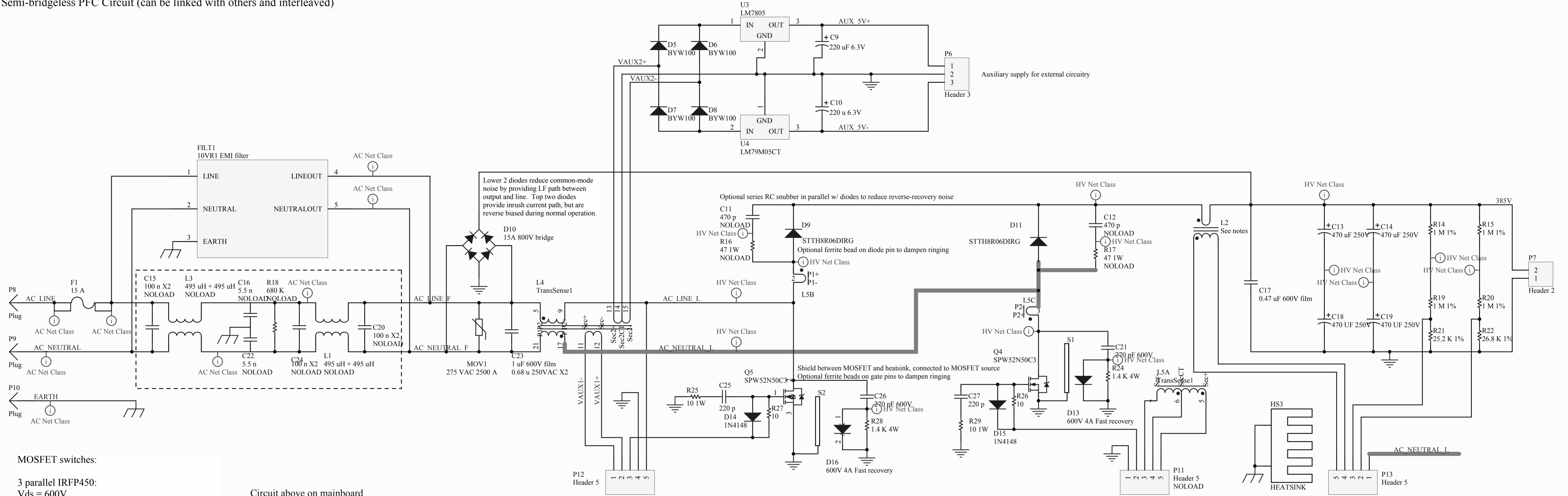


Semi-bridgeless PFC Circuit (can be linked with others and interleaved)



MOSFET switches:

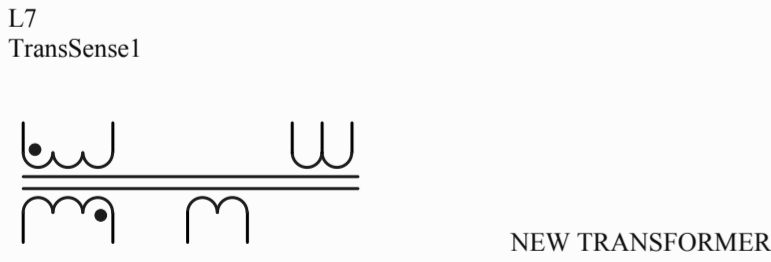
3 parallel IRFP450:
Vds = 600V
Rds = 133 mOhm
Qc = 450 nC
Id = 42 A

2 parallel STY34NB50F:
Vds = 500V
Rds = 70 mOhm
Qc = 280 nC
Id = 68 A

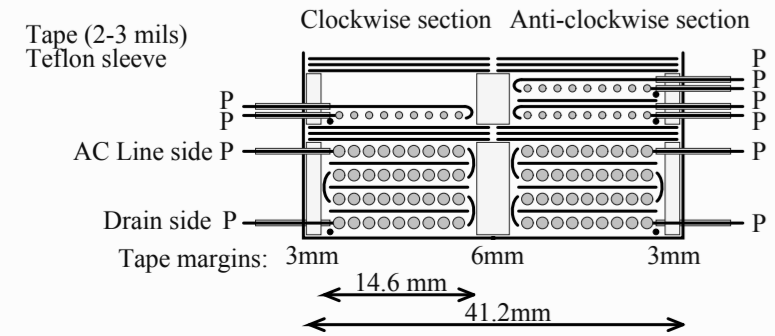
Single SPW52N50C3 CoolMOS: (\$6.50 mouser)
Vds = 500V
Rds = 70 mOhm
Qc = 260 nC
Id = 52 A

Boost diodes STTH8R06FP:
600V 8A
Vd = 1.4V
Ultrafast 25ns
TO-220

ORIGINAL TRANSFORMER
L=450 uH: comprised of two ETD-59 transformers in series, each:
225 uH, 2.0mm gap, AL=300
13T+13T primary in two sections, three layers each,
with insulated 0.125 inch gap between sections.
Bundle of 25 wires of 26 ga (0.4mm)
Secondary is XX turns.



L=440 uH: ETD-59, 2.0mm gap, AL=300
19T+19T primary in two sections, three or four layers each, with tape margins as shown.
Bundle of 15 wires of AWG 26 (0.4mm)
Aux1 is XX turns. Aux2 and Aux3 are YY turns each of AWG 26 (0.4mm).



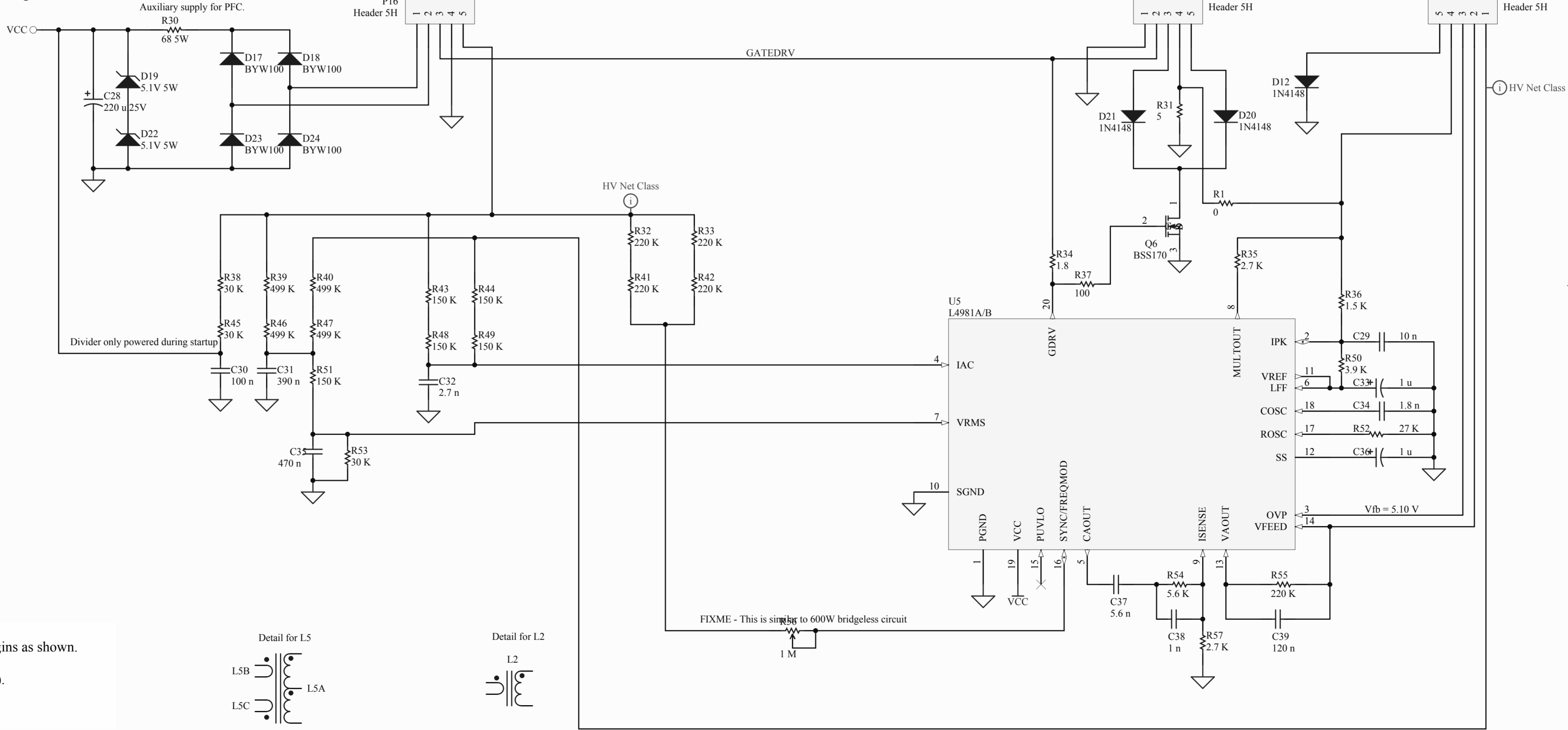
If the winding ends on the side of the bobbin that is opposite from the intended finish terminal, bring the wire across the coil at a 90 degree angle. Tape can be used to hold the wire down at the bend. It may be necessary to place a piece of tape under this wire to insulate it from its own winding to prevent cut-through and subsequent shorted turns.
The driven end of the primary winding (the end connected to the MOSFET Drain) should be the start of the winding rather than the finish.

20 mm high-perm toroid
Primaries: 1T, 1T, heavy gauge
Secondary: 50T + 50T 30ga,
center tapped

20 mm high-perm toroid
Primary: 1T, heavy gauge
Secondary: 50T, 30ga

Circuit above on mainboard

Circuit below on daughtercard



Alternates:

- D1 FFPF08S60SNTU
- D2 FFPF08S60SNTU
- D3 IDT08S60C SiC
- D4 IDT08S60C SiC
- D25 6.2V 3W
- D26 6.2V 3W

Title		bridgeless_pfc.SchDoc		*	*
Size	Number	Revision			
C		A2			
Date:	4/13/2010	Sheet of			
File:	C:\projects\bridgeless_pfc.SchDoc	Drawn By:			

