

Off-Line High Voltage EL Lamp Driver

Ordering Information

Device	Package Options			
	8-Lead P-Dip	8-Lead SO	7-Pin TO-220	Die
HV809	HV809P	HV809LG	HV809K2	HV809X

Features

- ☐ Processed with HVC MOS[®] technology
- ☐ Input voltage up to 200V DC
- ☐ 400V peak-to-peak output voltage
- ☐ Output load up to 350nF (100 in² for 3.5nF/in² lamp)
- ☐ Adjustable output lamp frequency
- ☐ Adjustable On/Off pulsing frequency

Applications

- ☐ Electronic Organizers
- ☐ Handheld Portable Computers
- ☐ Display Signs
- ☐ Portable Instrumentation Equipment

Absolute Maximum Ratings

HV_{IN} , Input Voltage	+210V	
V_{DD} , Internal Logic Voltage	+15V	
Operating Temperature Range	-25°C to +85°C	
Storage Temperature Range	-55°C to +150°C	
Power Dissipation	8 Pin DIP	1.0 Watt
	SO-8	500mW
	7 Pin TO-220	15 Watts

Note:

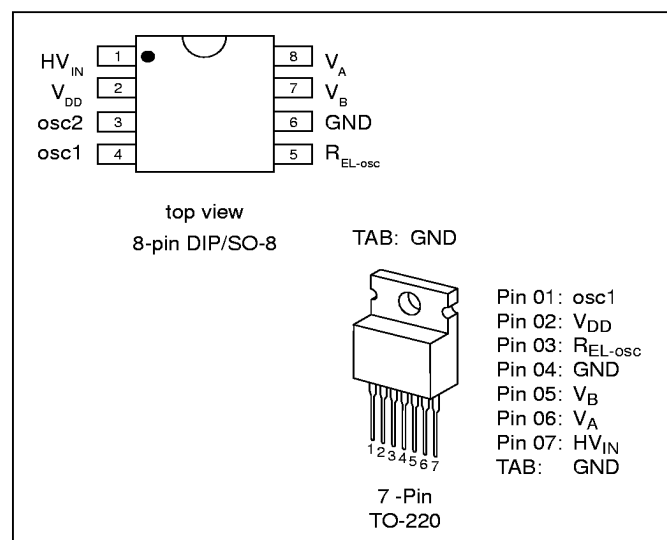
*All voltages are referenced to GND.

General Description

The Supertex HV809 is an off-line high voltage EL lamp driver integrated circuit designed for driving EL lamps of up to 350nF at 400Hz. The input supply voltage can be a rectified nominal 120V AC source or any other DC source up to 200V. The HV809 will supply the EL lamp with an AC square wave with a peak-to-peak voltage of two times the input DC voltage.

The HV809 has two internal oscillators, a low output voltage linear regulator, and a high voltage output H-bridge. The high voltage output H-bridge frequency is set by an external resistor connected between the R_{EL-osc} and GND pins. The EL lamp is connected between V_A and V_B . For the HV809 in the 8-pin package, an external RC network can be connected between the oscillator's osc1 and osc2 pins to pulse the EL lamp on and off.

Pin Configurations



For detailed circuit and application information, please refer to Application Note AN-H36.

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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_{IN}	High voltage supply current			70	mA	$HV_{IN} = 170V$, $R_{EL} = 1.0M\Omega$, $C_L = 350nF$
				9	mA	$HV_{IN} = 170V$, $R_{EL} = 1.0M\Omega$, $C_L = 50nF$
I_{INQ}	Quiescent supply current			400	μA	$HV_{IN} = 170V$, $R_{EL-osc} = 1.0M\Omega$, $osc1 = GND$, No Load
				100	μA	$HV_{IN} = 170V$, $R_{EL-osc} = 1.0M\Omega$, $osc1 = V_{DD}$, No Load
I_{SINK}	osc2 sink current		300		μA	$V_{osc2} = 1.0V$
I_{SOURCE}	osc2 source current		100		μA	$V_{osc2} = V_{DD} - 1.0V$
I_{osc1}	osc1 logic input leakage current		± 10		μA	$V_{osc1} = 0V$ and V_{DD}
V_H	osc1 hysteresis voltage		2.5		V	
V_{A-B}	Min differential output voltage across lamp			400	V	$HV_{IN} = 200V$
V_{DD}	Internal supply voltage	8	10	12	V	No load on V_{DD}
$I_{DD (OUT)}$	Maximum output V_{DD} current			4	mA	For HV809K2, $\Delta V_{DD} = 1.0V$

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

Symbol	Parameter	Min	Typ	Max	Units	Conditions
f_{EL}	V_{A-B} output drive frequency	320	400	480	Hz	$R_{EL-osc} = 1.0M\Omega$, $osc1 = GND$, $C_L = 350nF$
		0.8	1.0	1.2	KHz	$R_{EL-osc} = 330K\Omega$, $osc1 = GND$, $C_L = 150nF$
t_r	Output rise time		180	250	μs	$CL = 150nF$, $HV_{IN} = 170V$
t_f	Output fall time		50	100	μs	$CL = 150nF$, $HV_{IN} = 170V$

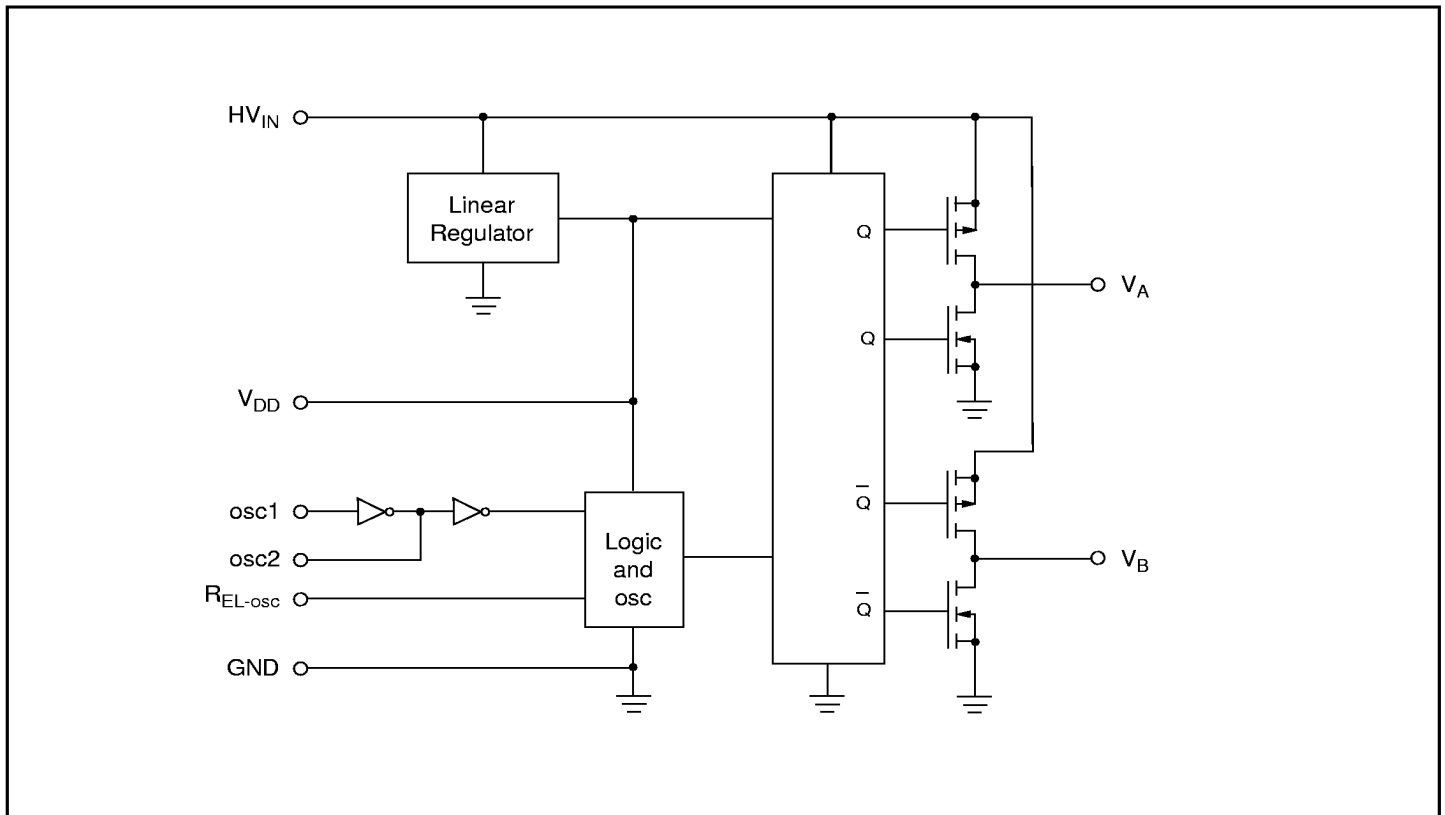
Recommended Operating Conditions

Symbol	Parameter	Min	Typ	Max	Units	Conditions
HV_{IN}	High voltage input	50		200	V	
C_L	Load capacitance			350	nF	$R_{EL-osc} = 1.0M\Omega$, $HV_{IN} = 170V$
				150	nF	$R_{EL-osc} = 330K\Omega$, $HV_{IN} = 170V$
T_A	Operating temperature	-25		85	$^\circ\text{C}$	

Function Table

osc1	Outputs V_A and V_B
GND	Enabled
V_{DD}	Disabled

Block Diagram



Typical Applications

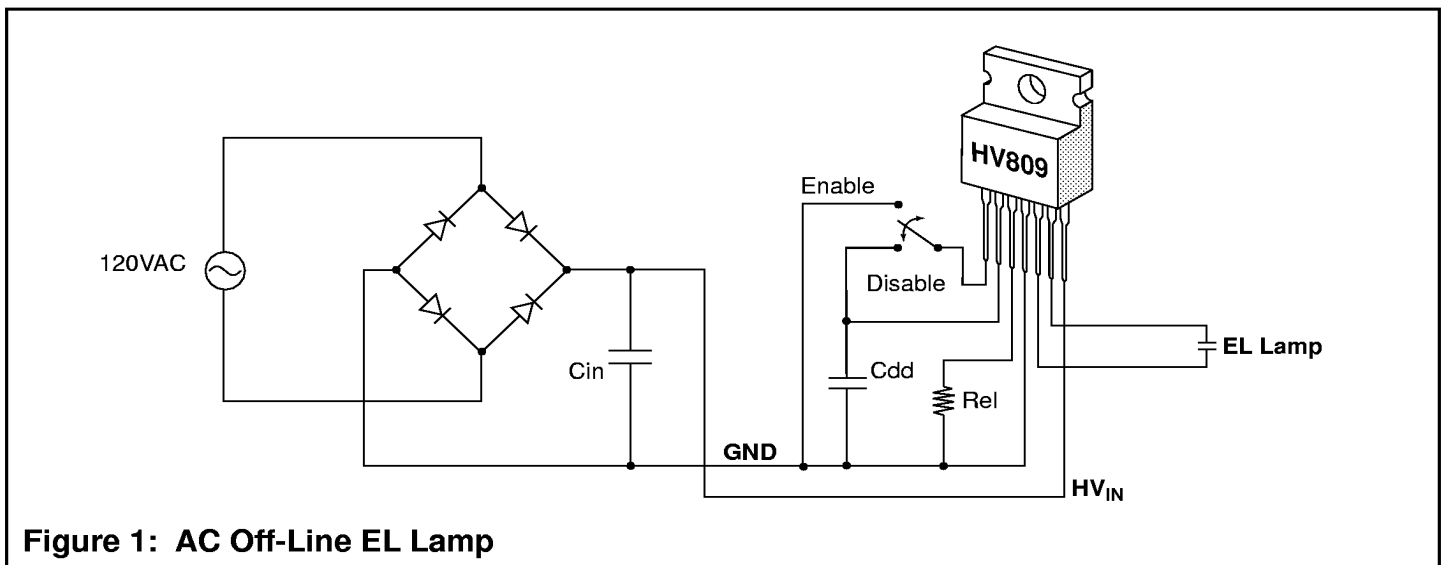


Figure 1: AC Off-Line EL Lamp

Typical Application

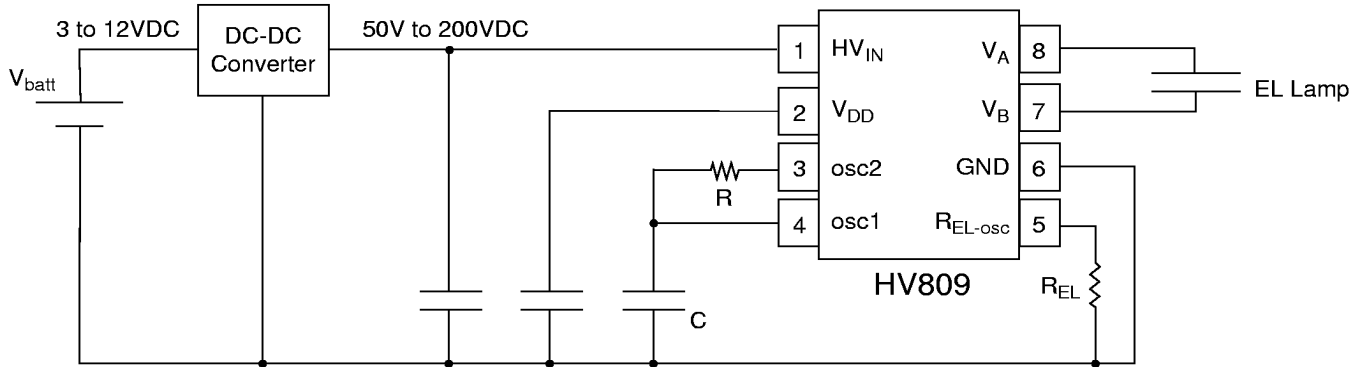


Figure 2: Pulsing EL Lamp

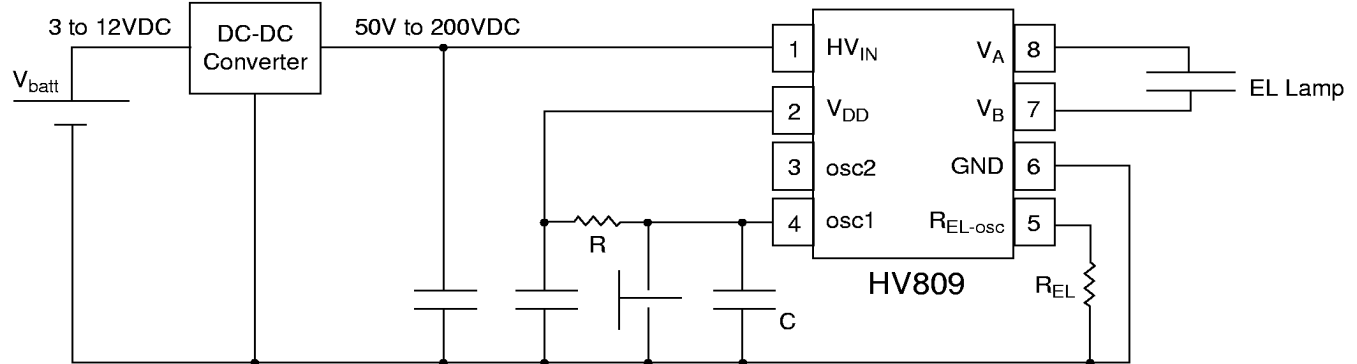


Figure 3: Push Button Delayed Turn Off