Preliminary

Dual High Voltage, Low Noise EL Lamp Driver

Ordering Information

Device	Package Options	
	MSOP-8	Die
HV832	HV832MG*	HV832X

* Product supplied on 2500 piece carrier tape reels.

Features

- ❏ 2.0V to 3.6V operating supply voltage
- ❏ DC to AC conversion
- ❏ Low noise
- ❏ Output voltage regulation
- ❏ Enable/disable function

Applications

- ❏ Mobile cellular phones
- ❏ Pagers
- ❏ Portable instrumentation
- ❏ Portable transceivers

Absolute Maximum Ratings*

Supply voltage, V_{DD}	-0.5V to 7.5V
Output voltage, V_{C_S}	-0.5V to +100V
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-65°C to +150°C
8 Pin MSOP Power Dissipation	250mW

* All voltages are referenced to ground.

General Description

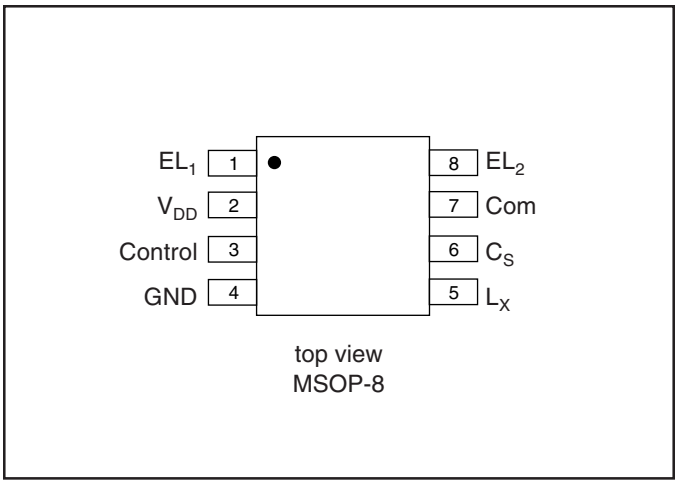
The Supertex HV832 is a high voltage driver designed for driving two EL lamps with a combined area of 3.5 square inches. The input supply voltage range is from 2.0V to 3.6V. The device is designed to reduce the amount of audible noise emitted by the lamp. The device uses a single inductor and a minimum number of passive components. The nominal regulated output voltage that is applied to the EL lamp is ±80V.

The HV832 has an internal oscillator, a switching MOSFET, and two high voltage EL lamp drivers. The frequency for the switching MOSFET is set at 51KHz nominal. The EL lamp driver frequency is set by dividing the MOSFET switching frequency by 128. An external inductor is connected between the L_X and V_{DD} pins. A 0.001 to 0.01µF, 100V capacitor is connected between C_S and Ground. The EL lamps are connected between EL_1 to Com and EL_2 to Com.

An input control pin is available to select various modes of the device. Each logic pulse applied to the control pin will cause the device to change to the next mode. The sequence for the modes is: (1) EL_1 on only, (2) EL_2 on only, (3) both EL_1 and EL_2 on, and (4) device shuts down. During power up of the device, the mode will default to shut down.

The switching MOSFET charges the external inductor and discharges it into the capacitor at Cs. The voltage at C_S will start to increase. Once the voltage at Cs reaches a nominal value of 80V, the switching MOSFET is turned off to conserve power. The outputs EL_1 to Com and EL_2 to Com are configured as H bridges and are switching in opposite states to achieve 160V across the EL lamp.

Pin Configuration



top view
MSOP-8

Electrical Characteristics

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

Symbol	Parameter	Min	Typ	Max	Units	Conditions
$R_{DS(ON)}$	On-resistance of switching transistor			7.0	Ω	I = 100mA
V_{DD}	Input voltage range	2.0		3.6	V	
V_{CS}	Output regulation voltage	75	80	85	V	V_{DD} = 2.0V to 3.6V
V_{diff}	differential output voltage across each lamp (EL_1 to Com, EL_2 to Com)	150	160	170	V	V_{DD} = 2.0V to 3.6V
I_{DDQ}	Quiescent V_{DD} supply current			150	nA	
I_{DD}	Input current into V_{DD} pin			150	µA	V_{DD} = 2.0V to 3.6V
I_{IN}	Input current including inductor current		26.5	30	mA	V_{IN} = 3.0V. T_A = -40°C to +85°C. See Figure 1.
			12	16		V_{IN} = 3.0V. T_A = 25°C. See Figure 1.
V_{CS}	Output voltage on V_{CS}		74		V	V_{IN} = 3.0V. See Figure 1.
f_{EL}	V_{diff} output drive frequency	350	400	450	Hz	V_{IN} = 3.0V. See Figure 1.
f_{SW}	Switching transistor frequency	44.8	51.2	57.6	KHz	V_{IN} = 3.0V. See Figure 1.
$f_{SW\ Drift}$	Switching transistor frequency Drift			+/- 5.0	KHz	T_A = -40°C to +85°C
D	Switching transistor duty cycle	85			%	See Figure 1.
I_{IL}	Input logic low current going into the control pin.			0.6	µA	V_{DD} = 2.0V to 3.6V. See Figure 1.
I_{IH}	Input logic high current going into the control pin.			0.6		
V_{IL}	Logic input low voltage	0		0.25	V	
V_{IH}	Logic input high voltage	1.75		V_{DD}	V	

* The inductor used is a 560uH Murata inductor, typ DC resistance of 7.8 Ohms, part # LQS33C561.

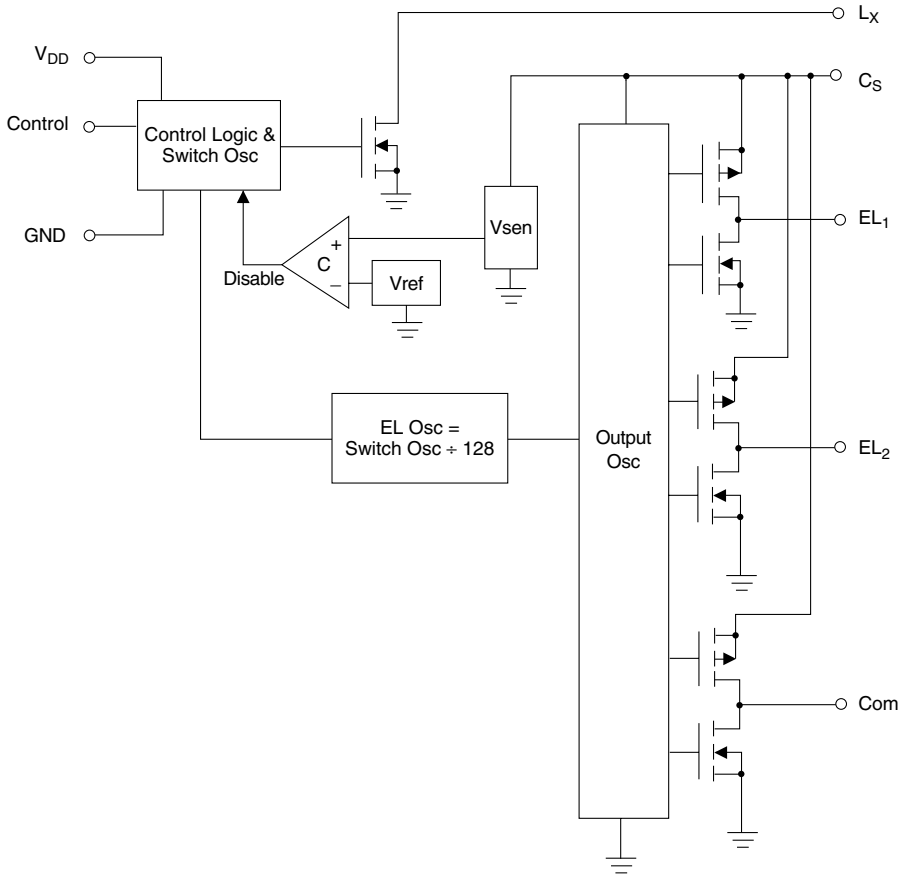
Recommended Operating Conditions

Symbol	Parameter	Min	Typ	Max	Units	Conditions
V_{DD}	Supply voltage	2.0		3.6	V	
T_A	Operating temperature	-40		85	°C	

Function Table

Control	EL_1	EL_2	Com	IC
Power up	HI Z	HI Z	HI Z	OFF
1st pulse L to H	ON	HI Z	ON	ON
2nd pulse L to H	HI Z	ON	ON	ON
3rd pulse L to H	ON	ON	ON	ON
4th pulse L to H	HI Z	HI Z	HI Z	OFF

Functional Block Diagram



Typical Application Circuit

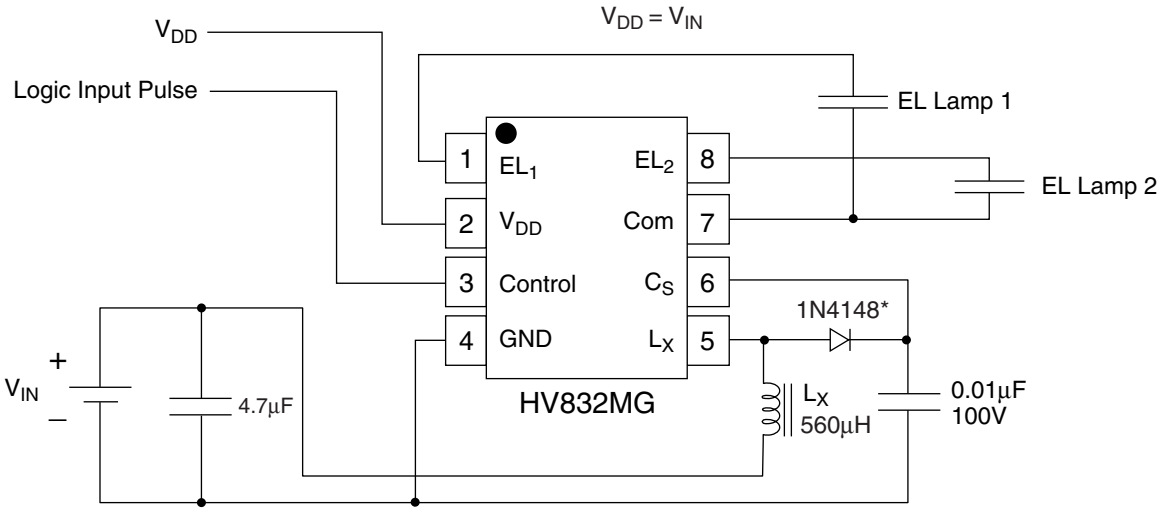


Figure 1

Device	Lamp Size	V_{DD}	I_{DD} max	V_{CS} min	f_{EL}	Brightness	T_A
HV832MG	1.5in^2	3.0V	26.5mA	74V	400Hz	7.5ft-lm	-40°C to +85°C

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