



## 1.0 Design Specifications

Inputs	Outputs #1
VinMin=12	Vout1=-12
VinMax=12	Iout1=1.5

## 2.0 Design Description

This design uses a buck-boost topology. The LM3485 is a hysteretic step-down controller operating around 300kHz in steady state and converts the output voltage to -12V. This design is known for its simplicity and fast transient response. Another benefit is high efficiency operation at light loads without an increase in output ripple.

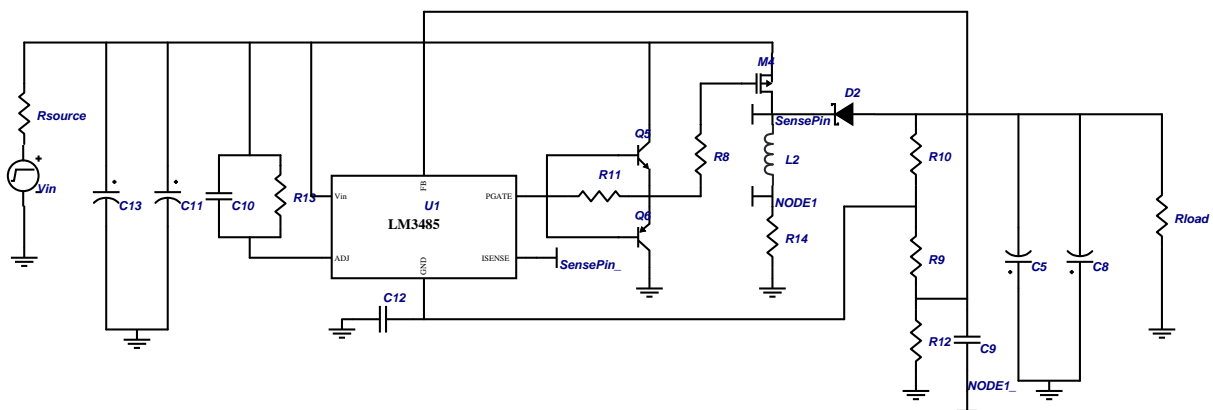
Ripple voltage generated across R14 is sensed by the feedback pin. C9 will allow the high frequency ripple to appear

across the feedback pin without being attenuated by R9 & R12.

The output load can be changed by adjusting the voltage divider R9 & R12.

Notes: Please note that M4 in the schematic is designated as Q4 in the layout.

## 3.0 Schematic



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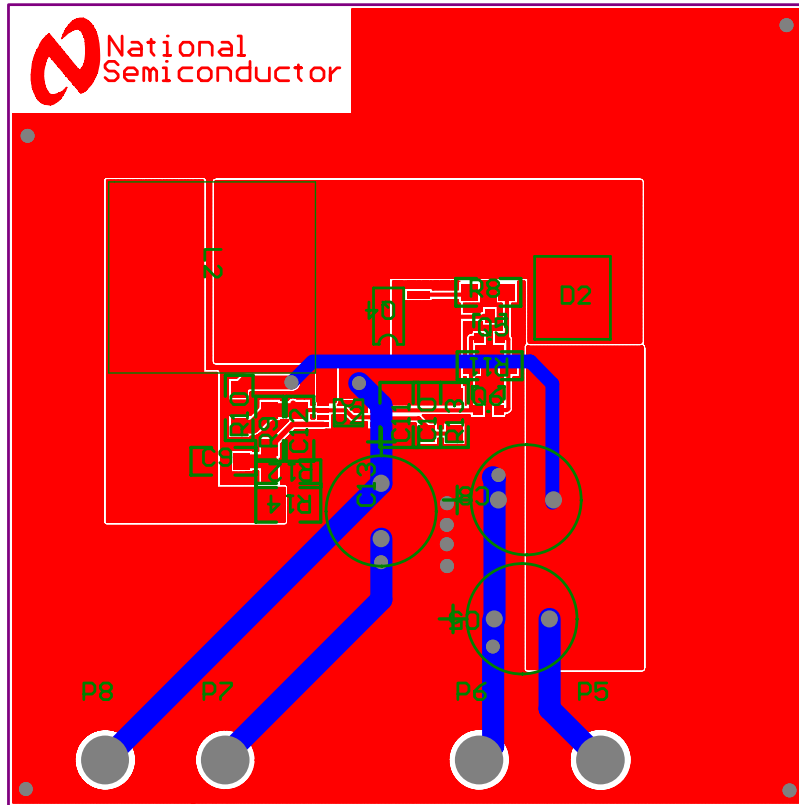
FIGURE 1. Example Schematic Showing Connection for all Components.

## 4.0 Bill Of Materials

Part	Manufacturer	Part#	Attributes
C10	TDK	C3216X7R1C105K	1u F
C11	TDK	C3216X7R1C105K	1u F
C12	TDK	C3216X7R1C105K	1u F
C13	Sanyo	16MV1000WG	1000u F
C5	TDK	C3216X7R1C105K	1u F
C8	Sanyo	16MV1000WG	1000u F, 0.039 Ohms
C9	Vitramon	VJ1206A102KXA	1n F
D2	ONSEMI	MBRS240T3	0.5 V
L2	TDK	SLF12575T-330M3R2	33u H, 0.0474 Ohms
M4	Siliconix	SI4431ADY	
Q5	ONSEMI	MMBT4401LT1	

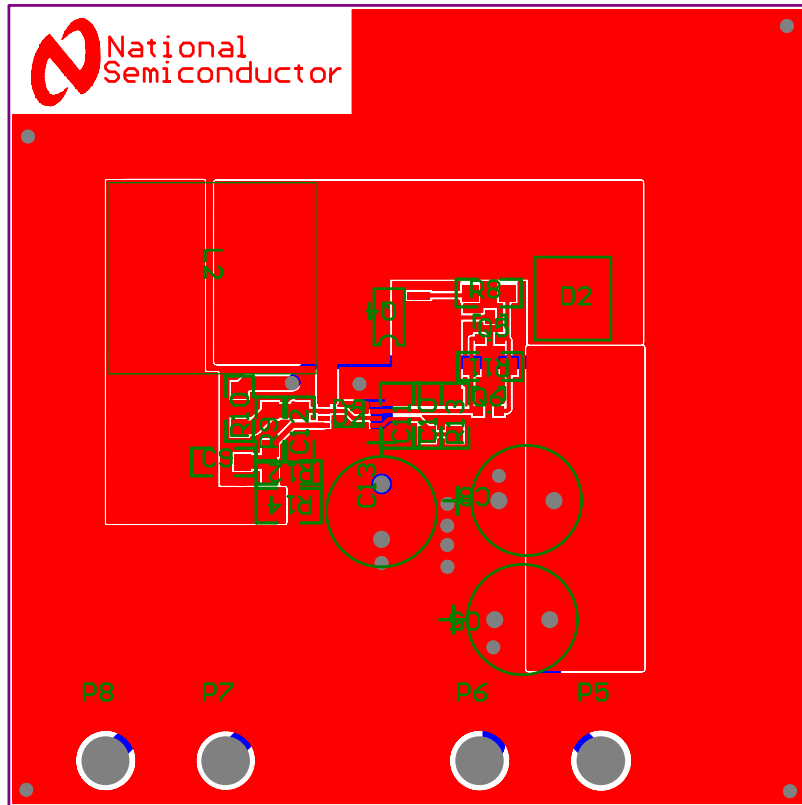
Part	Manufacturer	Part#	Attributes
Q6	ONSEMI	MMBT4403LT1	
R10	Dale	CRCW120610R0F	10 Ohms
R11	Dale	CRCW12061001F	1k Ohms
R12	Dale	CRCW12061782F	17.8k Ohms
R13	Dale	CRCW120618252F	82.5k Ohms
R14	Dale	WSL-1210 .025	0.025 Ohms
R8	Dale	CRCW12064R7J	4.7 Ohms
R9	Dale	CRCW12062051F	2.05k Ohms
U1	National Semiconductor	LM3485	

## 5.0 Layout



PADC\_NSC0102\_1o\_1

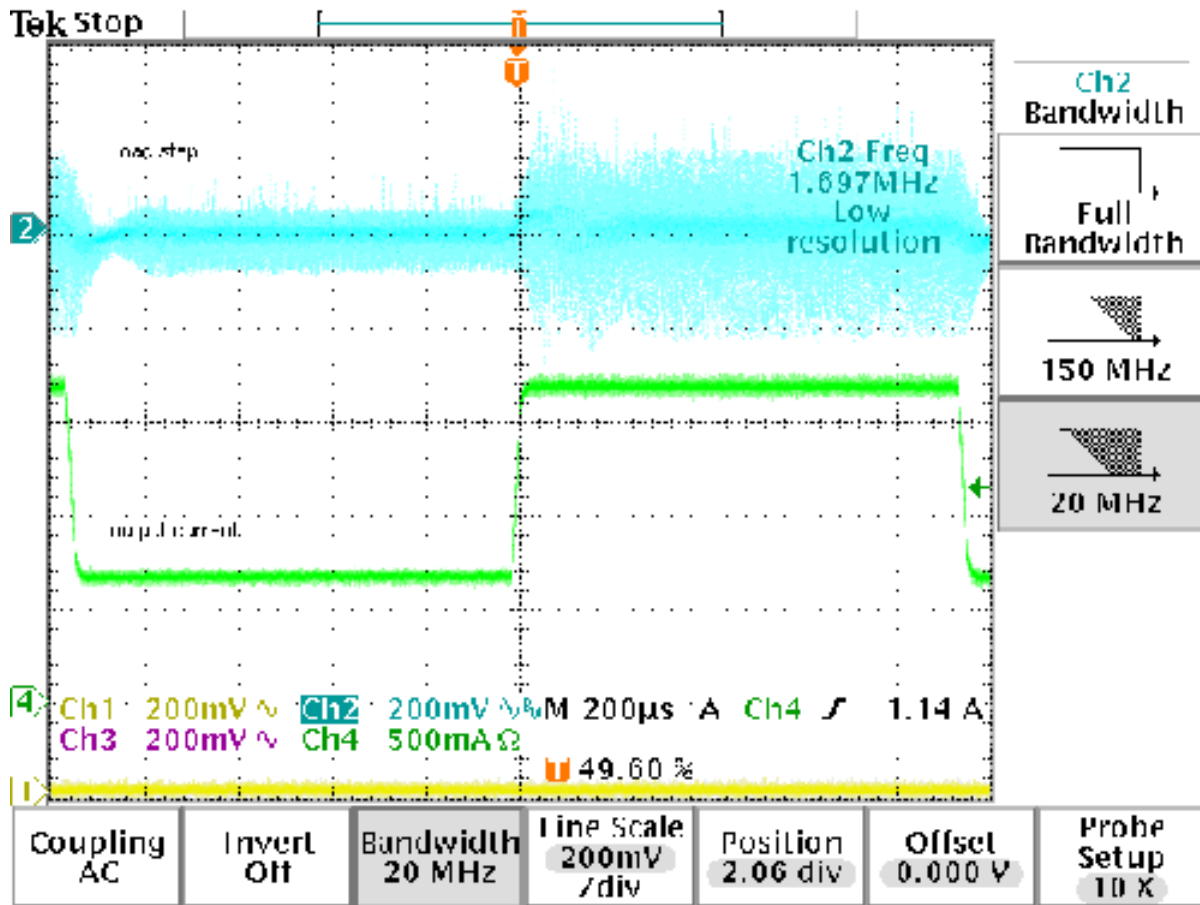
FIGURE 2. Board's Bottom View



PADC\_NSC0102\_lo\_2

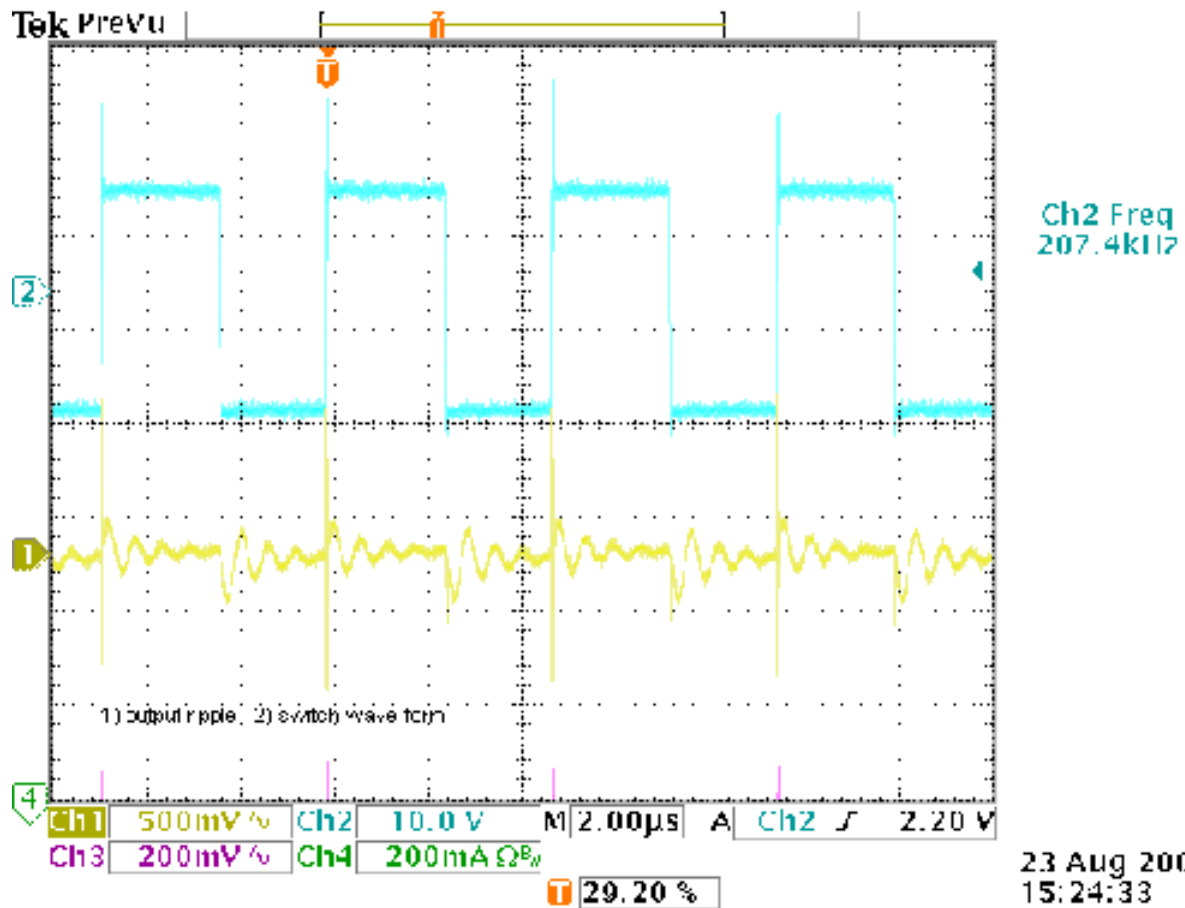
FIGURE 3. Board's Top View

## 6.0 Waveforms



PADC\_NSC0102\_wf\_3

FIGURE 4. loadstep



PADC\_NSC0102\_wf\_4

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