

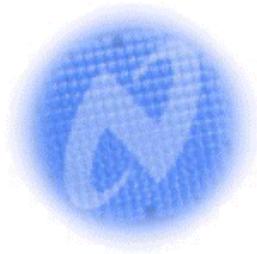
# LM5030

*LM5030 Application: DC - DC Converter Utilizing the Push-Pull Topology*

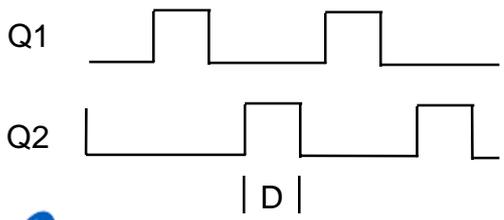
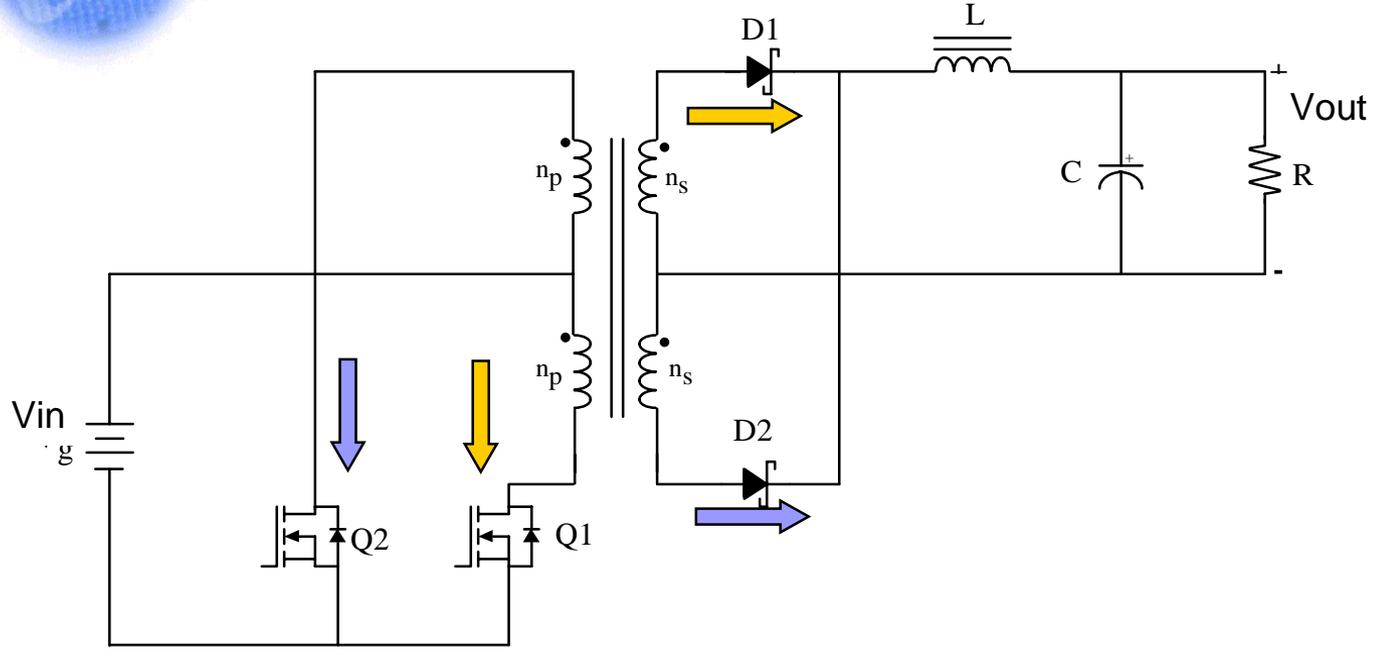


Literature Number: SNVA553

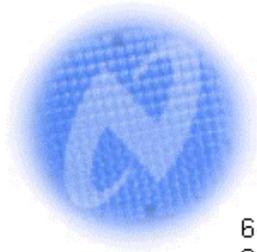
***LM5030 Application DC – DC  
Converter  
Utilizing the Push-Pull  
Topology***



# Push-Pull Topology



$$V_{out} = V_{in} * D * \frac{N_s}{N_p} * 2$$



# Push-Pull Switching Waveforms

6-Dec-02  
9:51:46

$I_L$

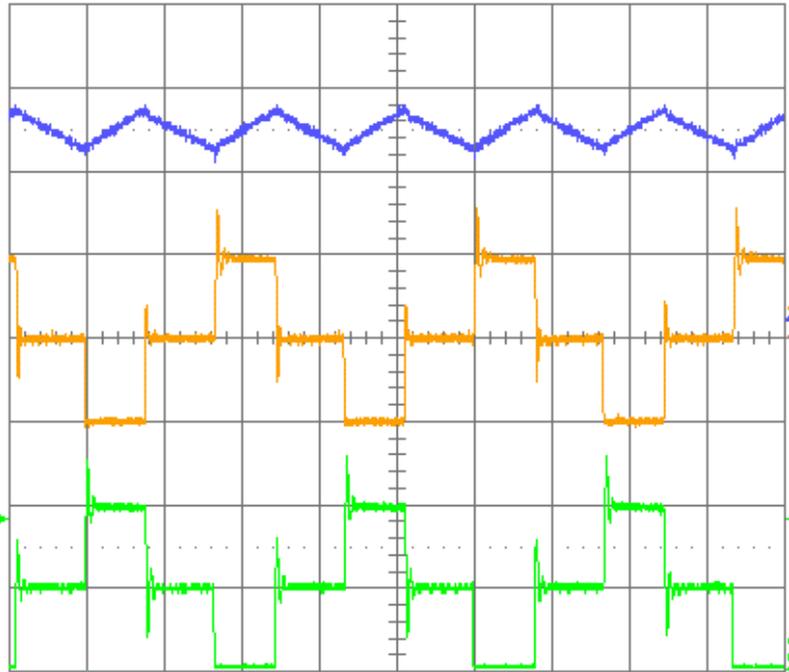
2  $\mu$ s  
2.00 A

$V_{DS}(\text{PUSH})$

2  $\mu$ s  
50 V

1  $\mu$ s  
50 V

$V_{DS}(\text{PULL})$



$V_{in} = 48V$   
 $V_{out} = 3.3V$   
 $I_{out} = 5A$

2  $\mu$ s

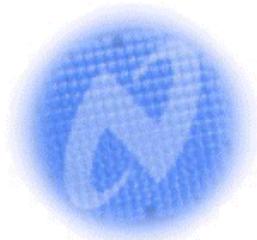
1	5	V	AC	$\times 10$
2	5	V	DC	$\times 10$
3	2	V	DC	$\times 10$
4	.2	V	DC	$\times 10$



2 DC 90 V

500 MS/s

AUTO

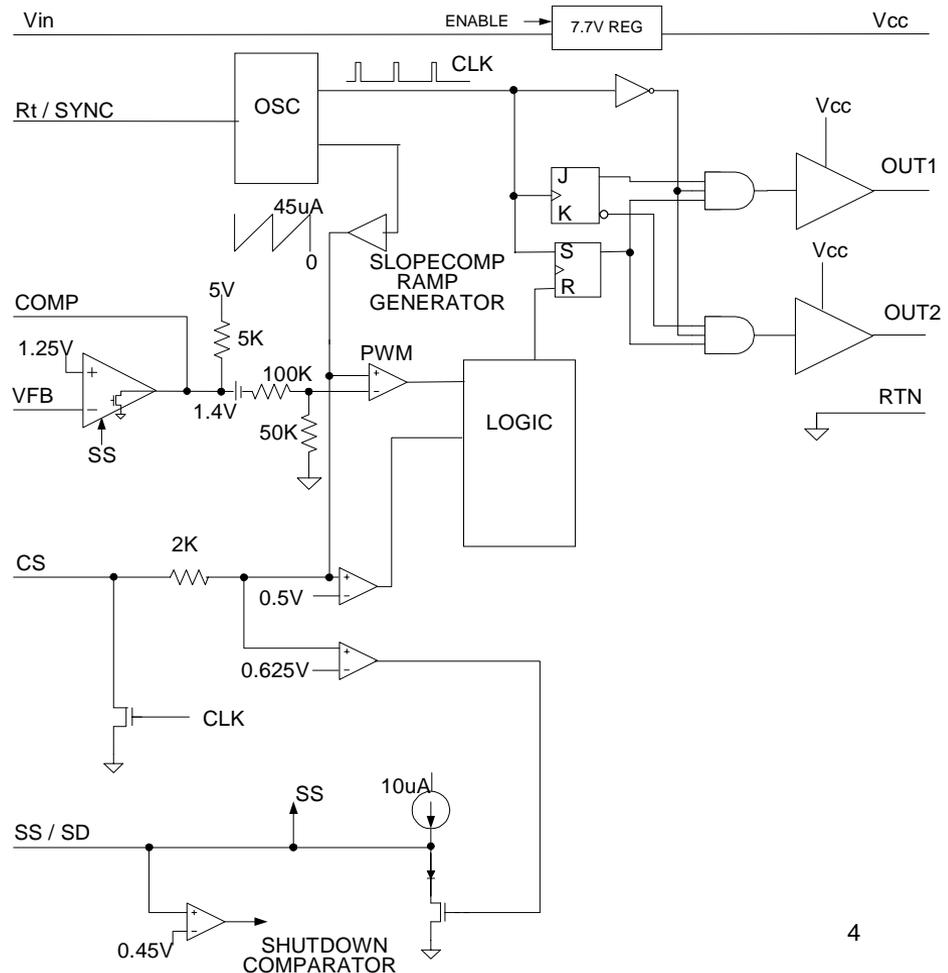


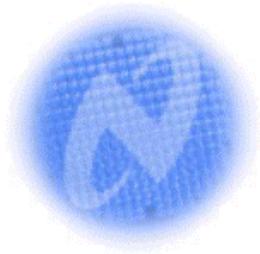
# LM5030 Push-Pull Controller

## Features

- Internal 15-100V start-up regulator
- CM control, internal slope comp.
- Set frequency with single resistor
  - 100k – 600kHz
- Synchronizable osc.
- Error amp
- Precision 1.25V reference
- Programmable soft-start
- Dual mode over-current protection
- Direct opto-coupler interface
- Integrated 1.5A gate drivers
- Fixed output driver deadtime (150nsec)
- Thermal shutdown (165°C)

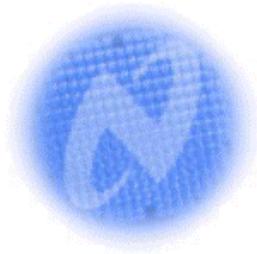
**Packages:** MSOP10,  
LLP10 (4mm x 4mm)





# LM5030 Advantages

Feature:	LM5030	UCC2808
100V Start-up Regulator	Internal	External
Current Sense Delay	40nsec typical	100nsec typical
Slope Compensation	Internal & Adjustable	External
Soft-Start	Programmable	Fixed / Wide Tolerance
Synchronizable	Yes	Difficult
Opto Interface	Internal Pull-up to Vref	External to Vcc (FFwd Issue)
Packages	MSOP10 or LLP10	S08 or TSSOP8



# *Application Converter Performance*

Input Range: 36 to 75V

Output Voltage: 3.3V

Output Current: 0 to 10A

Measured Efficiency (48V Input):

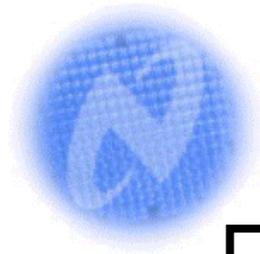
82.5% @ 10A and 84.5% @5A

Board Size: 2.4 x 2.4 x 0.45

Load Regulation: 0.2%

Line Regulation: 0.1%

Current Limit ~11A

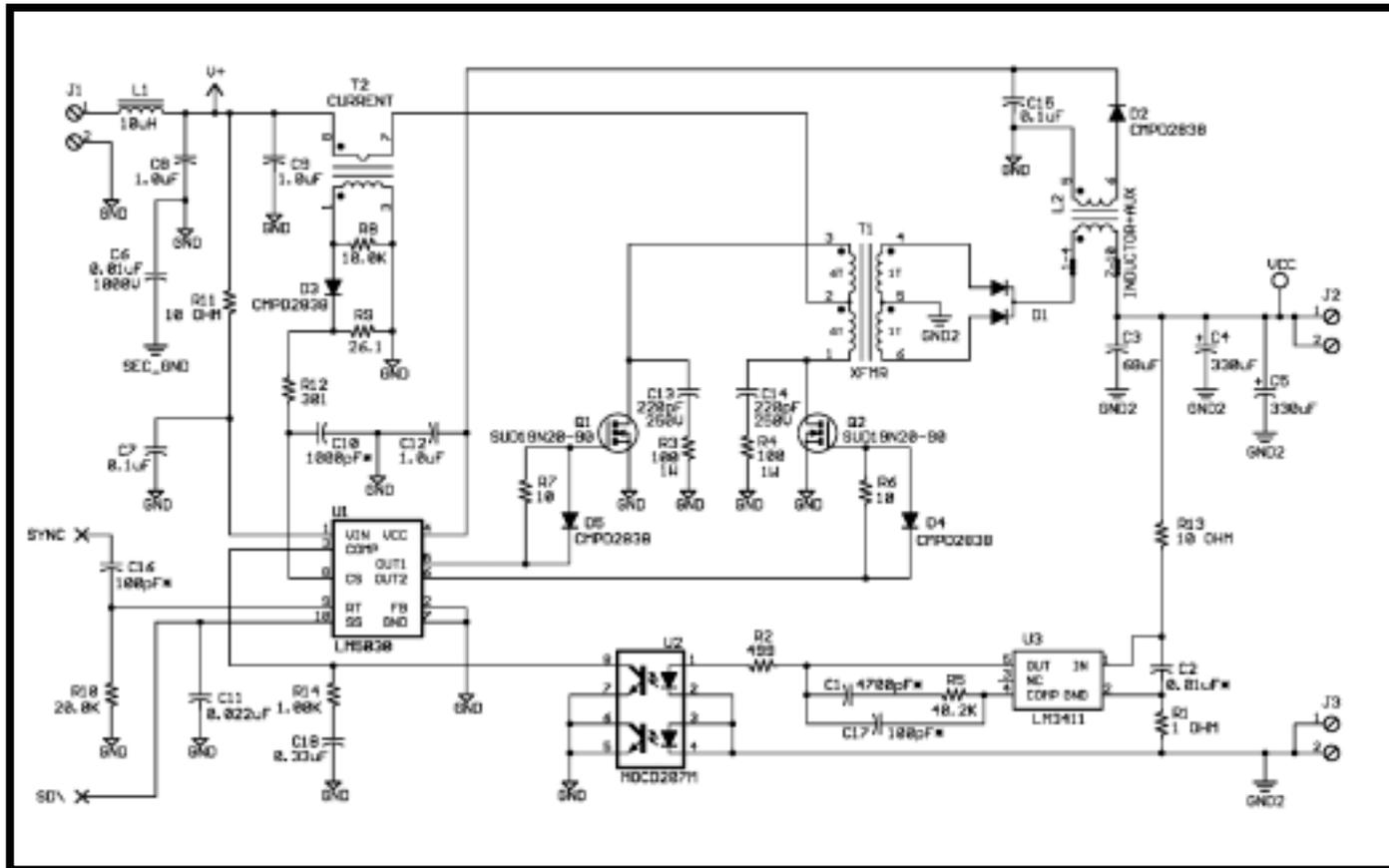


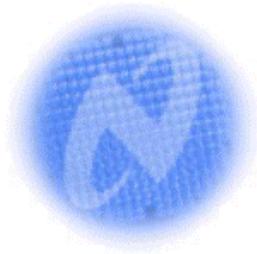
# LM5030 Push-Pull Demo Board

36V-75Vin to +3.3V @ 10A

Input:  
36 – 75V

Output:  
3.3V @ 10A





# Demonstration Converter Photo



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