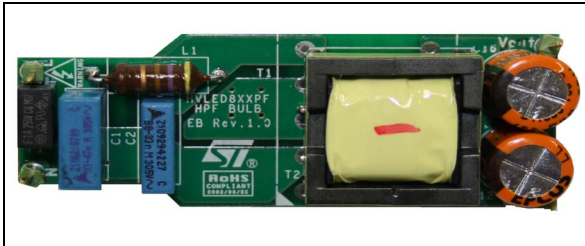


15 W high power factor LED driver based on HVLED815PF

Data brief



Features

- 15 W LED driver
- Single stage HPF flyback
- Primary side regulation - no optocoupler
- Power factor > 0.95
- LED driver efficiency > 84%
- THD < 20%
- European input range

Description

The LED driver board is based on a flyback topology using the STMicroelectronics® HVLED815PF device.

The HVLED815PF device is a high voltage primary switcher intended for operating directly from the rectified mains with minimum external parts and enabling high power factor (> 0.95) to provide an efficient, compact and cost effective solution for LED driving. It combines a high-performance low voltage PWM controller chip and an 800 V, avalanche rugged Power MOSFET, in the same package. There is no need for the optocoupler thanks to the patented primary sensing regulation (PSR) technique. The device assures protection against LED string fault (open or short).

Board description

Table 1. Electrical specifications

Parameter	Value
Input voltage	220 Vac +/- 20%
Output LED current	485 mA (typ.)
Output LED voltage	30.5 V (typ.)
Power factor (PF)	> 0.95
Total harmonic distortion (THD)	< 20%
LED driver efficiency	> 84%

Figure 1. Jumpers and connectors location

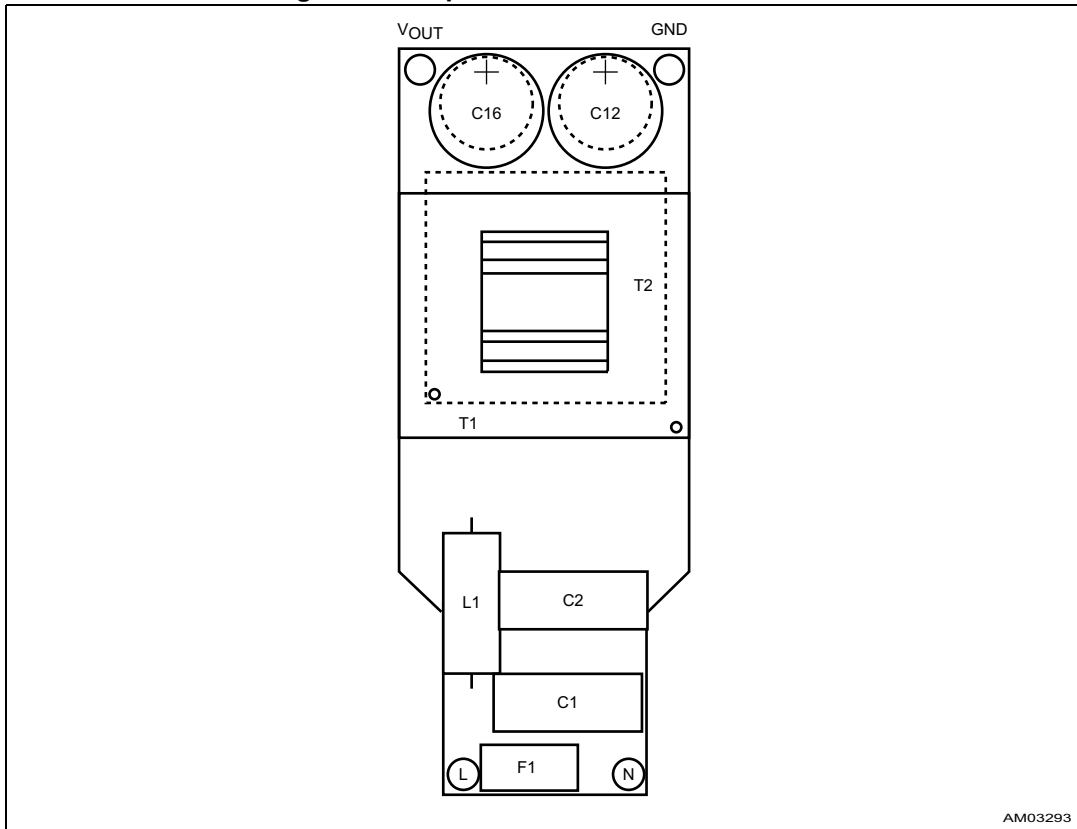
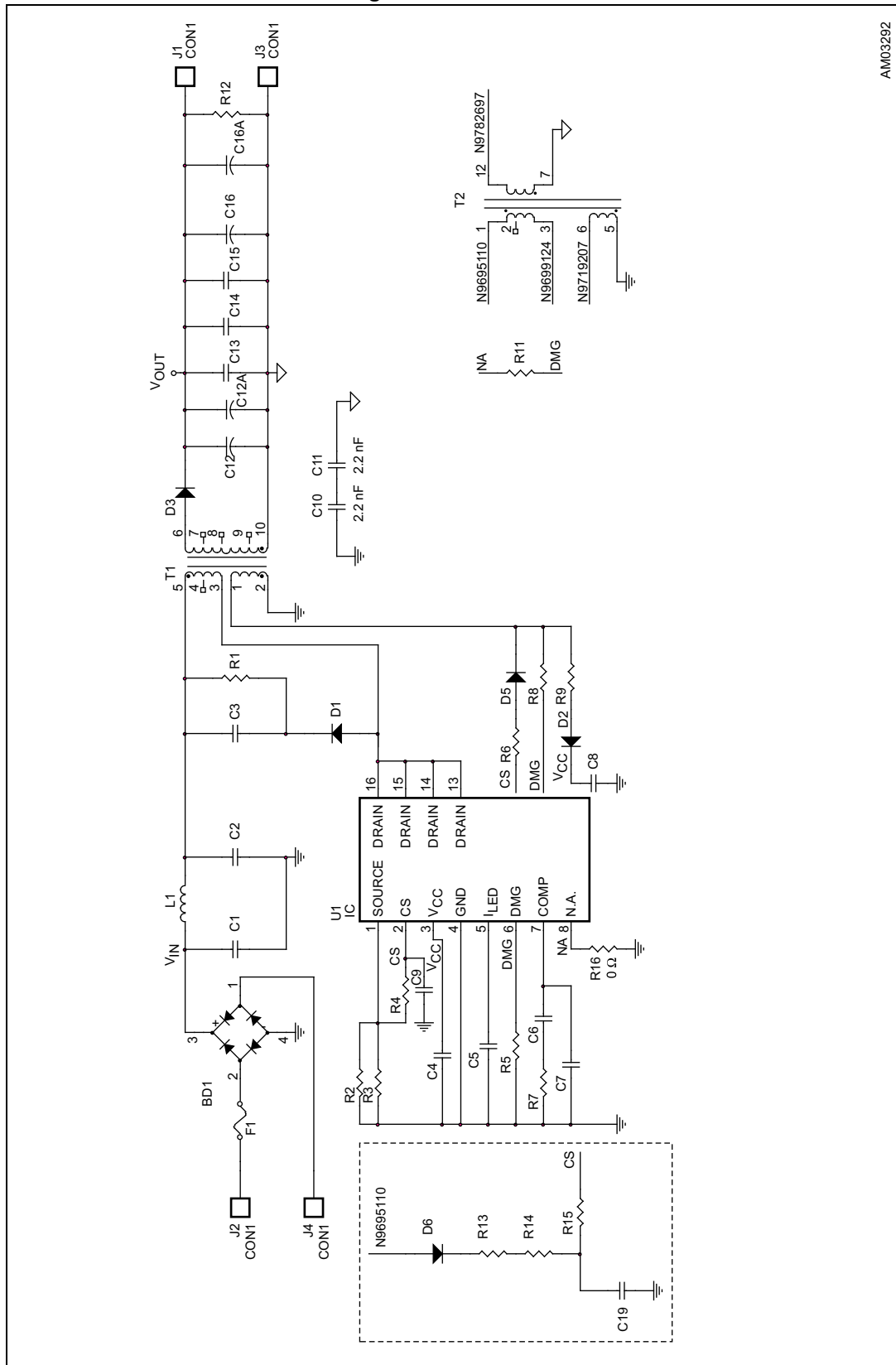


Table 2. Connector A pinout

Name	Type	Function
L		Line input voltage
N		Line input voltage
V _{OUT}		Positive output LED (+)
GND		Negative output GND (-)

Figure 2. Schematic



AM03292

Table 3. Bill of material

Part reference	Part value	Part description
BD1	HD06-T	600 V - 0.8 A
C1	B32921C3473	47 nF - X2
C2	B32921C3333	47 nF - X2
C3	C3216X7R2J222K	2.2 nF - 630 V - X7R
C4	C2012X5R1E106K	10 μ F - 25 V - X5R
C5	C1608X5R1A106K	10 μ F - 10 V - X5R
C6		470 nF - 10 V
C7		1 nF - 25 V
C8		100 nF - 25 V
C9		1 nF
C10	GA342DR7GF102KW02L	1000 pF - 250 V
C11	GA342DR7GF102KW02L	1000 pF - 250 V
C12		N. M.
C12A	B41888D6157M	150 μ F - 50 V
C13	C3216X5R1H106K	10 μ F - 50 V - X5R
C14		N. M.
C15	C3216X5R1H106K	10 μ F - 50 V - X5R
C16		N. M.
C16A	B41888D6157M	150 μ F - 50 V
C19	C2012X5R1H225K	2.2 μ F - 50 V - X5R
D1	STTH1L06A	1 A - 600 V
D2	1N4148	
D3	STPS3150UF	3 A - 150 V
D5	1N4148	
D6	1N4148	
F1	MCMSF 1 A 250 V	1 A - 250 V
L1	B82144A2474J000	680 μ H
R1		150 k Ω
R2		1.5 Ω - 1%
R3		2.2 Ω - 1%
R4		560 Ω - 1%
R5		24 k Ω - 1%
R6		30 k Ω - 1%
R7		12 k Ω
R8		180 k Ω - 1%

Table 3. Bill of material (continued)

Part reference	Part value	Part description
R9		270 Ω
R11		NC
R12		10 kΩ
R13		91 kΩ - 1%
R14		82 kΩ - 1%
R15		39 kΩ - 1%
R16		0 Ω
T2	TDK xxxH004 x12375-3	EFD20
U1	HVLED815PF	IC LED driver with integrated MOSFET
J2, J4		Input connector
J1, J3		Output connector

Figure 3. Layout (top layer)

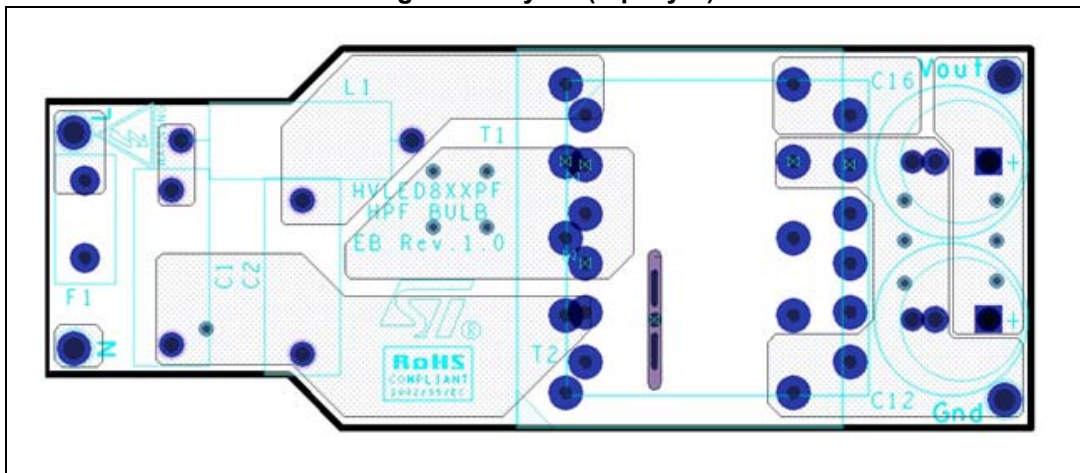
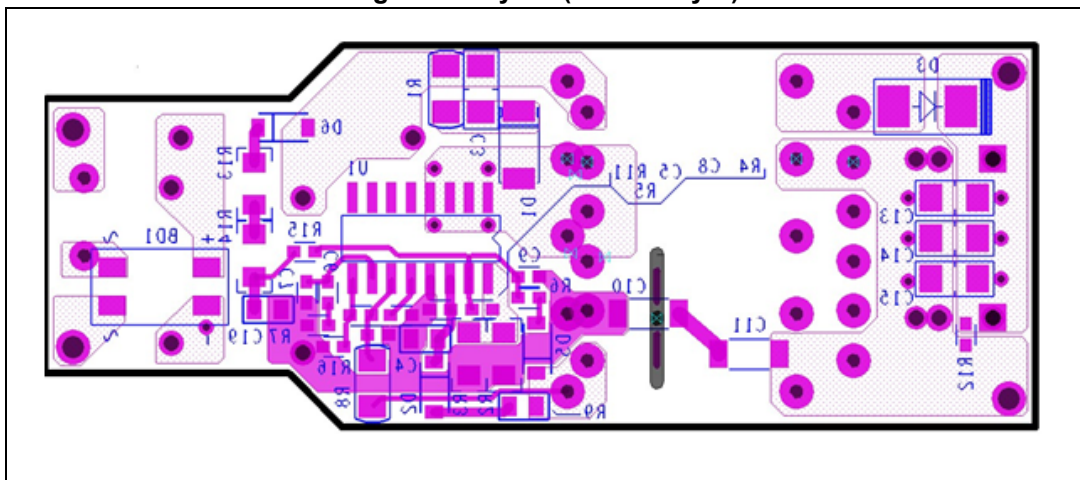


Figure 4. Layout (bottom layer)



Revision history

Table 4. Document revision history

Date	Revision	Changes
27-Aug-2013	1	Initial release.

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