# Low Noise, High Voltage EL Lamp Driver IC Demoboard

# **General Description**

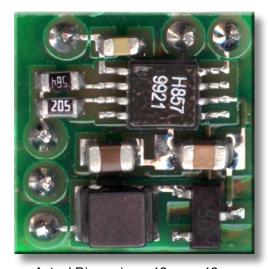
The Supertex HV857DB1 demoboard contains all necessary circuitry to demonstrate the features of the HV857 EL lamp driver.

Simply connect it to a power supply and a lamp. 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) and *AN-H43* (EL lamp driver circuits to reduce audible noise).

# **Specifications**

| •                       |                    |
|-------------------------|--------------------|
| Parameter               | Value              |
| Input voltage:          | 1.8 to 5.0V        |
| Typical supply current: | 26mA               |
| Lamp size:              | 2.6in <sup>2</sup> |
| Lamp frequency:         | 206Hz              |
| Converter frequency:    | 80kHz              |

# **Board Layout and Connection Diagram**



Actual Dimensions: 12mm x 12mm

# V<sub>DD</sub> C<sub>DD</sub> V<sub>A</sub> V<sub>B</sub> R<sub>SW</sub> HV857 EN C<sub>IN</sub> C<sub>S</sub> GND V<sub>IN</sub> L<sub>X</sub> D

### **Connections:**

#### **EN - Enable Input**

Enables/Disables the lamp driver. A logic high (connect to  $V_{\text{DD}}$ ) enables the driver, and a logic low (connect to GND) disables the driver. This input can be connected to a mechanical switch or to a logic circuit output that has a source impedance of less than  $20k\Omega$ .

#### V<sub>DD</sub> - IC Supply

Supplies the HV857 EL driver IC. The supplied circuit is optimized for 3.0V operation. The operating range can be from 1.8 to 5.0V. Connect to positive terminal of a power supply.

#### V<sub>IN</sub> - Inductor Supply

Supplies the high voltage power converter. Connect to positive terminal of a power supply.

#### **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 demo board. External supply bypass capacitors are not required.

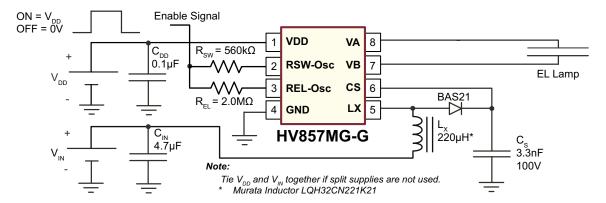
#### **V<sub>A</sub>** and **V<sub>B</sub>** - Lamp Connections

Connect to an EL lamp. Polarity is irrelevant.

#### Note:

Make sure all the above connections are made before powering up the supply voltages.

# **Schematic**



# **Typical Performance**

| Lamp Size | $V_{DD} = V_{IN}$ | I <sub>IN</sub> | V <sub>cs</sub> | f <sub>EL</sub> | Brigh | Brightness     |  |
|-----------|-------------------|-----------------|-----------------|-----------------|-------|----------------|--|
| (in²)     | (V)               | (mA)            | (V)             | (Hz)            | ft-lm | cd/ <b>m</b> ² |  |
| 2.6       | 1.8               | 24.6            | 76.4            | 206             | 3.65  | 12.5           |  |
| 2.6       | 2.0               | 25.2            | 82.8            | 206             | 4.24  | 14.5           |  |
| 2.6       | 3.0               | 23.6            | 86.4            | 206             | 5.41  | 18.5           |  |
| 2.6       | 4.0               | 19.2            | 88.0            | 206             | 5.88  | 20.1           |  |
| 2.6       | 5.0               | 15.4            | 90.0            | 206             | 6.23  | 21.3           |  |
| 1.8       | 1.8               | 20.8            | 84.0            | 206             | 4.56  | 15.6           |  |
| 1.8       | 2.0               | 17.3            | 84.8            | 206             | 4.91  | 16.8           |  |
| 1.8       | 3.0               | 13.9            | 86.8            | 206             | 5.53  | 18.9           |  |
| 1.8       | 4.0               | 9.6             | 88.0            | 206             | 5.94  | 20.3           |  |
| 1.8       | 5.0               | 7.2             | 90.0            | 206             | 6.20  | 21.2           |  |

## **Bill of Materials**

| Component       | Description                       | Package     | Manufacturer | Part #         |
|-----------------|-----------------------------------|-------------|--------------|----------------|
| L <sub>x</sub>  | 220µH Inductor                    | -           | Murata       | LQH32CN221K21  |
| C <sub>s</sub>  | 3.3nF, 100V, NPO chip capacitor   | 0805        | Novacap      | 0805N332K101NT |
| R <sub>sw</sub> | 5%, 560kΩ resistor                | 0805        | Any          |                |
| R <sub>EL</sub> | 5%, 2MΩ resistor                  | 0805        | Any          |                |
| C <sub>IN</sub> | 4.7µF, 10V ceramic chip capacitor | 0805        | Any          |                |
| C <sub>DD</sub> | 0.1µF, 16V ceramic chip capacitor | 0603        | Any          |                |
| Diode           | 250V fast recovery diode          | SOT-23      | Diodes Inc   | BAS21          |
| Clip            | Micro alligator clip              | -           | Mueller      | BU-34          |
| Boot            | Flexible vinly insulation         | -           | Mueller      | BU-36-0        |
| U1              | EL driver IC                      | 8-Lead MSOP | Supertex Inc | HV857MG-G      |

**Supertex inc.** does not recommend the use of its products in life support applications, and will not knowingly sell them for use in such applications unless it receives an adequate "product liability indemnification insurance agreement." **Supertex inc.** does not assume responsibility for use of devices described, and limits its liability to the replacement of the devices determined defective due to workmanship. No responsibility is assumed for possible omissions and inaccuracies. Circuitry and specifications are subject to change without notice. For the latest product specifications refer to the **Supertex inc.** (website: http://www.supertex.com)

©2010 **Supertex inc.** All rights reserved. Unauthorized use or reproduction is prohibited.

