Advanced Information

High Voltage EL Lamp Driver

Ordering Information

Device	Input Voltage	Package Options	
		8-Lead SO	Die
HV824	1.0V to 1.6V	HV824LG	HV824X

Features

- Processed with HVCMOS® technology
- 1.0V to 1.6V supply voltage
- DC to AC conversion
- Permits the use of high-resistance elastomeric lamp connectors
- Adjustable output lamp frequency to control lamp color, lamp life, and power consumption
- Adjustable converter frequency to eliminate harmonics and optimize power consumption
- Enable/disable function
- Low current draw under no load condition

Applications

- Pagers
- Portable Transceiver
- Portable Instrumentation
- Cellular Phones

General Description

The Supertex HV824 is a high voltage driver designed to drive EL lamps with capacitive loads of 2nF to 15nF. The input supply voltage range is 1.0V to1.6V. The device uses a single inductor and a minimum number of passive components. Typical output voltage applied to the EL lamp is 120V to 150V peak-to-peak. The HV824 can be enabled/disabled by connecting the R_{SW} resistor to V_{DD}/ground. In die form, the device has an enable bar pad which enables the IC when it is at logic low.

The HV824 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 V_{DD} pin. The EL lamp driver frequency is set by an external resistor connected between the $R_{EL\text{-}osc}$ pin and the V_{DD} pin. An external inductor is connected between the L_x and V_{DD} pins. A 0.01µF to 0.1µF capacitor is connected between C_s and GND pins. The EL lamp is connected between V_A and V_B.

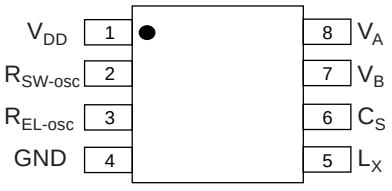
The switching MOSFET charges the external inductor and discharges it into the 0.01µF to 0.1µF capacitor at C_s. The voltage at C_S will start to increase. Once the voltage at C_s reaches a nominal value of 75V, the switching MOSFET is turned OFF to conserve power. The outputs V_A and V_B are configured as an H-bridge and are switching in opposite states to achieve a maximum voltage of 180V peak-to-peak across the EL lamp.

Absolute Maximum Ratings*

Supply Voltage, V_{DD}	-0.5V to +2.0V
Output Voltage, V_{Cs}	-0.5V to +120V
Operating Temperature Range	-25°C to +85°C
Storage Temperature Range	-65°C to +150°C
Power Dissipation	400mW

Note:
*All voltages are referenced to GND.

Pin Configuration



SO-8
top view

Electrical Characteristics

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

Symbol	Parameter	Min	Typ	Max	Units	Conditions
I_{DDQ}	Quiescent V_{DD} supply current		50	100	nA	R_{SW-osc}=Low
I_{DD}	Input current going into the V_{DD} pin			450	µA	V_{DD}=1.5V.
I_{IN}	Input current including inductor current.			70	mA	V_{DD}=1.5V. See Figure 1.
V_{P-P}	Output voltage peak-to-peak	140	150	160	V	V_{DD}=1.5V. See Figure 1.
		130				V_{DD}=1.0V. See Figure 1.
f_{EL}	V_{A-B} output drive frequency	300	333		Hz	V_{DD}=1.5V. See Figure 1.
D	Switching transistor duty cycle		88		%	
C_{LOAD}	EL panel capacitance load range	2.0		15	nF	

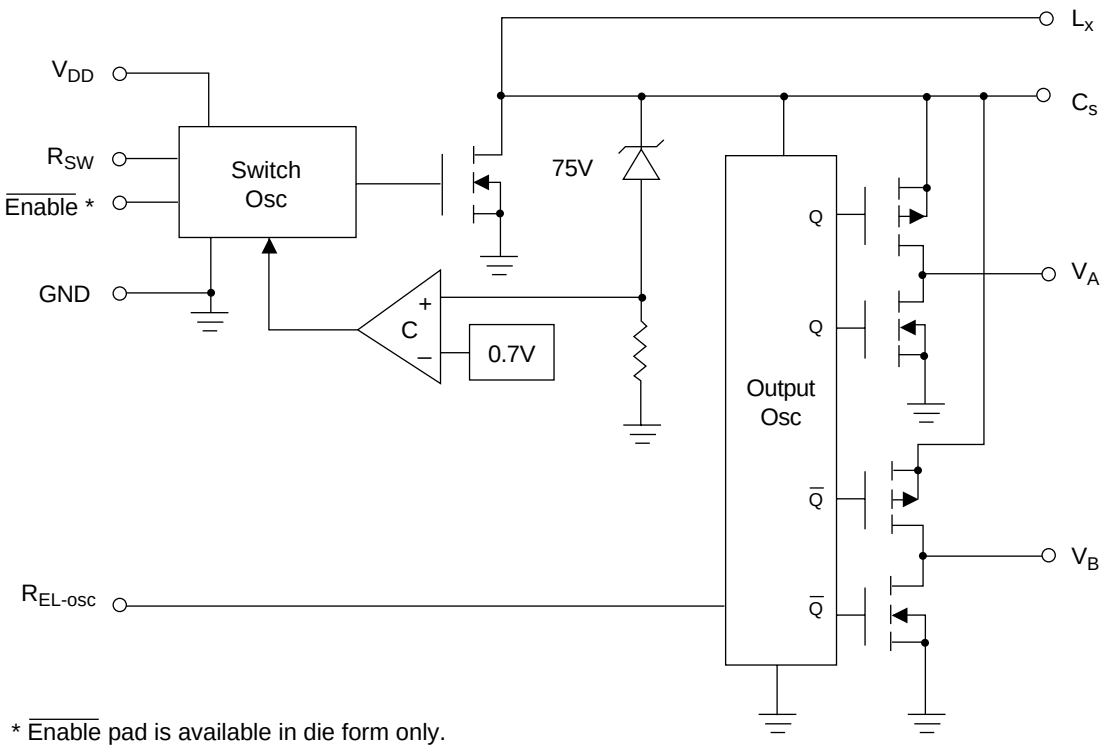
Recommended Operating Conditions

Symbol	Parameter	Min	Typ	Max	Units	Conditions
V_{DD}	Supply voltage	1.0		1.6	V	
T_A	Operating temperature	-25		85	°C	

Enable/Disable Table

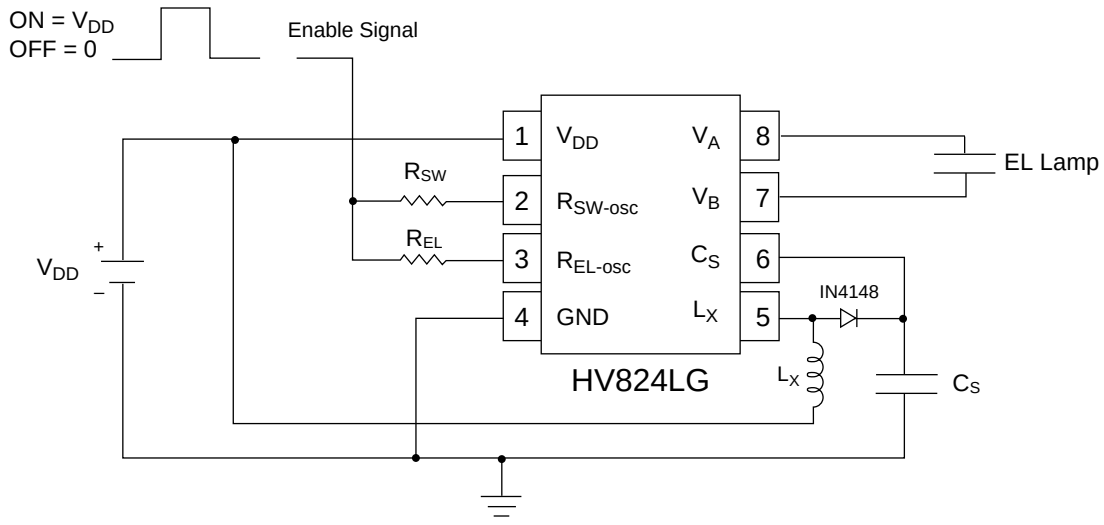
Symbol	Parameter	Min	Typ	Max	Units	Conditions
V_{IL}	Low level input voltage to R_{SW} resistor	0		0.2	V	V_{DD}=1.0V to 1.6V.
V_{IH}	High level input voltage to R_{SW} resistor	V_{DD}-0.5		V_{DD}	V	V_{DD}=1.0V to 1.6V.

Block Diagram



* $\overline{Enable}$ pad is available in die form only.

Typical Application



Typical Performance

Lamp Size	V_{IN}	I_{IN}	V_{CS}	f_{EL}	Brightness
1.5in^2	1.0V-1.5V	70mA	75V	333Hz	5.0ft-lm