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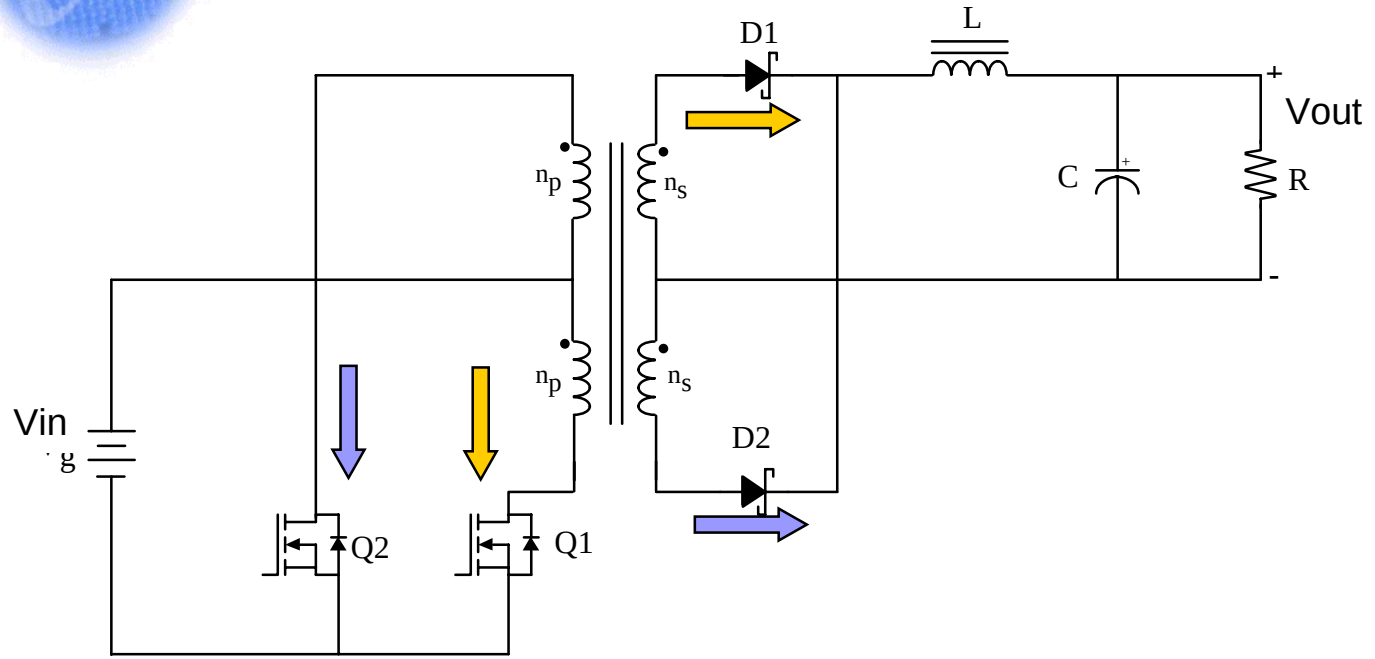
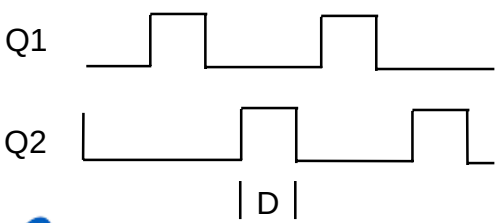
LM5030 Application DC – DC Converter Utilizing the Push-Pull Topology

Push-Pull Topology





$$Vout = Vin * D * \frac{Ns}{Np} * 2$$

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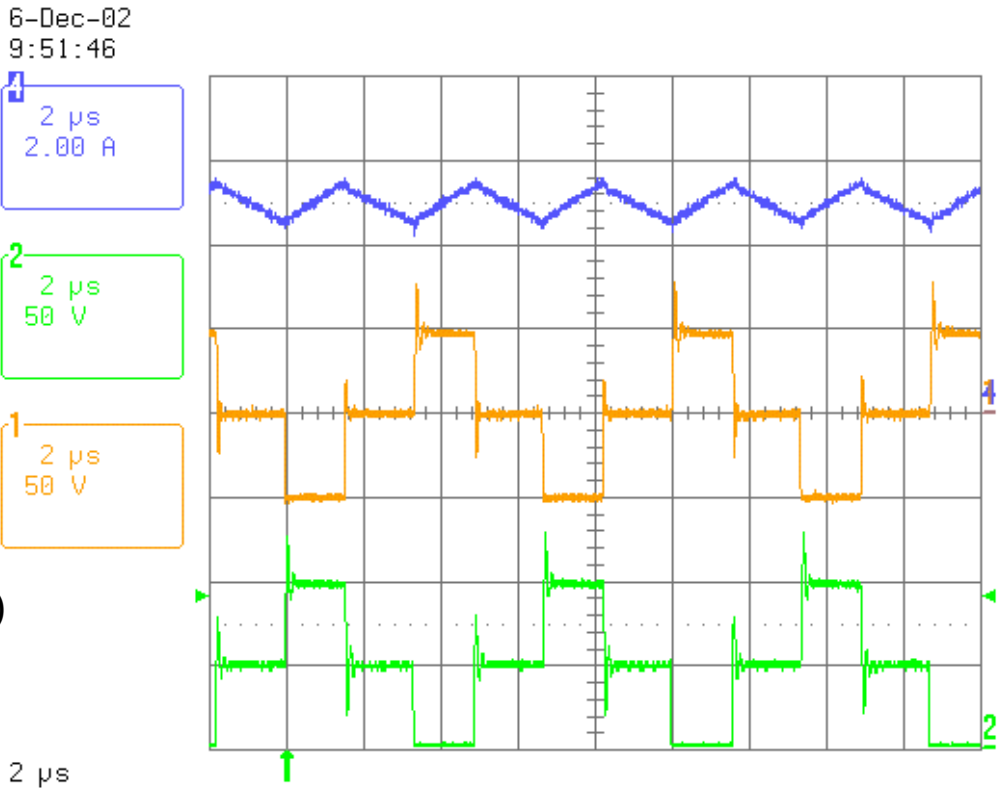
Push-Pull Switching Waveforms



I_L

V_{DS}(PUSH)

V_{DS}(PULL)

Vin =48V
Vout =3.3V
Iout = 5A

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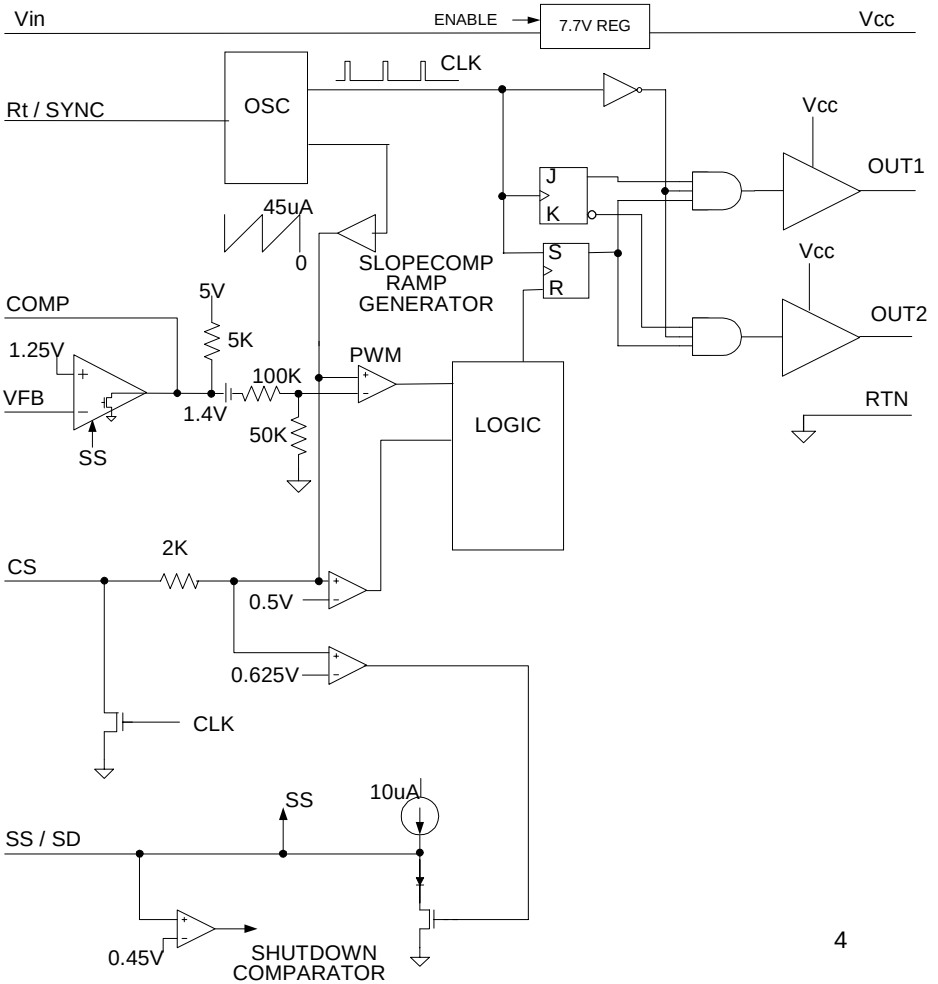
LM5030 Push-Pull Controller

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)



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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	SO8 or TSSOP8

Application Converter Performance

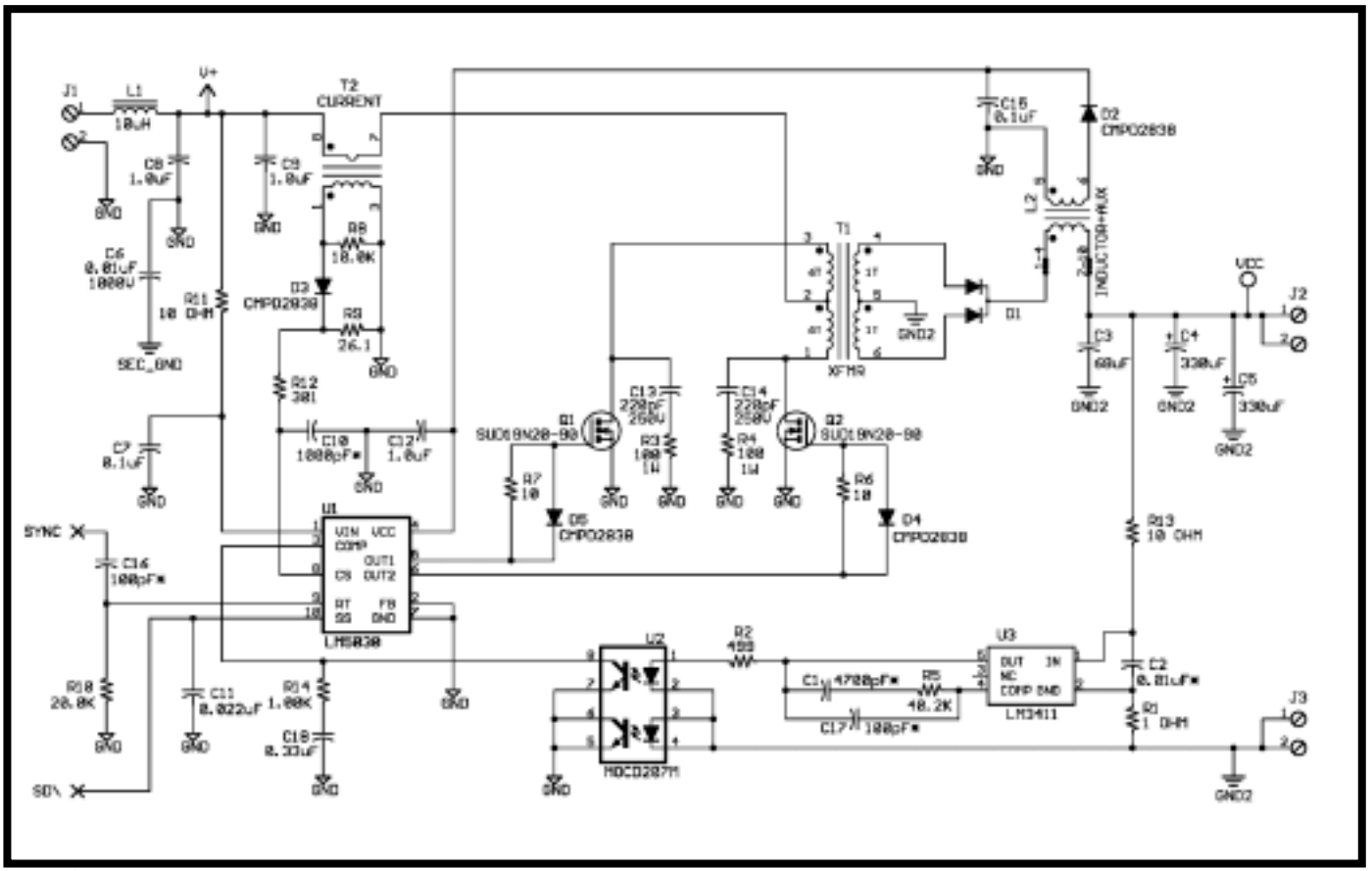
Input Range: 36 to 75V
Output Voltage: 3.3V
Output Current: 0 to 10A
Measured Efficiency (48V Input):
82.5% @ 10A and 84.5% @5A
Board Size: 2.4 x 2.4 x 0.45
Load Regulation: 0.2%
Line Regulation: 0.1%
Current Limit ~11A

LM5030 Push-Pull Demo Board

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

Input:
36 – 75V

Output:
3.3V @ 10A



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Demonstration Converter Photo

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