

High Voltage EL Lamp Driver

Ordering Information

Device	Package Options		
	MSOP-8	SO-8	Die
HV826	HV826MG*	HV826LG	HV826X

* Product supplied on 2500 piece carrier tape reels.

Features

- ☐ 1.8V to 3.5V operating supply voltage
- ☐ DC to AC conversion
- ☐ Adjustable output frequency
- ☐ Adjustable switch frequency
- ☐ Output voltage regulation
- ☐ Enable/disable function

Applications

- ☐ Mobile cellular phones
- ☐ Pagers
- ☐ Portable Transceivers
- ☐ Remote Control Units
- ☐ Calculators

Absolute Maximum Ratings*

Supply Voltage, V_{DD}	-0.5V to +4.5V
Output Voltage, V_{CS}	-0.5V to +100V
Operating Temperature Range	-25° to +85°C
Storage Temperature Range	-65°C to +150°C
MSOP-8 Power Dissipation	250mW
SO-8 Power Dissipation	400mW

Note:

*All voltages are referenced to GND.

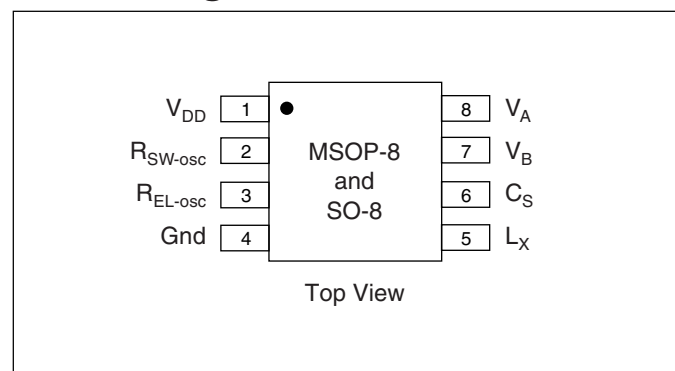
General Description

The Supertex HV826 is a high voltage driver designed for driving EL lamps. The input supply voltage range is from 1.8V to 3.5V. The device uses a single inductor and a minimum number of passive components. The nominal regulated output voltage that is applied to the EL lamp is $\pm 80V$. The chip can be enabled/disabled by connecting the resistor on R_{SW-OSC} to V_{DD} /ground.

The HV826 has two internal oscillators, a switching MOSFET, and a high voltage EL lamp driver. The frequency for the switching MOSFET is set by an external resistor connected between the R_{SW-osc} pin and the supply pin V_{DD} . The EL lamp driver frequency is set by an external resistor connected between R_{EL-osc} pin and the V_{DD} pin. An external inductor is connected between the L_X and V_{DD} pins. A 0.01-0.1 μF capacitor is connected between C_S and ground. The EL lamp is connected between V_A and V_B .

The switching MOSFET charges the external inductor and discharges it into the capacitor at C_S . The voltage at C_S will start to increase. Once the voltage at C_S reaches a nominal value of 80V, the switching MOSFET is turned OFF to conserve power. The outputs V_A and V_B are configured as an H bridge and are switching in opposite states to achieve 160V peak-to-peak across the EL lamp.

Pin Configuration



Electrical Characteristics

DC Characteristics (Over recommended operating conditions unless otherwise specified, $T_A=25^{\circ}\text{C}$)

Symbol	Parameter	Min	Typ	Max	Units	Conditions
$R_{DS(on)}$	On-resistance of switching transistor			7.0	Ω	$I=100\text{mA}$
V_{CS}	Max. output regulation voltage	75	80	85	V	$V_{DD}=1.8\text{V to }3.5\text{V}$
V_{A-B}	Max. of differential output voltage across lamp	150	160	170	V	$V_{DD}=1.8\text{V to }3.5\text{V}$
I_{DDQ}	Quiescent V_{DD} supply current			100	nA	$R_{SW-osc} = \text{Low}$
I_{DD}	Input current going into the V_{DD} pin			150	μA	$V_{DD}=1.8\text{V to }3.5\text{V}$. See Figure 1.
I_{IN}	Input current including inductor current		35	45	mA	$V_{IN}=1.5\text{V}$. See Figure 1.
V_{CS}	Output voltage on V_{CS}	65	70		V	$V_{IN}=1.5\text{V}$. See Figure 1.
f_{EL}	V_{A-B} output drive frequency	300	375	450	Hz	$V_{IN}=1.5\text{V}$. See Figure 1.
f_{SW}	Switching transistor frequency		80		KHz	$V_{IN}=1.5\text{V}$. See Figure 1.
D	Switching transistor duty cycle		88		%	See figure 1.

Recommended Operating Conditions

Symbol	Parameter	Min	Typ	Max	Units	Conditions
V_{DD}	Supply voltage	1.8		3.5	V	
f_{EL}	V_{A-B} output drive frequency	60		1000	KHz	
T_A	Operating temperature	-25		85	$^{\circ}\text{C}$	

Enable/Disable Function Table

Symbol	Parameter	Min	Typ	Max	Units	Conditions
EN-L	Logic input low voltage	0		0.5	V	$V_{DD}=1.8\text{V to }3.5\text{V}$
EN-H	Logic input high voltage	$V_{DD}-0.5$		V_{DD}	V	$V_{DD}=1.8\text{V to }3.5\text{V}$

Block Diagram

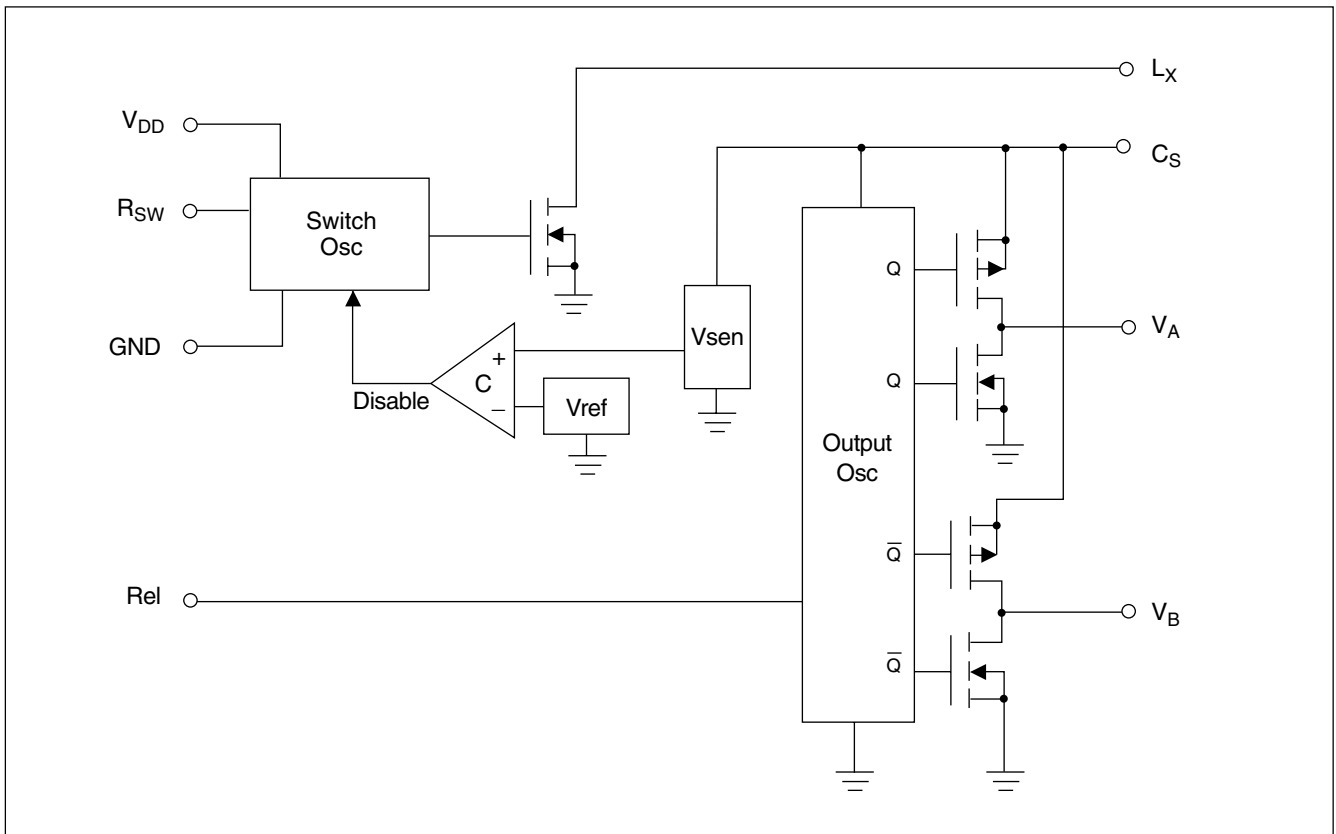
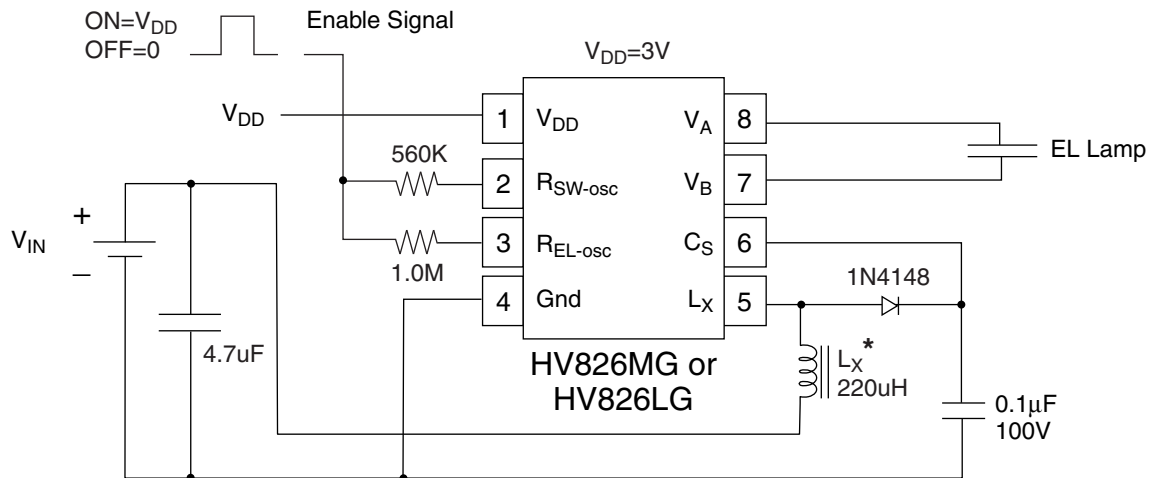


Figure 1: Typical Application



* L_X = Murata LQH4N221K04

Operating V_{DD} voltage: 1.8V to 3.5V
 EL lamp size: Up to 2.5 in²
 Brightness: 3.0 to 5.0ft-lm

Typical Performance

Device	Lamp Size	V_{IN}	I_{IN}	V_{CS}	f_{EL}	Brightness	T_A
HV826MG	1.6 in ²	1.5V	35mA	66V	345Hz	5.0ft-lm	-25°C to +85°C

Typical Performance Curves for Figure 1 (1.6 in.² lamp)

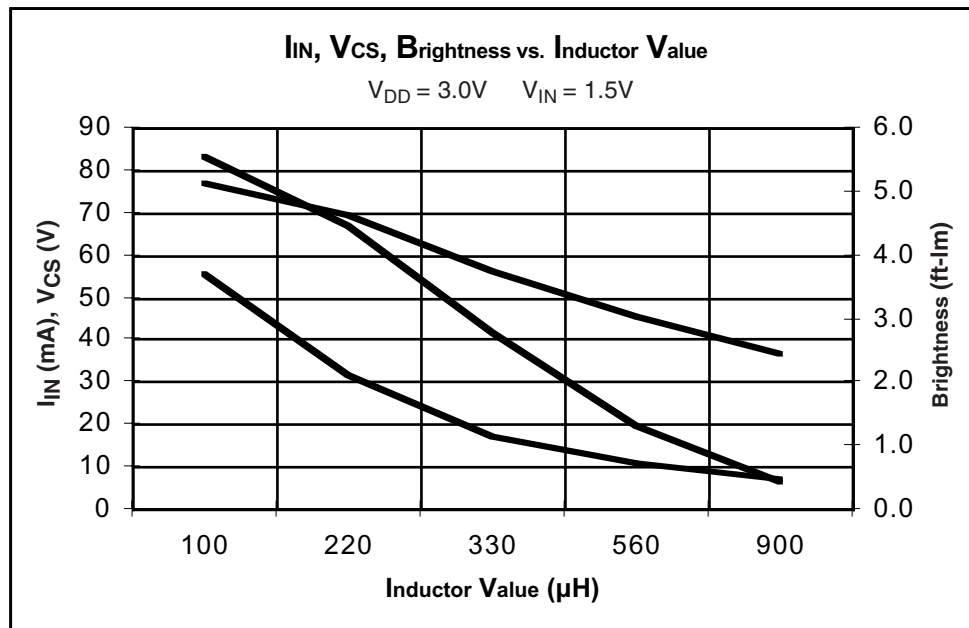
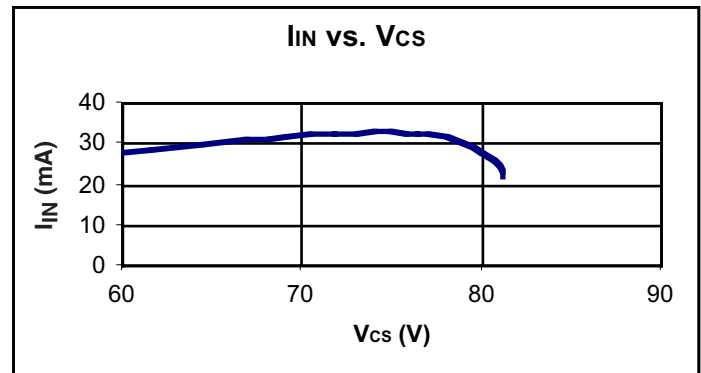
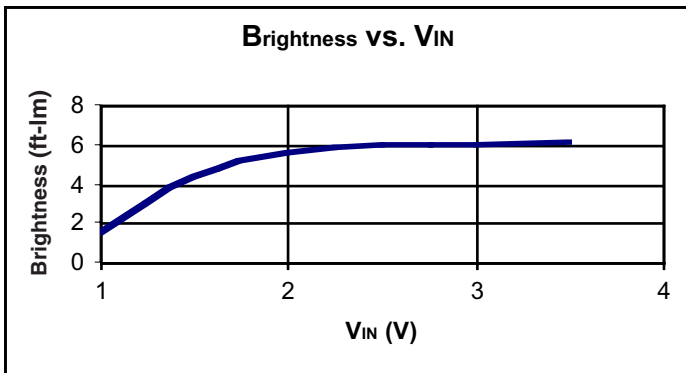
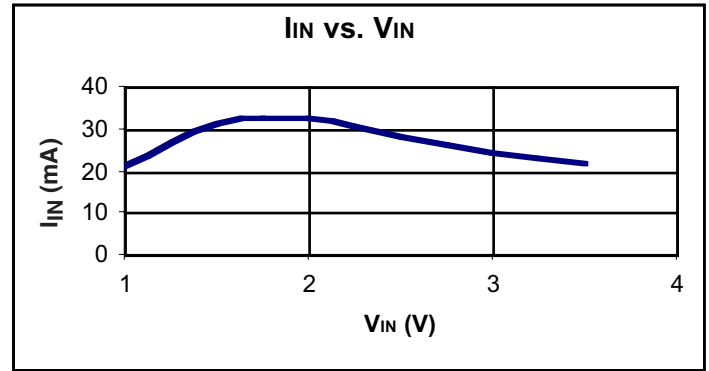
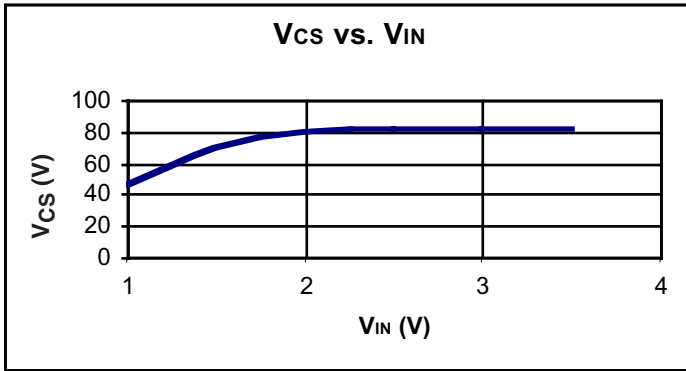
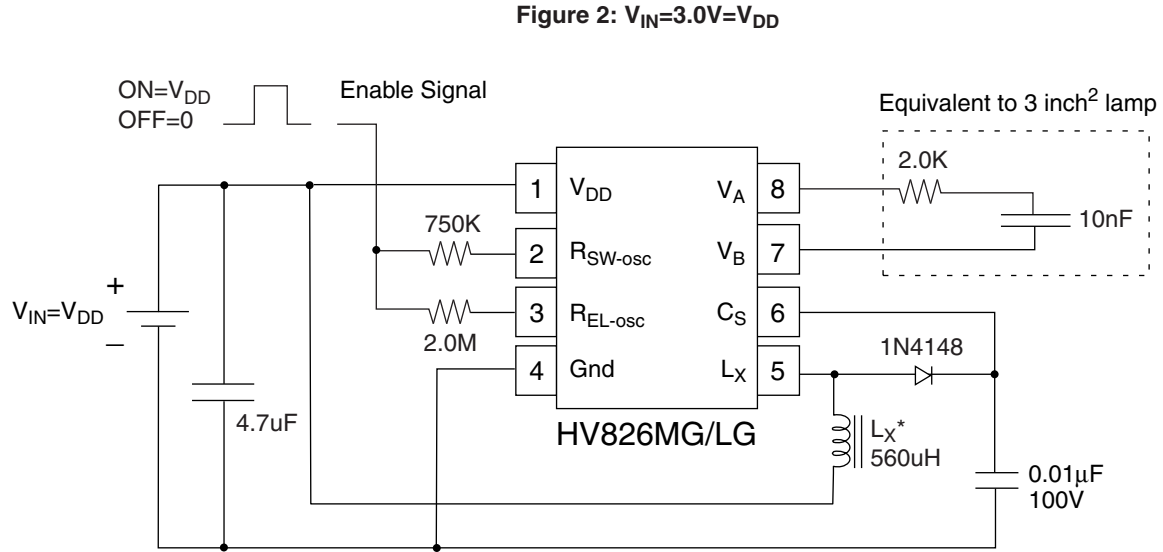


Figure 2: Typical Application

* L_X = Murata LQH4N561K04

Operating V_{DD} voltage: 1.8V to 3.5V
EL lamp size: Up to 4.5 in²
Brightness: 3.0 to 5.0ft-lm

Typical Performance

Device	Lamp Size	V_{DD}	I_{DD}	V_{CS}	f_{EL}	Brightness	T_A
HV826MG	3.0 in ²	3.0V	23mA	80V	195Hz	4.0ft-lm	-25°C to +85°C

Typical Performance Curves for Figure 2 (3.0 in.² lamp)

