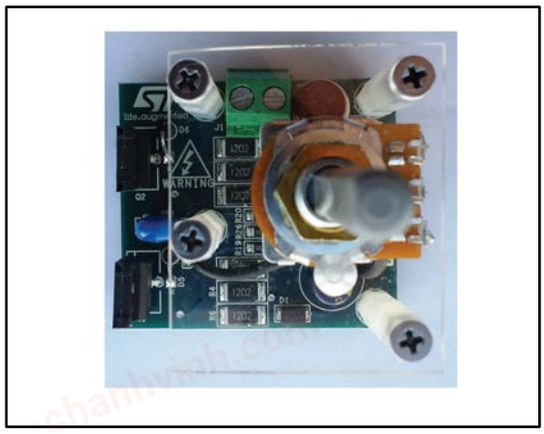
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STEVAL-ILD005V1

Trailing edge phase control rotary wall dimmer based on the STF17N62K3 power MOSFET

Data brief



Features

- Operation for 2-wire wall dimmer
- Trailing-edge control only (compatible with all lamps commonly found on the market)
- Operation on 230 V rms line voltage (±10%) and 50/60 Hz line frequency
- Dimmable power range (without heatsinks mounted on MOSFETs)
  - 40 W to 300 W for 230 V rms line
- Maximum operating ambient temperature: 50 °C
- Power efficiency @ Max power - 230 V > 95%
- Power factor @ Max power > 0.98
- Control and regulation interface with a switched type single linear rotary potentiometer
- Compliance with EMC standards:
  - IEC 61000-4-5: criteria A for 2 kV surge
  - Compliant with EN55015 with 300 W - 230 V halogen lamp
- Flicker-free dimming performance
- Smooth dimming operation and silent dimming control with no buzzing or audible noise
- Acceptable levels of EMI noise without the need for LC filters to reduce conducted emission disturbances
- Low inrush current generation
- RoHS compliant

Description

The STEVAL-ILD005V1 evaluation board implements a simple and cost-effective MOS-based reverse phase cut dimming solution for analog wall dimmers using a pair of STF17N62K3 power MOSFETs controlled by a triple 3-input NOR gate to effectively dim either resistive or capacitive lighting loads (i.e. halogen lamps, electronic low voltage transformers and various dimmable CFL/LED lamps). The AC analog control dimming technique employed allows for both on/off power switching and up/down dimming functions through a single linear rotary potentiometer equipped with a mechanical switch which opens the circuit at minimum setting. Control of the board is achieved using a triple 3-input NOR gate (pin-to-pin compatible with a ST's HCF4025BE 14-lead dual in-line CMOS gate logic device in plastic SO-14 micropackage) which acts as a gate driving voltage signal source, performs zero crossing detection and timing through the use of a few other passive components and diodes.

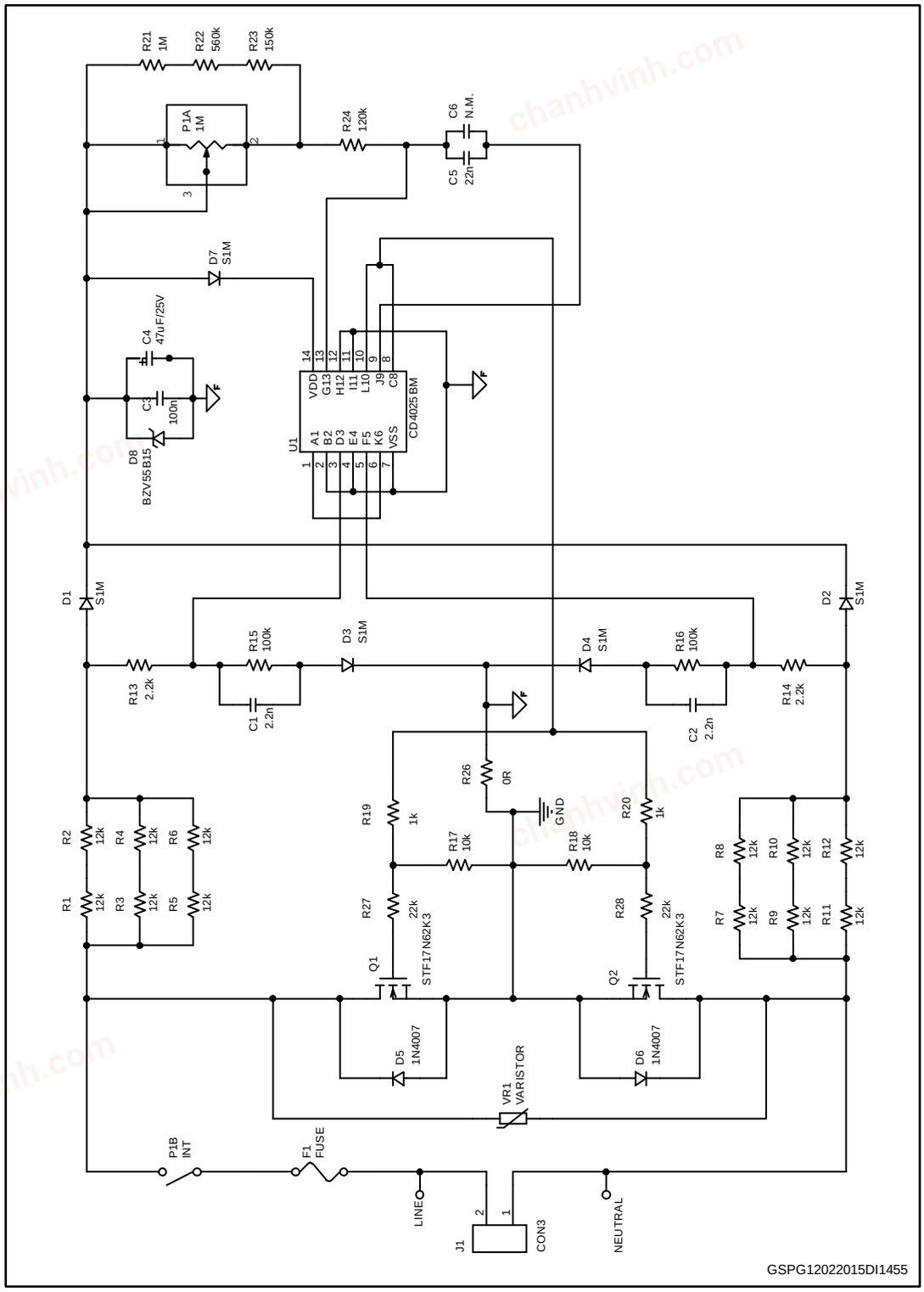
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1 Schematic diagram

Figure 1: STEVAL-ILD005V1 circuit schematic



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2 Revision history

Table 1: Document revision history

Date	Rev	Changes
12-Feb-2015	1	First release.
18-Feb-2015	2	Minor text change to improve readability

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