

## Low Noise, Dual EL Lamp Driver Demoboard

### General Description

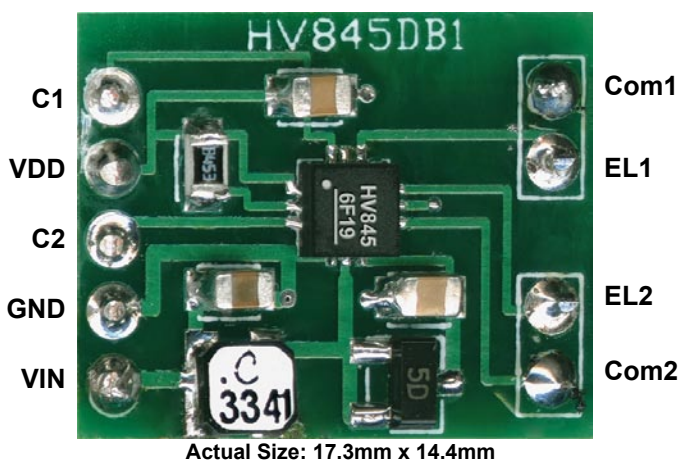
The Supertex HV845DB1 demoboard contains all necessary circuitry to demonstrate the features of the HV845 dual EL lamp driver.

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 <sup>2</sup>
Lamp frequency:	195Hz
Converter frequency:	98kHz

### Board Layout and Connection Diagram



### 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 20k $\Omega$ .

#### $V_{DD}$ : 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.

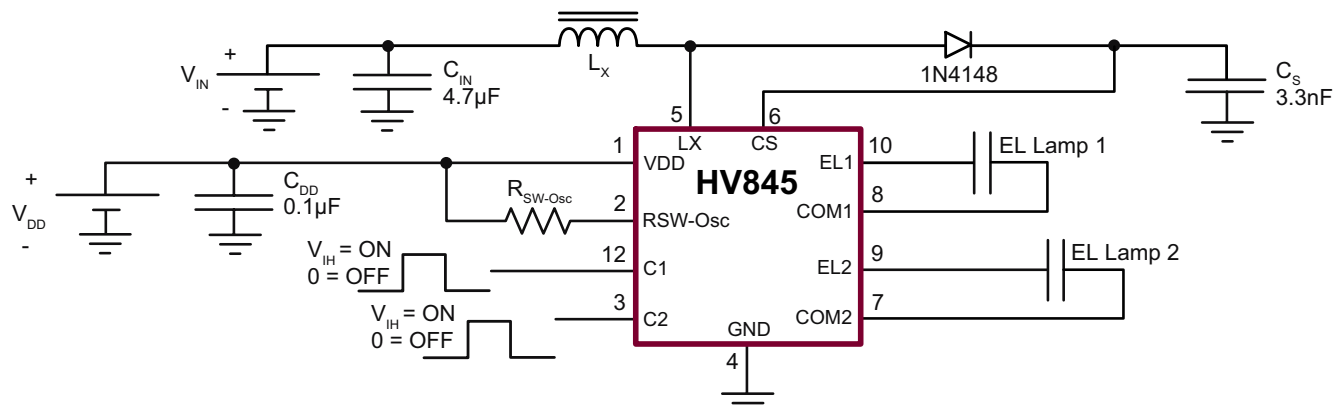
#### $EL_1$ and $EL_2$ : Lamp Connections

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:  $R_{SW} = 845k\Omega$ ,  $L_X = 330\mu H$  Coilcraft (LPS3010-334ML),  $C_S = 3.3nF$  100V NPO. The following performance was observed when driving  $EL_1 = 1.3in^2$  and  $EL_2 = 0.93in^2$  green lamps.

$V_{DD}$ (V)	$V_{IN}$ (V)	Lamp	$I_{IN}$ (mA)	$V_{CS}$ ( $V_{PEAK}$ )	$f_{EL}$ (Hz)	Lamp Brightness ( $cd/m^2$ )	
						$EL_1$	$EL_2$
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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