

Revision History	
Revision	Notes
A	Initial design
A1	Adjust SS and RES, remove DG to DS PNP pull down

**Peak Input Current**

Current limit =  $0.075V/0.01\Omega = 7.5A$   
 Inrush limit =  $0.110V/0.01\Omega = 11A$   
 Circuit breaker =  $0.160V/0.01\Omega = 16A$

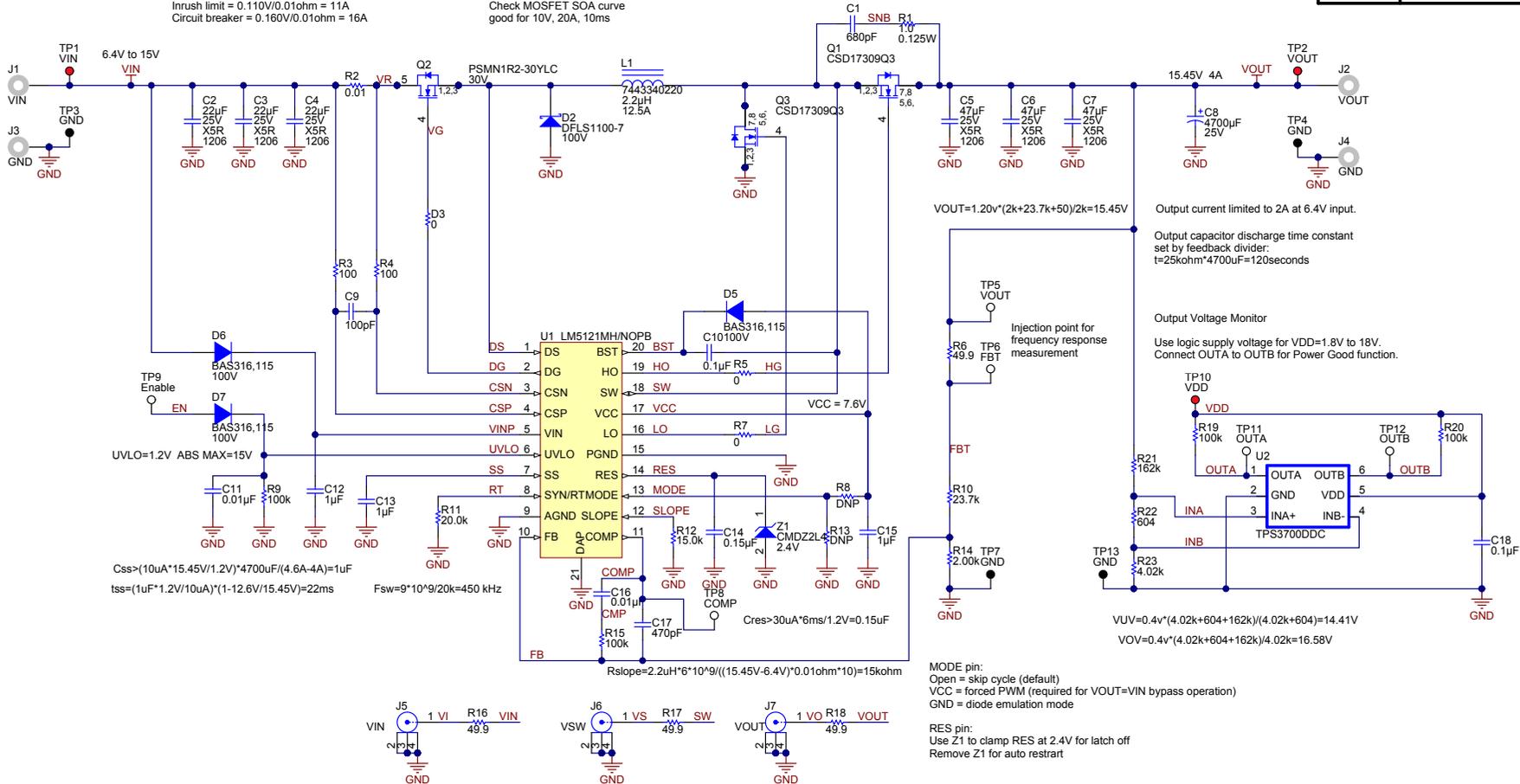
**Inrush Limiting**

$T=4700\mu F \cdot 12.6V/11A=5.4ms$   
 Check MOSFET SOA curve good for 10V, 20A, 10ms

**Snubber Power Dissipation**

$P=1/2 \cdot C \cdot (V_p^2 - V_n^2) \cdot F_{sw}$   
 Where  $V_p$  and  $V_n$  are the positive and negative voltage spikes across the snubber resistor.

Use  $V_p=V_n=V_{in}$  as initial approximation.  
 $P=680pF \cdot 12.6V^2 \cdot 450kHz = 48.5mW$



Output current limited to 2A at 6.4V input.

Output capacitor discharge time constant set by feedback divider:  
 $t=25k\Omega \cdot 4700\mu F = 120seconds$

**Output Voltage Monitor**

Use logic supply voltage for VDD=1.8V to 1.8V. Connect OUTA to OUTB for Power Good function.

Injection point for frequency response measurement

$VUV=0.4V \cdot (4.02k+604+162k)/(4.02k+604)=14.41V$

$VOV=0.4V \cdot (4.02k+604+162k)/4.02k=16.58V$

MODE pin:  
 Open = skip cycle (default)  
 VCC = forced PWM (required for VOUT=VIN bypass operation)  
 GND = diode emulation mode

RES pin:  
 Use Z1 to clamp RES at 2.4V for latch off  
 Remove Z1 for auto restart

Use 50 ohm termination for coax measurement connections, divide by 2 scale factor.

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Designed for: Public Release		Mod. Date: 4/24/2014	
Project Title: LM5121 Boost			
Number: PMP9372	Rev: A1	Sheet Title: LM5121 Boost	Sheet 1 of 2
SVN Rev: Not in version control	Assembly Variant: (No Variations)	File: PMP9372_REV1A1_S11_SchDoc	Size: B
Drawn By: Robert Sheehan	Engineer: Robert Sheehan	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	<a href="http://www.ti.com">http://www.ti.com</a>



H1 NY PMS 440 0025 PH H2 NY PMS 440 0025 PH H3 NY PMS 440 0025 PH H4 NY PMS 440 0025 PH

H5 1902C H6 1902C H7 1902C H8 1902C

FID1 FID2 FID3

PCB Number: PMP9372  
PCB Rev: A

PCB  
LOGO  
Texas Instruments

Label Table

Variant	Label Text
001	ChangeMe!
002	ChangeMe!

LBL1  
PCB Label  
Size: 0.65" x 0.20"

ZZ1  
Label Assembly Note  
This Assembly Note is for PCB labels only

ZZ2  
Assembly Note  
These assemblies are ESD sensitive, ESD precautions shall be observed.

ZZ3  
Assembly Note  
These assemblies must be clean and free from flux and all contaminants. Use of no clean flux is not acceptable.

ZZ4  
Assembly Note  
These assemblies must comply with workmanship standards IPC-A-610 Class 2, unless otherwise specified.

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Designed for: Public Release		Mod. Date: 4/24/2014	
Project Title: LMS121 Boost			
Number: PMP9372	Rev: A1	Sheet Title: Hardware	
SVN Rev: Not in version control	Assembly Variant: [No Variations]	Sheet: 2 of 2	
Drawn By: Robert Sheehan	File: PMP9372_REV A1_S12_SchDoc	Size: B	
Engineer: Roben Sheehan	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>		

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