High Voltage EL Lamp Driver

Ordering Information

	Package Options						
Device	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:

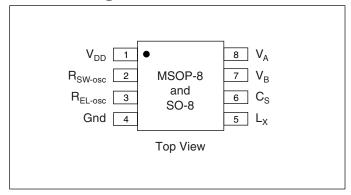
General Description

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 ± 80 V. The chip can be enabled/disabled by connecting the resistor on $R_{SW\text{-}OSC}$ 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 $R_{SW\text{-}osc}$ pin and the supply pin V_{DD} . The EL lamp driver frequency is set by an external resistor connected between $R_{EL\text{-}osc}$ 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 $C_{\rm S}.$ The voltage at $C_{\rm S}$ will start to increase. Once the voltage at $C_{\rm S}$ reaches a nominal value of 80V, the switching MOSFET is turned OFF to conserve power. The outputs $V_{\rm A}$ and $V_{\rm B}$ are configured as an H bridge and are switching in opposite states to achieve 160V peak-to-peak across the EL lamp.

Pin Configuration



^{*}All voltages are referenced to GND.

Electrical Characteristics

DC Characteristics (Over recommended operating conditions unless otherwise specified, T_A =25°C)

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

Recommended Operating Conditions

Symbol	Parameter	Min	Тур	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	°C	

Enable/Disable Function Table

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

Block Diagram

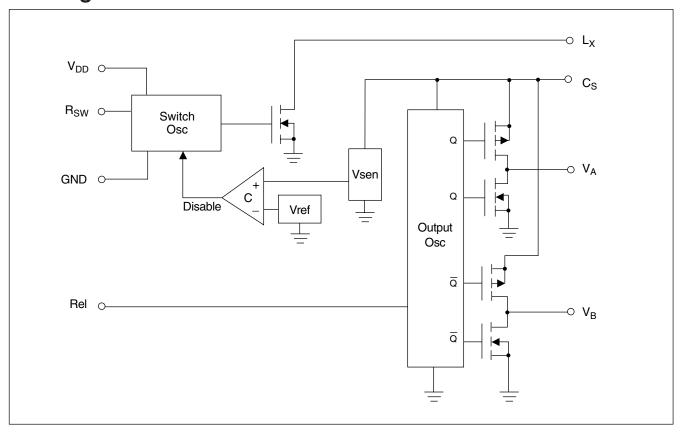
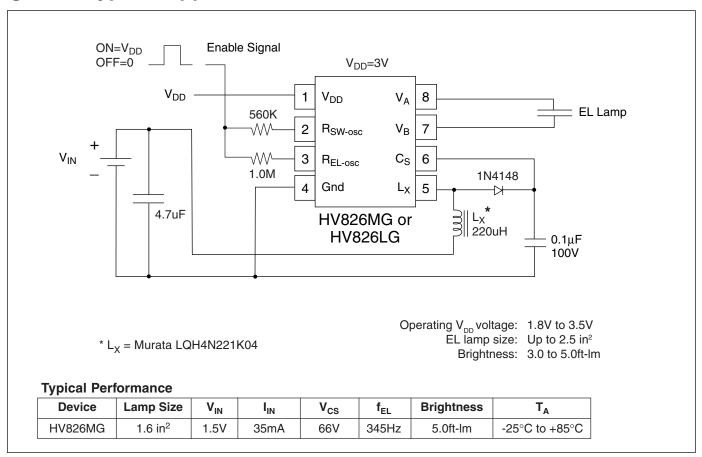
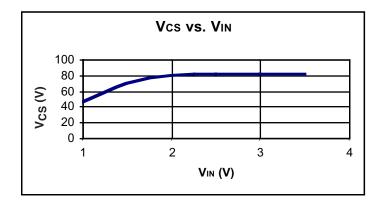
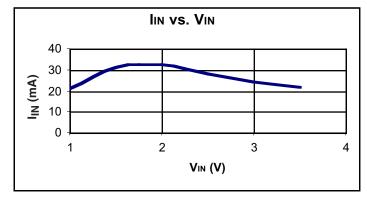


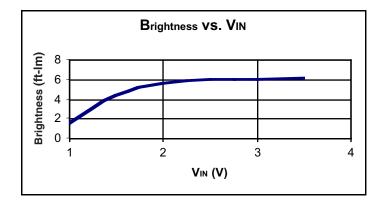
Figure 1: Typical Application

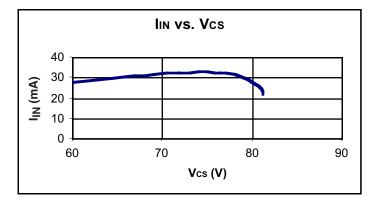


Typical Performance Curves for Figure 1 (1.6 in.² lamp)









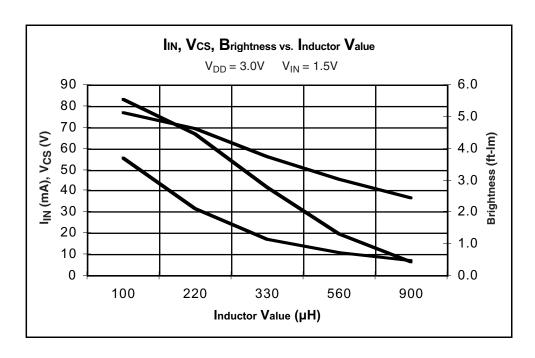
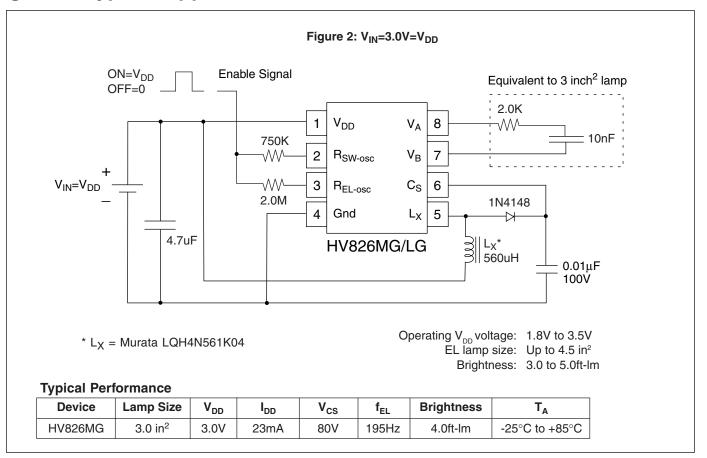


Figure 2: Typical Application



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

