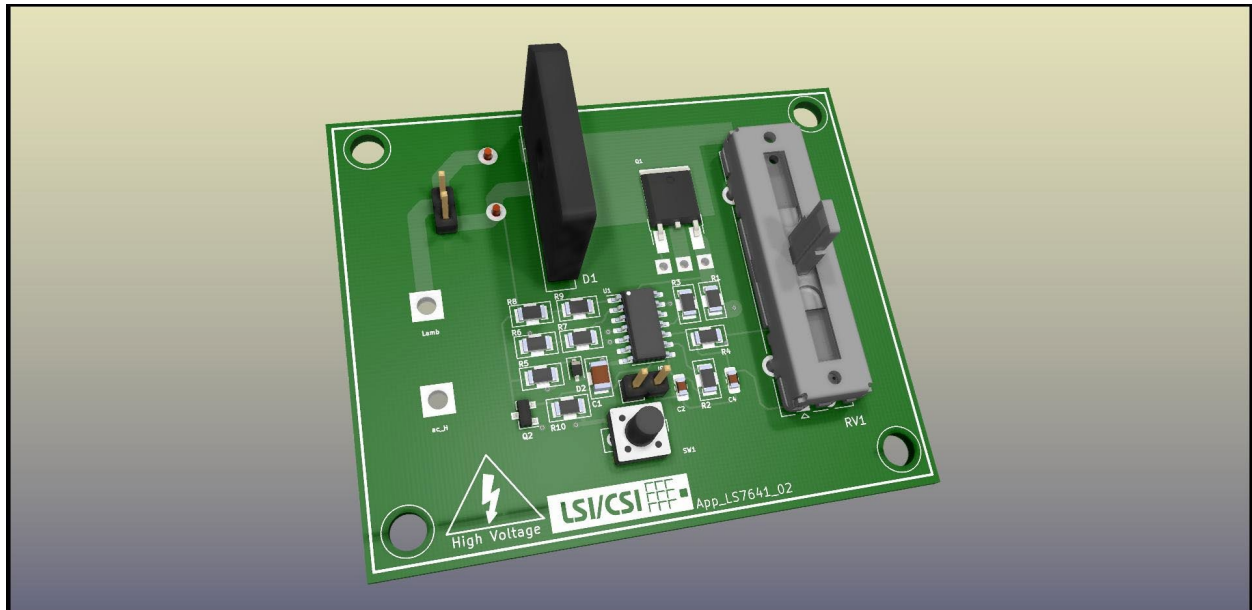


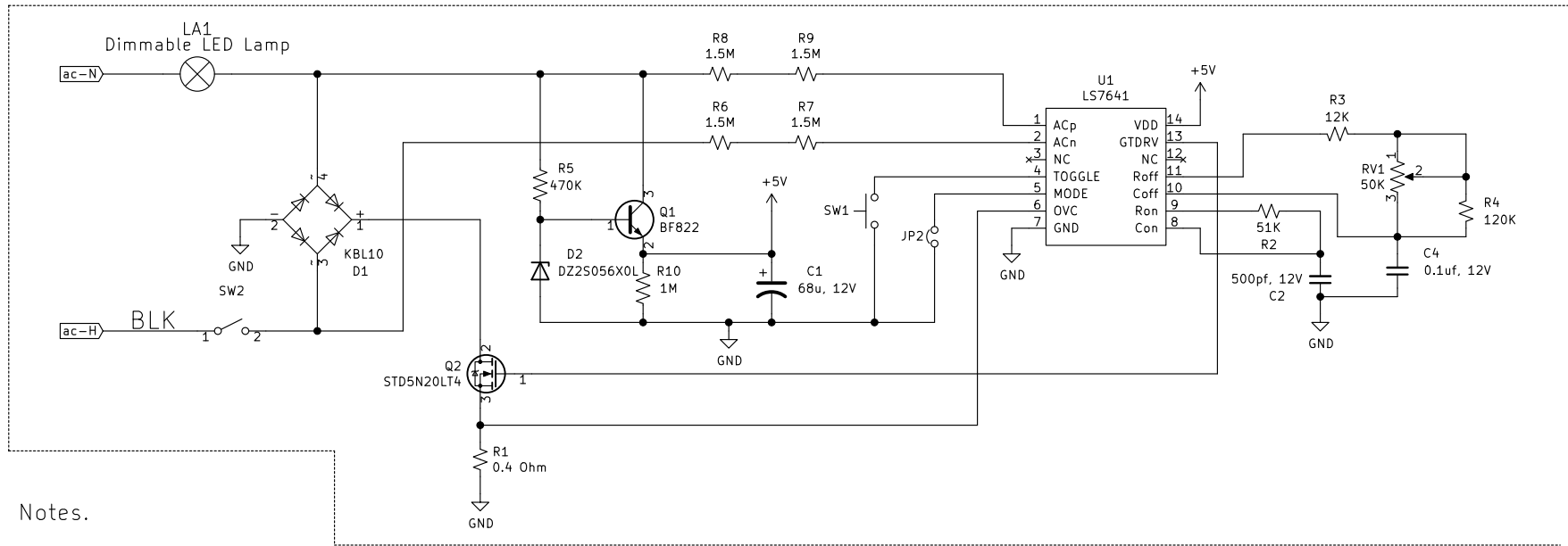
APP_LS7641_02

LED dimmer circuit for wall switch installation

APP_LS7641_02 is an evaluation board for the reverse phase dimmer IC LS7641. The application circuit can be re-laid out into a PCB which can be accommodated into a wall switch receptacle such as the ones shown in fig 2 or fig 3. The evaluation board is designed for 120VAC application. It can be adapted to 240VAC application by changing few components values according to Note 4 in fig 1.



WALL DIMMER SWITCH



Notes.

1. R1 sets the limit for over-current at $300\text{mV}/0.4 = 750\text{mA}$
2. R2 and C2 together sets the turn-on delay with respect to zero-cross at 32us.
A trimpot can be used for R2 for adjustability as needed for different types of bulbs.
3. R3, RV1 and C4 together sets the turn-off delay.
Lower limit of the delay = $1.25 \times 12\text{K} \times 0.1\mu = 1.5\text{ms}$. (32 degrees @ 60Hz) .
Upper limit of the delay = $1.25 \times 47\text{K} \times 0.1\mu = 5.9\text{ms}$. (127 degrees @ 60Hz).
R3 can be replaced with a trimpot for setting the minimum dim level.
Brightness level is controlled with RV1 which can be either a sliding or a rotary pot.
4. The component values are shown for 120VAC, 60Hz application.
Following adjustments are needed for 240VAC, 50Hz applications:
R5 = 820K; R6 = R7 = R8 = R9 = 3M; R4 = 750K,
Q1 = FJV42 or equivalent; Q2 = TSM4NC50CP or equivalent
5. Momentary push-button switch SW1 is used for toggling the light between on and off.
6. All resistors are 0.25W unless specified otherwise.

Fig 1. APP_LS7641_02

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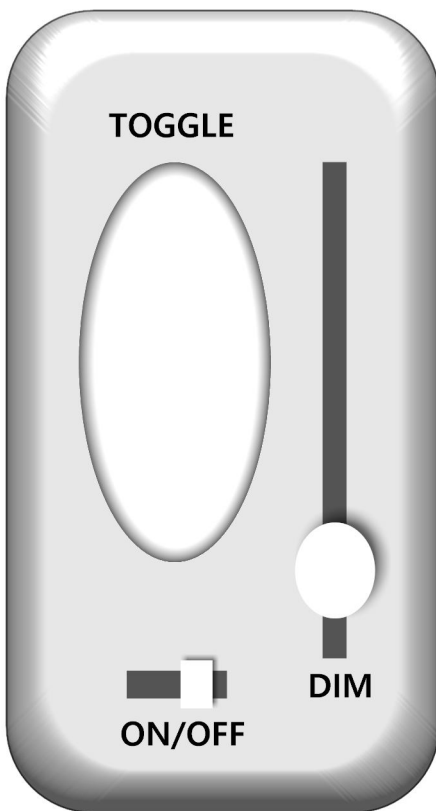


Fig 2

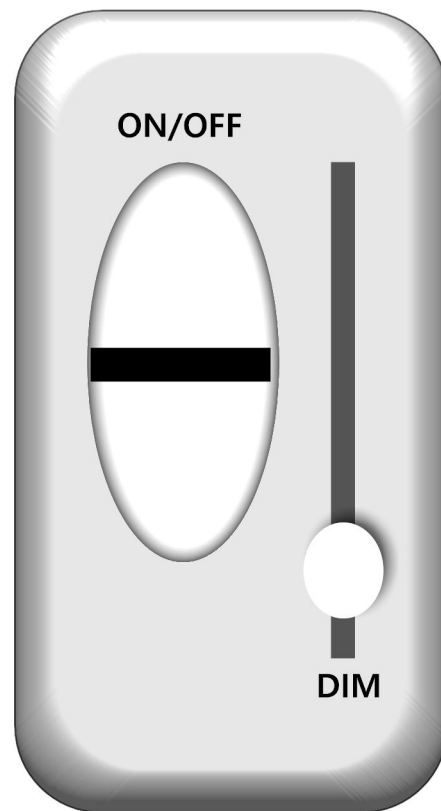


Fig 3

Fig 2 and Fig 3 are examples of wall switch dimmers. The "ON/OFF" switches in fig 2 and 3 correspond to SW2 in fig 1. In fig 2 it is a SPST slide switch and fig 3 it is a rocker switch. The "TOGGLE" switch in fig 3 corresponds to the momentary switch SW1 in fig 1. The potentiometer RV1 in fig 1 corresponds to the sliding potentiometer labeled "DIM".

In fig 2 the ON/OFF switch is used for turning the power on or off to the dimmer unit. When powered the alternate pressing of the TOGGLE switch causes the lamp to turn on or off. The brightness of the lamp is controlled by the sliding potentiometer DIM.

In fig 3 there is no TOGGLE switch. Instead the lamp is turned on and off with the ON/OFF power switch.