

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

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.

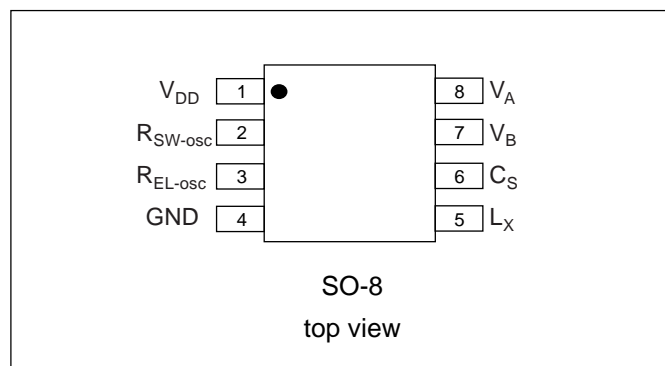
General Description

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 to 1.6V. 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-osc} pin and the V_{DD} pin. The EL lamp driver frequency is set by an external resistor connected between the 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 μ F to 0.1 μ F 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 0.01 μ F to 0.1 μ F 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.

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

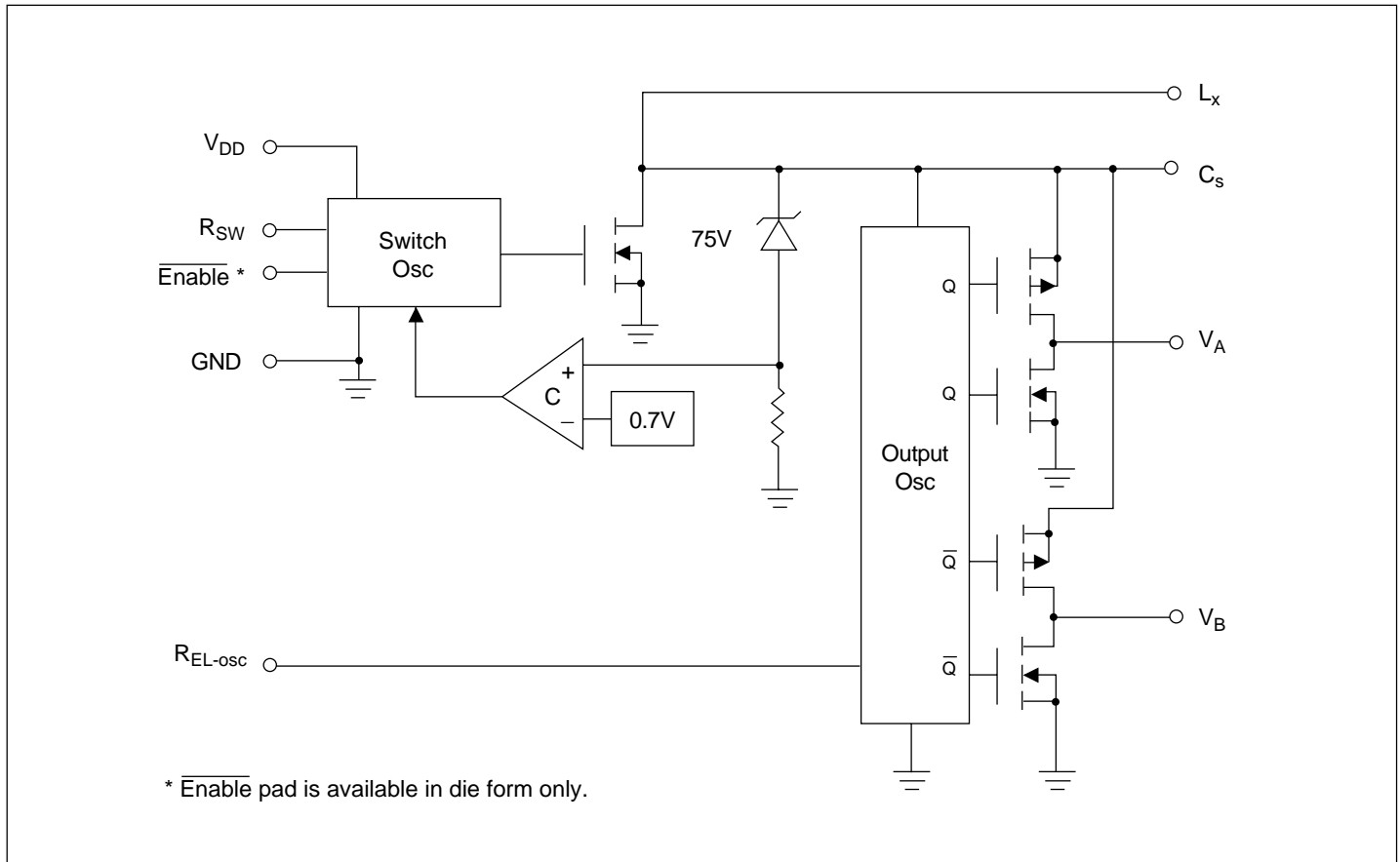
Recommended Operating Conditions

Symbol	Parameter	Min	Typ	Max	Units	Conditions
V_{DD}	Supply voltage	1.0		1.6	V	
T_A	Operating temperature	-25		85	$^\circ\text{C}$	

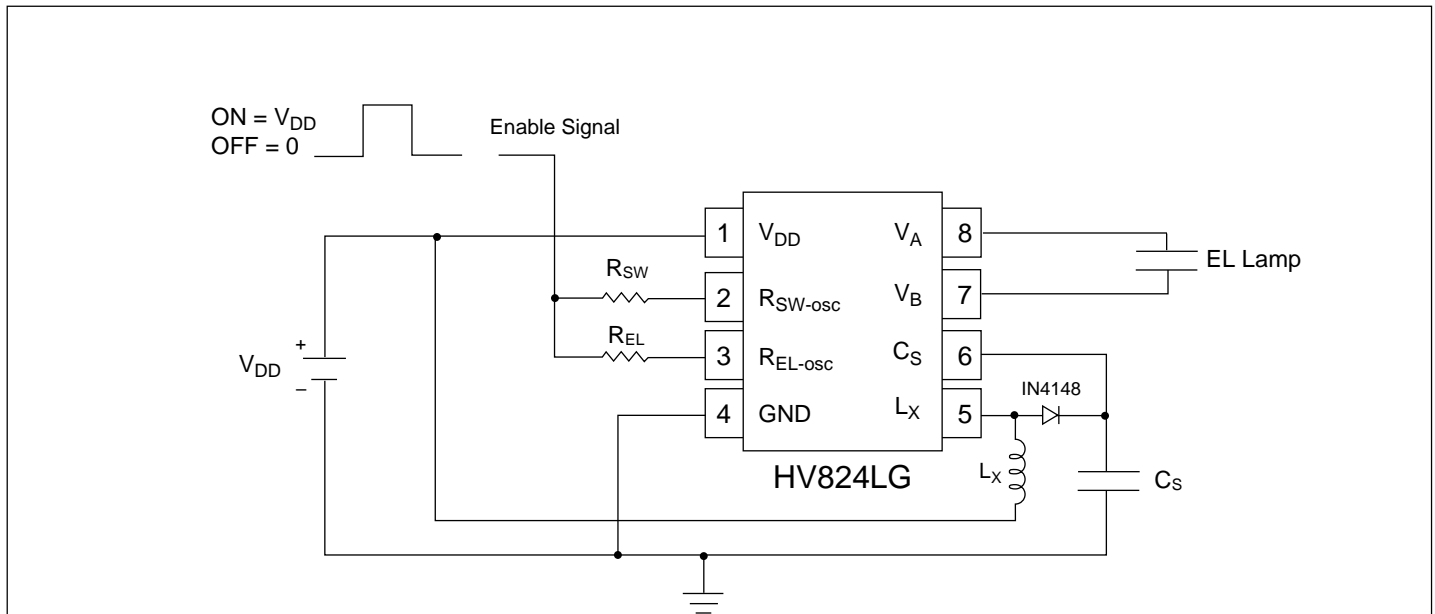
Enable/Disable Table

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

Block Diagram



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