Low Noise, Dual EL Lamp Driver Demoboard

General Description

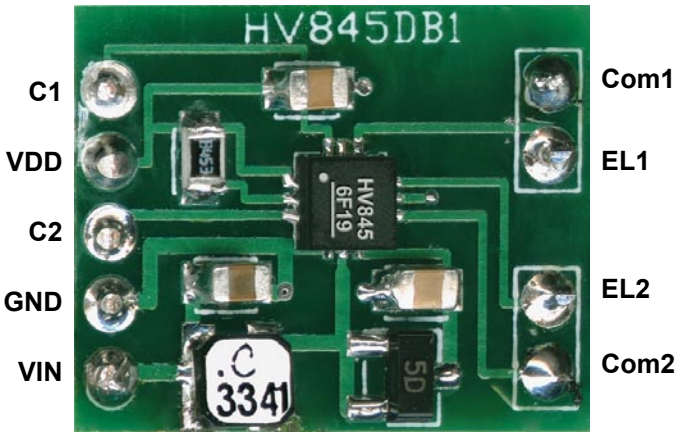
The Supertex HV845DB1 demoboard contains all necessary circuitry to demonstrate the features of the HV845 dual EL lamp driver.

Simply connect it to a power supply and a lamp as shown below. For additional assistance in designing EL driver circuits, please refer to application notes ***AN-H33 (effect of external components on performance of Supertex EL drivers)***.

Specifications

Parameter	Value
V_{DD} input voltage:	3.0V
V_{IN} inductor supply voltage:	3.3 - 4.2V
Supply current:	13mA
Lamp size:	2.3in^2
Lamp frequency:	195Hz
Converter frequency:	98kHz

Board Layout and Connection Diagram



Actual Size: 17.3mm x 14.4mm

Connections:

Controls C_1 and C_2: Lamp Selection

Various modes of the device are selected via the C_1 and C_2 pins. When C_1 is connected to V_{DD}/GND, Lamp 1 (EL_1) will be ON/OFF. When C_2 is connected to V_{DD}/GND, lamp 2 (EL_2) will be ON/OFF. When both C_1 and C_2 are connected to GND, the device shuts down. These inputs may be connected to a mechanical switch, or to a logic circuit output that has a source impedance of less than 20kΩ.

V_{DD}: IC Supply

Supplies the HV845 EL driver IC. The supplied circuit is optimized for 3.0V operation.

V_{IN}: Inductor Supply

Supplies the high voltage power converter. The demoboard is optimized for 3.3V to 4.2V operation.

GND: Circuit Ground

Connect to V_{DD} and V_{IN} negative terminals. Supply bypass capacitor for both V_{DD} and V_{IN} are provided on the demoboard. External supply bypass capacitors are not necessary.

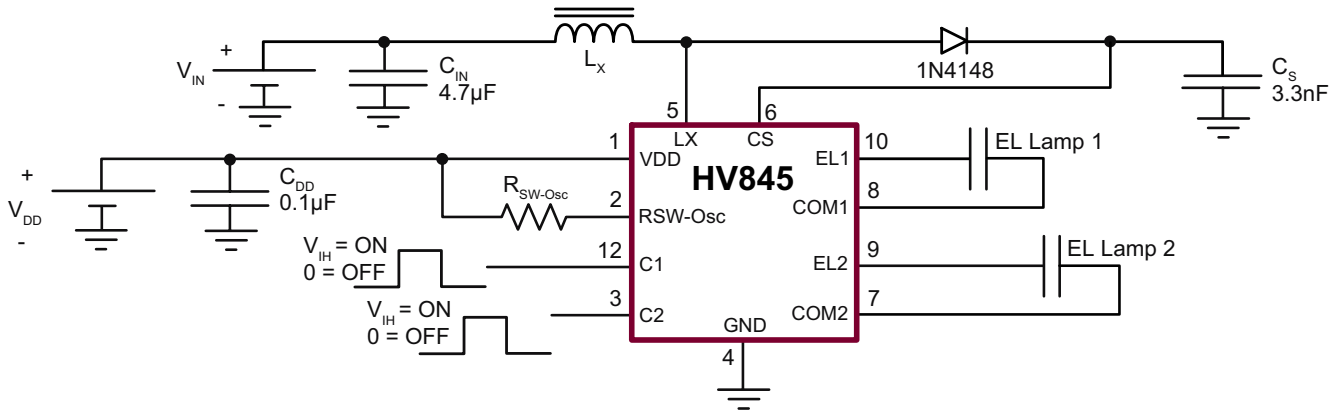
EL_1 and EL_2: Lamp Connections

Connects to lamps 1 and 2. Polarity is irrelevant.

Com1 and Com2: Lamp Connections

Connects to the other side of lamps 1 and 2. Polarity is irrelevant.

Figure1: HV845DB1 Circuit Schematic



Typical Performance

The specific external components used in the above circuit are: R_{SW} = 845kΩ, L_X = 330µH Coilcraft (LPS3010-334ML), C_S= 3.3nF 100V NPO. The following performance was observed when driving EL_1 = 1.3in² and EL_2 = 0.93in² green lamps.

V_{DD} (V)	V_{IN} (V)	Lamp	I_{IN} (mA)	V_{CS} (V_{PEAK})	f_{EL} (Hz)	Lamp Brightness (cd/m²)	
						EL_1	EL_2
3.0	3.3	EL_1 ON	8.96	88	195	17.04	-
3.0	3.3	EL_2 ON	6.96	88	195	-	16.36
3.0	3.3	EL_1 and EL_2 ON	12.35	88	195	16.17	14.72
3.0	3.7	EL_1 ON	7.65	88	195	17.45	-
3.0	3.7	EL_2 ON	5.98	88	195	-	16.78
3.0	3.7	EL_1 and EL_2 ON	11.13	88	195	16.64	15.79
3.0	4.2	EL_1 ON	6.19	88	195	17.71	-
3.0	4.2	EL_2 ON	4.79	88	195	-	17.20
3.0	4.2	EL_1 and EL_2 ON	8.51	88	195	17.27	16.20

Bill of Materials

Part	Description	Package	Manufacturer	Part Number
L_X	330µH Inductor	---	Coilcraft	LPS3010-334ML
C_S	3.3nF, 100V, NPO chip capacitor	0805	Novacap	0805N332K101NT
R_{SW}	1%, 845kΩ chip resistor	0805	Any	---
C_{IN}	4.7µF, 10V ceramic chip capacitor	0805	Any	---
C_{DD}	0.1µF, 16V ceramic chip capacitor	0805	Any	---
Diode	100V fast recovery diode	SOT-23	Diodes Inc	1N4148
U1	EL driver IC	12-Lead QFN	Supertex Inc	HV845K7-G

The above circuit may need to be optimized further based on specification of the lamp used.

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