



1.0 Design Specifications

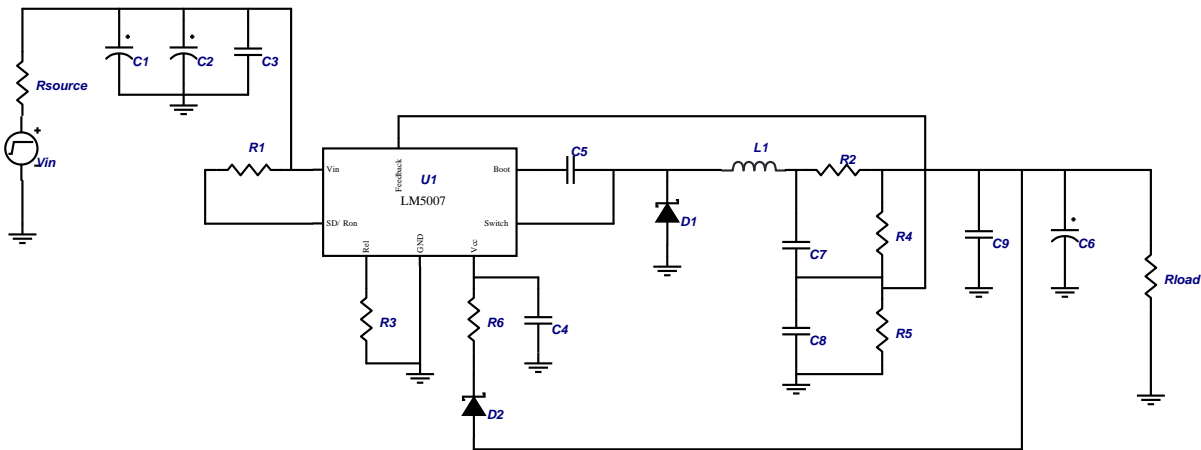
Inputs	Outputs #1
VinMin=18	Vout1=13
VinMax=42	Iout1=0.07

2.0 Design Description

This design employs the LM5007 step-down switching regulator. The LM5007 features all of the functions needed to implement low cost, efficient, Buck bias regulators. This high voltage regulator contains an 80 V, 0.7A N-Channel Buck Switch. The device is easy to apply and is provided in the MSOP-8 and the thermally enhanced LLP-8 packages. The regulator is based on a hysteretic control scheme using an on time inversely proportional to VIN. This feature allows the operating frequency to remain

relatively constant with load and input voltage variations. The hysteretic control requires no control loop compensation, while providing very fast load transient response. An intelligent current limit is implemented in the LM5007 with forced off time that is inversely proportional to VOUT. This current limiting scheme reduces load current foldback. Additional protection features include: Thermal Shutdown, Vcc undervoltage lockout, gate drive undervoltage lockout, and Max Duty Cycle limiter.

3.0 Schematic



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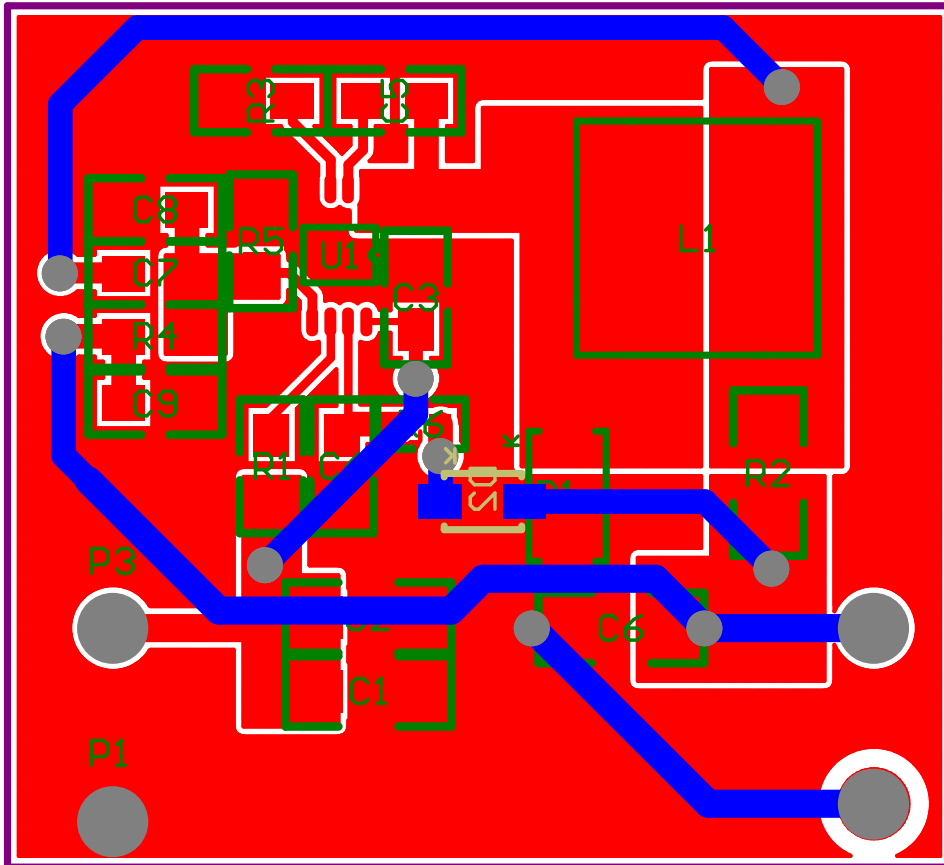
FIGURE 1. Example Schematic Showing Connection for all Components.

4.0 Bill Of Materials

Part	Manufacturer	Part#	Attributes
C1	TDK	C3216X7R1H474	470n F
C2	TDK	C3216X7R1H474	470n F
C3	Vishay	VJ0805Y104KXXA	0.1u F
C4	Vishay	VJ0805Y104KXXA	0.1u F
C5	Vishay	VJ0805Y104KXXA	0.1u F
C6	TDK	C3216X7R1H474	10u F
C7	TDK	C3216X7R1C106	470p F
C8	NOT INSERTED	NOT INSERTED	
C9	NOT INSERTED	NOT INSERTED	

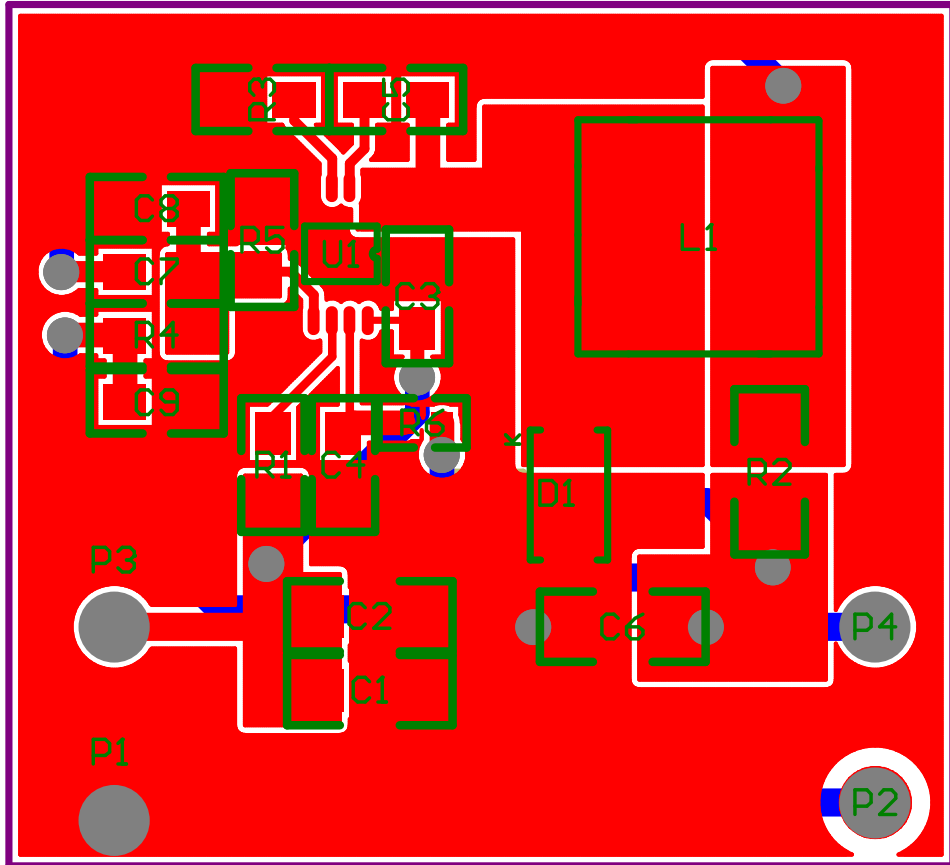
Part	Manufacturer	Part#	Attributes
D1	Diodes Inc	B1100	0.79 V
D2	ONSEMI	BAT54H	0.32 V
L1	Pulse	P1167-474	353u H, 1688m Ohms
R1	Vishay	CRCW08051403F	140k Ohms
R2	Vishay	CRCW08051R00F	1 Ohms
R3	Vishay	CRCW08051003F	100k Ohms
R4	Vishay	CRCW08058451F	8.45k Ohms
R5	Vishay	CRCW08052001F	2k Ohms
R6	Vishay	CRCW08050000F	0 Ohms
U1	National Semiconductor	LM5007	

5.0 Layout



PADC_NSC0509_lo_1

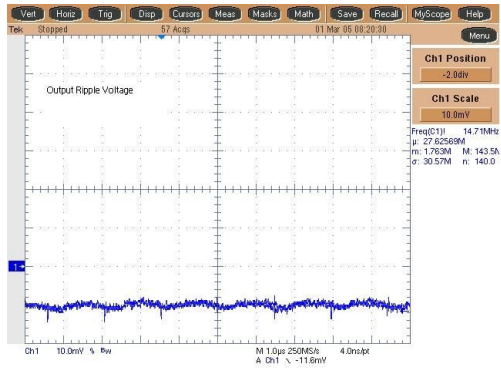
FIGURE 2. Board's Bottom View



PADC_NSC0509_lo_2

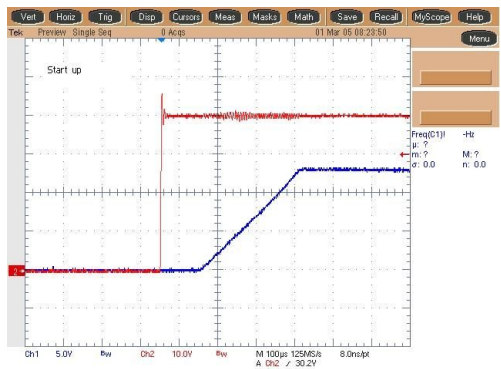
FIGURE 3. Board's Top View

6.0 Waveforms



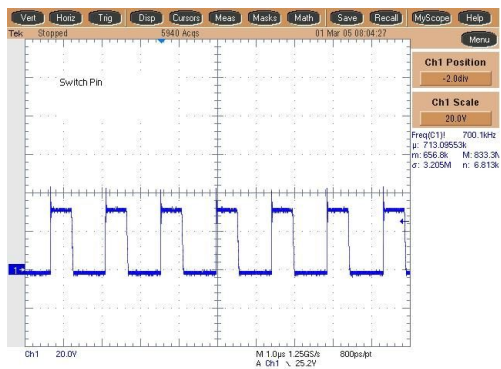
PADC_NSC0509_wf_3

FIGURE 4. Output Voltage Ripple



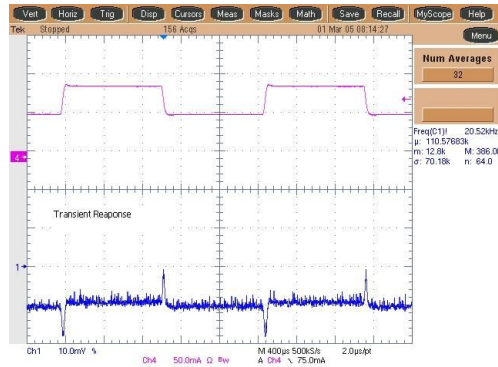
PADC_NSC0509_wf_4

FIGURE 5. Start Up



PADC_NSC0509_wf_5

FIGURE 6. Switch Pin



PAD_C_NSC0509_wf_6

FIGURE 7. Transient Response

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new.feedback@nsc.com
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**National Semiconductor Europe
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Email: europe.support@nsc.com
Deutsch Tel: +49 (0) 69 9508 6208
English Tel: +49 (0) 870 24 0 2171
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**National Semiconductor Asia
Pacific Customer Support Center**
Email: ap.support@nsc.com

**National Semiconductor Japan
Customer Support Center**
Fax: 81-3-5639-7507
Email: jpn.feedback@nsc.com
Tel: 81-3-5639-7560