

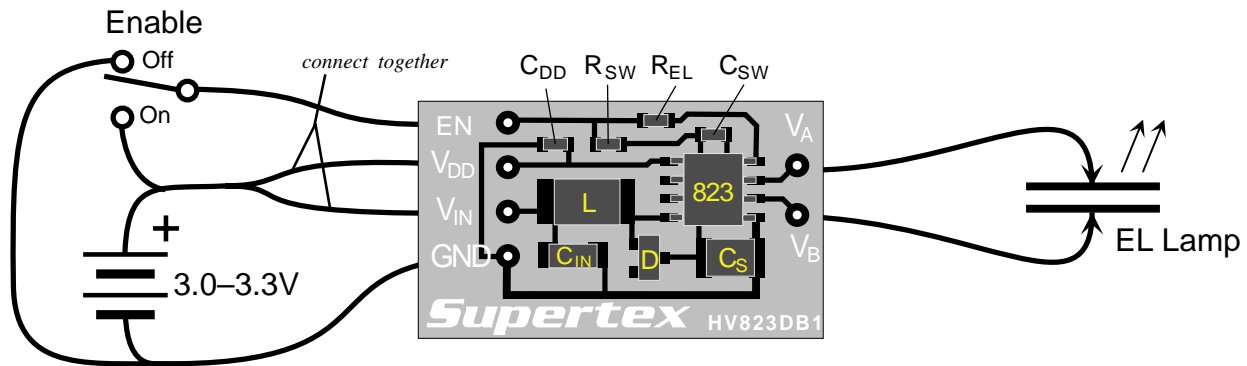
Introduction

The HV823DB1 EL Driver demo board contains all the circuitry necessary to drive an EL (Electroluminescent) lamp. Simply connect it to a power supply and a lamp as shown below.

Specifications

| | |
|---------------------|-------------------------|
| Supply Voltage | 3.0 - 3.3V |
| Supply Current | ~50mA |
| Lamp Size Range | 3 to 12 in ² |
| Lamp Frequency | ~260Hz |
| Converter Frequency | ~50kHz |

Board Layout & Connections



EN Enable Input

Enables/disables the lamp driver. A logic high (V_{DD}) enables the driver and a logic low (GND) disables the driver. This input may be connected to a mechanical switch as shown, or to a logic circuit output that has a source impedance of less than 20kΩ.

V_{DD} IC Supply

Supplies the HV823 EL driver IC. The supplied circuit is optimized for 3.0V to 3.3V operation. Current draw is typically 100μA when enabled and less than 1μA when disabled.

V_{IN} Inductor Supply

Supplies the high voltage power converter. Current draw is approximately 50mA.

GND Circuit Ground

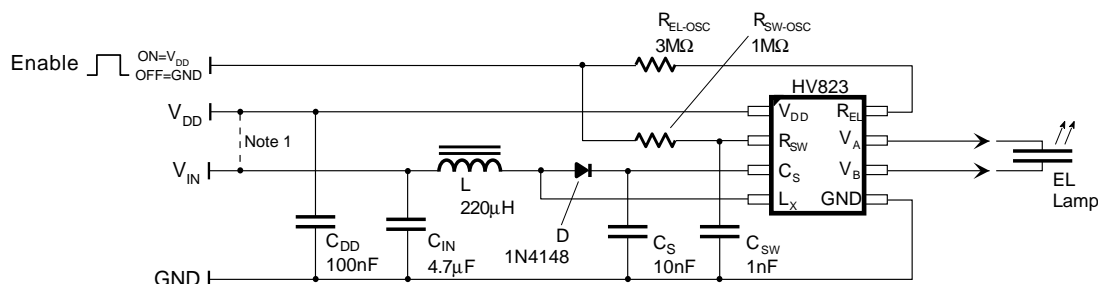
Connect to V_{DD} negative terminal. Supply bypass capacitors for both V_{DD} and V_{IN} are provided on the demo board. An external supply bypass capacitor is not necessary.

V_A and V_B Lamp Connections

Connect to EL lamp of 3 to 12 square inches. Polarity is irrelevant.

The supplied circuit has been optimized to drive an 8in² lamp from a 3.0V to 3.3V supply. The circuit may be customized with different component values to suit a particular application. To assist in customization, various circuits optimized for a variety of applications are provided. For additional assistance in designing EL driver circuits, please refer to **Application Notes AN-H33 (EL Lamp Driver Circuits)** and **AN-H34 (HV823 & HV825 EL Lamp Driver Circuits)**.

HV823DB1 Schematic



Note

- 1: Tie V_{DD} and V_{IN} together if split supplies are not used.
 C_{DD} is not needed when a single supply is used.

Modifying the Supplied Circuit

The supplied circuit is optimized to drive an 8in² green lamp from a 3.0V to 3.3V supply. To better suit other applications, the circuit may be modified by changing one or more of the components. The following table lists various applications in order of lamp size, along with supply voltages and component values. Find the circuit that most closely matches the desired application and change components as needed. For component locations, refer to the board layout and connection diagram at the beginning of this note.

| Lamp Size | Lamp ¹ Brightness | Lamp Color | Lamp Freq | V_{DD} | V_{IN} ² | V_{IN} Current | Component Values | | | | |
|--------------------|------------------------------|------------|-----------|----------|-----------------------|------------------|------------------|----------|----------|-------|----------|
| | | | | | | | L ³ | R_{EL} | R_{SW} | C_S | C_{SW} |
| 1.5in ² | 4.8ft-lm | Green | 260Hz | 3V | same | 10mA | 1mH | 3.3MΩ | 680kΩ | 100nF | none |
| 1.7in ² | 6.6ft-lm | Green | 400Hz | 3V | 1.0-1.5V | 35mA | 220µH | 2MΩ | 1MΩ | 100nF | none |
| 3.5in ² | 6.2ft-lm | Green | 400Hz | 3.3V | same | 25mA | 560µH | 2MΩ | 750kΩ | 100nF | none |
| 6in ² | 3.0ft-lm | Green | 170Hz | 3.3V | same | 21mA | 560µH | 5.1MΩ | 680kΩ | 100nF | none |
| 7in ² | 5.8ft-lm | Green | 400Hz | 5V | same | 30mA | 560µH | 2MΩ | 680kΩ | 10nF | 1nF |
| 7in ² | 7.8ft-lm | Green | 400Hz | 9V | same | 23mA | 560µH | 2MΩ | 680kΩ | 10nF | 1nF |
| 8in ² | 6.2ft-lm | Green | 400Hz | 5V | same | 30mA | 560µH | 2MΩ | 820kΩ | 10nF | 1nF |
| 9in ² | 4.7ft-lm | White | 800Hz | 5V | 12V | 12mA | 560µH | 1MΩ | 330kΩ | 100nF | 1nF |
| 10in ² | 4.1ft-lm | Green | 260Hz | 5V | same | 22mA | 1mH | 3.3MΩ | 680kΩ | 10nF | 1nF |
| 12in ² | 5.2ft-lm | Green | 260Hz | 3.3V | same | 51mA | 220µH | 3MΩ | 680kΩ | 10nF | none |
| 12in ² | 3.2ft-lm | Green | 260Hz | 5V | same | 19mA | 560µH | 3MΩ | 330kΩ | 10nF | 1nF |
| 13in ² | 3.1ft-lm | White | 400Hz | 5V | same | 34mA | 560µH | 2MΩ | 680kΩ | 10nF | 1nF |
| 13in ² | 6.6ft-lm | White | 400Hz | 9V | same | 35mA | 560µH | 2MΩ | 680kΩ | 10nF | 1nF |
| 23in ² | 2.1ft-lm | Green | 250Hz | 3.3V | same | 48mA | 330µH | 3.3MΩ | 1MΩ | 10nF | 1nF |

Notes:

- Lamp brightness can vary by type and manufacturer.
- 'same' in the V_{IN} column indicates that V_{IN} and V_{DD} are connected together to the same power supply.
- The recommended inductor is a Murata LQH4N series. Other inductors may be used, however, different inductor characteristics (especially series resistance) may result in overall circuit performance different from that listed. **Please refer to Application Note AN-H33 for more information.**