

Combo IC for PFC and ballast control

Data Brief

General description

A new control IC, the L6585, has been designed to manage electronic ballasts for fluorescent lamps; it includes both Power Factor Correction and half-bridge sections and embeds a wide range of features to provide an energy saving and cost effective solution.

The high-voltage single chip approach optimizes the management of lamp critical conditions like start-up (pre-heating and ignition), fault and lamp replacement. In fact, the internal logic is able to carry out all of these phases being steered by precise internal references and timings.

The PFC section has superior performance in terms of harmonic content mitigation. High Power Factor (PF) and Total Harmonic Distortion (THD)

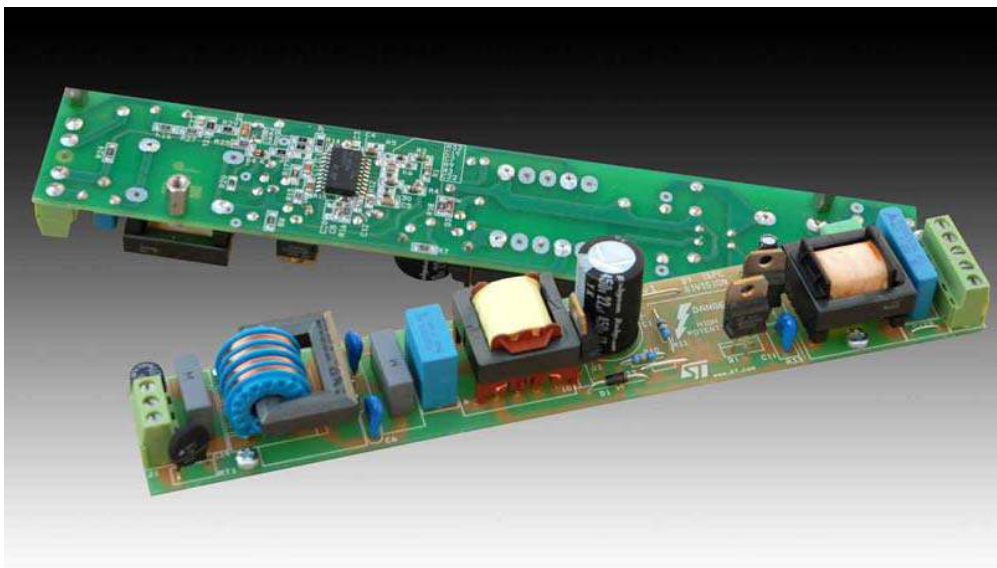
reduction are obtained as required by international norms, especially in case of Universal input voltage operation.

Particular care has been dedicated to pre-heating and ignition phases prior to lamp starting, in order to ensure the proper filament warming up and extend lamp life.

Innovative circuitry allows an improved control of the lamp voltage during ignition as well protection against failures due to lamp ageing. The use of this new control IC simplifies the industrialization of electronic ballasts increasing the application reliability and reducing its dimensions and cost.

For more info about the L6585D please refer to the related datasheet available at www.st.com.

Evaluation board



1 230V Demo application description

The design has been developed to drive a 54W TL fluorescent lamp. Specifically created to drive a T5 lamp, the demo board implements the end of life and the open lamp protections on the half bridge side, and the over-voltage and feedback disconnection protections on the PFC side. This circuit is intended to be used with 230V AC mains.

Figure 1. Evaluation board schematic

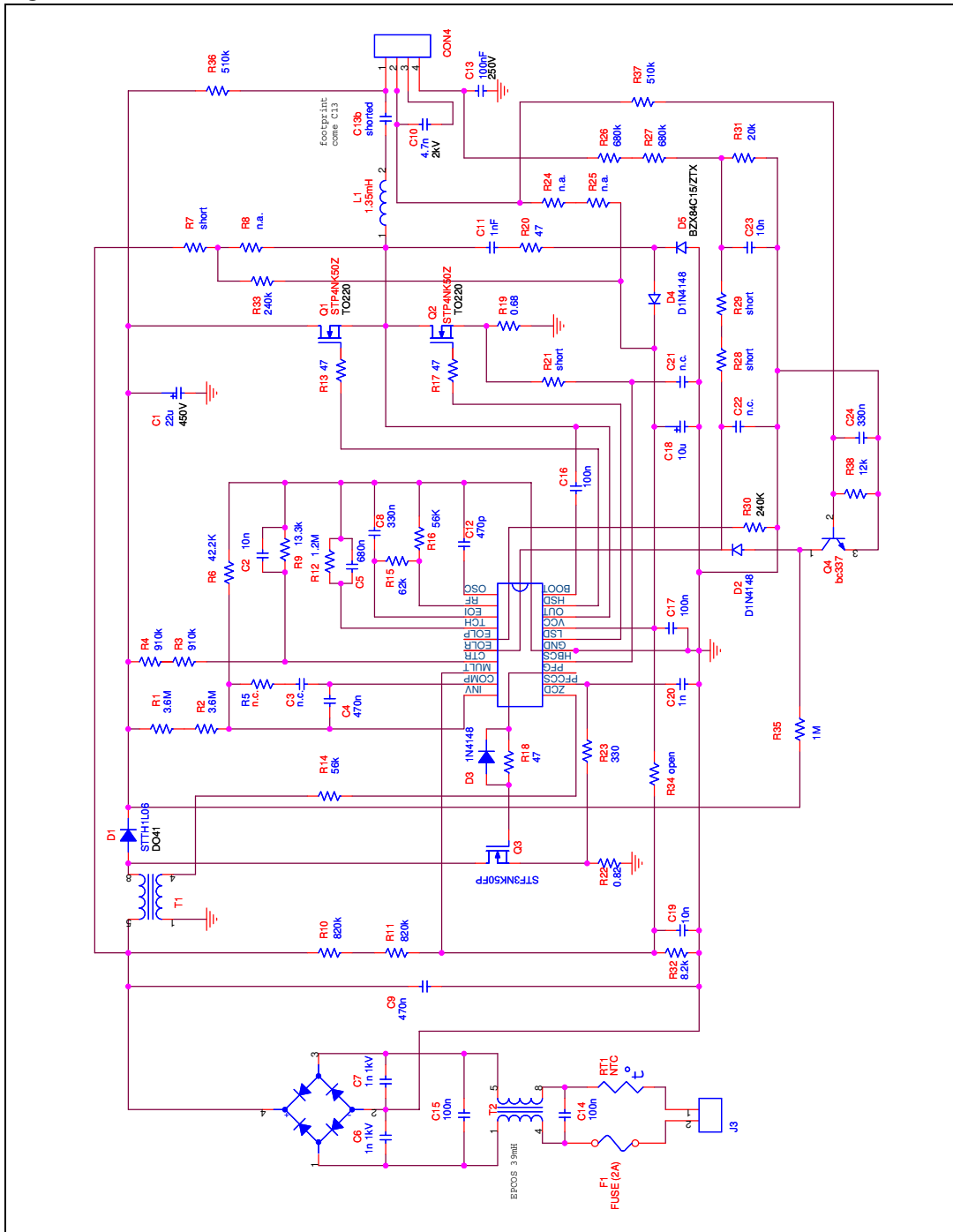


Table 1. Part list

Name	Value
BR1	DF06S
R1, R2	3.6M Ω
R3, R4	910K
R5	n.c
R6	42.2K Ω
R7	short
R8	n.c
R9	13.3K Ω
R10, R11	820K Ω
R12	1.2M Ω
R13	47 Ω
R14	47K Ω
R15	62K Ω
R16	56K Ω
R17, R18	47 Ω
R19	0.68, 1W
R20	47 Ω
R21	short
C1	22 μ F, 450V, EPCOS B43888A5226M9
C2	10nF
C3	n.c
C4	470nF
C5	680nF
C6, C7	1nF, 1KV
C8	330nF
C9	470nF, 630V, EPCOS B32652
C10	4.7nF, 2kV EPCOS B32653
C11	1nF, 630V
C12	470pF
C13	100nF, 250V
C13b	short
C14, C15	100nF, X2, 275Vac, EPCOS
C16	100nF
C17	100nF

Table 1. Part list (continued)

Name	Value
C18	10 μ F, 35V
C19	10nF
R22	0.82
R23	330
R24	n.c
R25	n.c
R26, R27	680K Ω
R28, R29	short
R30	240K Ω
R31	20K Ω
R32	8.2K Ω
R33	240K Ω
R43	open
R35	1M Ω
R36, R37	510K Ω
R38	12K Ω
Q1	STP4NK50ZD
Q2	STP4NK50ZD
Q3	STD3NK50Z1
Q4	BC817
IC1	L6585D
C20	1nF
C21	n.c
C22	n.c
C23	10nF
C24	330nF
T1	E25, 2.1mH, EPCOS T2363
T2	39mH, EPCOS B822731
F1	2A fuse
RT1	NTC, 16R
D1	STTH1L06
D2	1N4148
D3	1N4148
D4	1N4148

Table 1. Part list (continued)

Name	Value
D5	BZX84C15ZTX
L1	ITACOIL, 1.3mH

2 Revision history

Table 2. Revision history

Date	Revision	Changes
22-Nov-2006	1	First issue

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