## EVAL6585D-230V

## 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 <br> 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 | $3.6 \mathrm{M} \Omega$ |
| R3, R4 | 910K |
| R5 | n.c |
| R6 | $42.2 \mathrm{~K} \Omega$ |
| R7 | short |
| R8 | n.c |
| R9 | $13.3 \mathrm{~K} \Omega$ |
| R10, R11 | $820 \mathrm{~K} \Omega$ |
| R12 | $1.2 \mathrm{M} \Omega$ |
| R13 | $47 \Omega$ |
| R14 | $47 \mathrm{~K} \Omega$ |
| R15 | $62 \mathrm{~K} \Omega$ |
| R16 | $56 \mathrm{~K} \Omega$ |
| R17, R18 | $47 \Omega$ |
| R19 | 0.68, 1W |
| R20 | $47 \Omega$ |
| R21 | short |
| C1 | $22 \mu \mathrm{~F}, 450 \mathrm{~V}$, EPCOS B43888A5226M9 |
| C2 | 10nF |
| C3 | n.c |
| C4 | 470nF |
| C5 | 680nF |
| C6, C7 | 1nF, 1KV |
| C8 | 330 nF |
| C9 | 470nF, 630V, EPCCOS 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 | 10رF, 35V |
| C19 | 10nF |
| R22 | 0.82 |
| R23 | 330 |
| R24 | n.c |
| R25 | n.c |
| R26, R27 | 680K $\Omega$ |
| R28, R29 | short |
| R30 | 240K $\Omega$ |
| R31 | 20K $\Omega$ |
| R32 | $8.2 \mathrm{~K} \Omega$ |
| R33 | $240 \mathrm{~K} \Omega$ |
| R43 | open |
| R35 | $1 \mathrm{M} \Omega$ |
| R36, R37 | $510 \mathrm{~K} \Omega$ |
| R38 | $12 \mathrm{~K} \Omega$ |
| Q1 | STP4NK50ZD |
| Q2 | STP4NK50ZD |
| Q3 | STD3NK50Z1 |
| Q4 | BC817 |
| IC1 | L6585D |
| C20 | 1 nF |
| C21 | n.c |
| C22 | n.c |
| C23 | 10nF |
| C24 | 330nF |
| T1 | E25, 2.1 mH , 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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