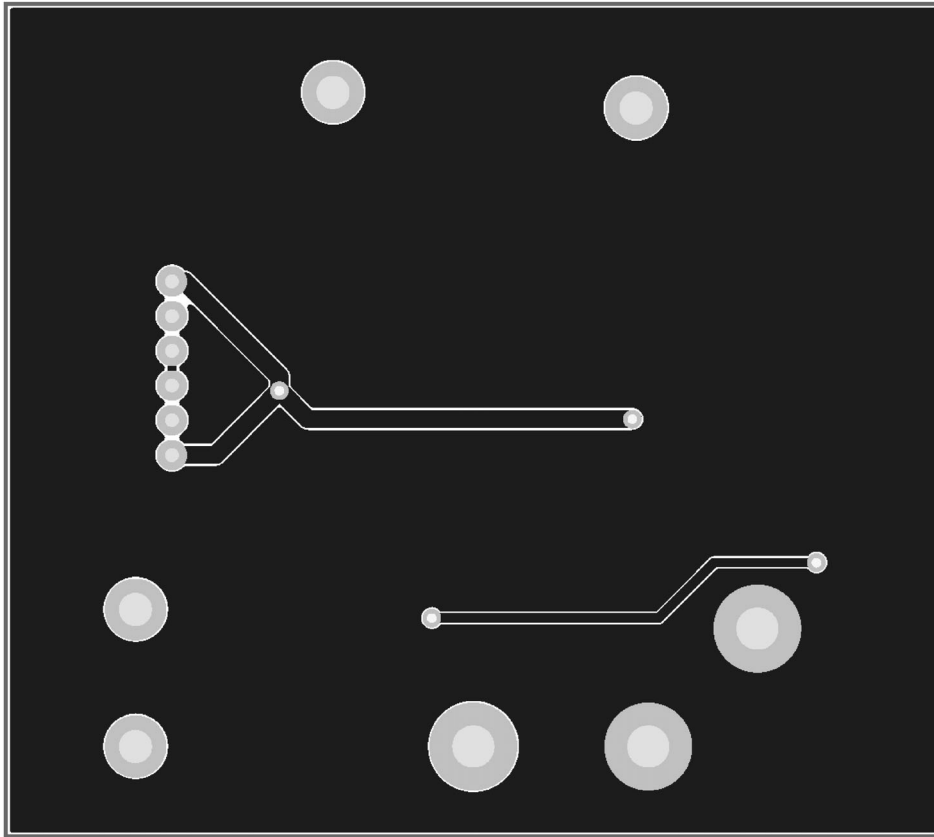
Schematic and Layout (Continued)



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Layout, Top Layer

Schematic and Layout (Continued)



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Layout, Bottom Layer

Bill of Materials

Designator	Component	Manufacturer
U1	LM2716MT-ADJ, TSSOP-24	National Semiconductor
L1	15 μ H, DO3316P-153	Coilcraft
L2	33 μ H, DO5022P-333	Coilcraft
C _{IN} , C _{OUT2}	68 μ F, 20V Tantalum, 293D686X9020D	Vishay
C _{INA} , C _{OUT1A}	0.1 μ F, Ceramic, VJ1206Y104KXX	Vishay
C _{INB}	0.47 μ F Ceramic, VJ1206Y474KXX	Vishay
C _{OUT1B}	68 μ F, 10V Tantalum, 293D686X9010D	Vishay
D1, D2	2A, 40V Schottky, MBRS240LT	On Semiconductor
C _{SS1}	22 nF, 1206 Case, VJ1206Y223KXA	Vishay
C _{SS2}	1 μ F, Ceramic, VJ1206Y105KXJ	Vishay
C _{BOOT}	4.7 nF, 1206 Case, VJ1206Y472KXA	Vishay
C _{C1} , C _{C2}	2.2 nF, 1206 Case, VJ1206Y222KXA	Vishay
C _{C3}	470 pF, 1206 Case, VJ1206A471KXA	Vishay
C _{C4} , CB1 (Only required for inputs higher than 10V)	100 pF, 1206 Case, VJ1206A101KXA	Vishay
R _{C1}	6.81k, 1206 Case, CRCW12066811F	Vishay
R _{C2}	24k, 1206 Case, CRCW12062402F	Vishay
R _F	22.6k, 1206 Case, CRCW12062262F	Vishay
R _{sd}	150k, 1206 Case, CRCW12061503F	Vishay
R _{FB1}	82.5k, 1206 Case, CRCW12068252F	Vishay
R _{FB2}	7.5k, 1206 Case, CRCW12067501F	Vishay

Bill of Materials (Continued)

Designator	Component	Manufacturer
Test Posts (7)	160-1026-02-01-00	Cambion

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