

## Off-Line High Voltage EL Lamp Driver

### Ordering Information

Device	Package Options			
	8-Lead SO	8-Lead SO + Slug	7-Pin TO-220	Die
HV809	HV809LG	HV809SG	HV809K2	HV809X

### Features

- Processed with HVCMOS<sup>®</sup> technology
- Input voltage up to 200V DC
- 400V peak-to-peak output voltage
- Output load up to 350nF (100 in<sup>2</sup> for 3.5nF/in<sup>2</sup> 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 <sub>IN</sub> , Input Voltage		+210V
V <sub>DD</sub> , Internal Logic Voltage		+15V
Operating Temperature Range		-25°C to +85°C
Storage Temperature Range		-55°C to +150°C
Power Dissipation	SO-8	500mW
	SO-8 + Slug	1.5 Watts
	7 Pin TO-220	15 Watts

**Note:**

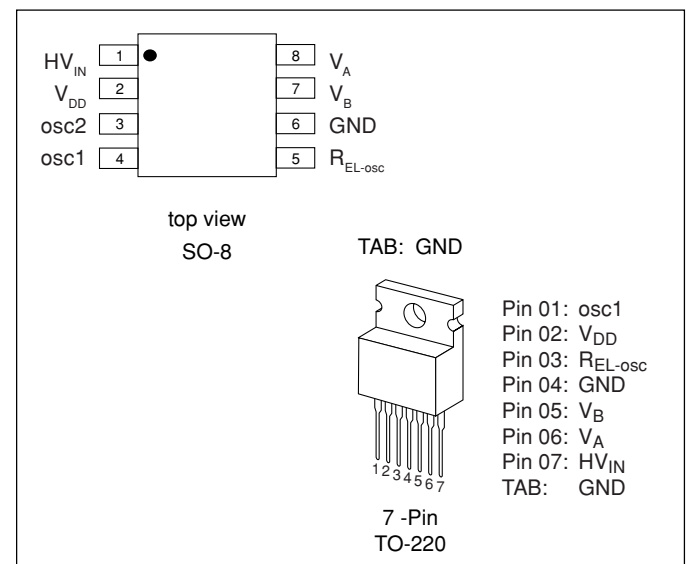
\*All voltages are referenced to GND.

### 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<sub>EL-osc</sub> and GND pins. The EL lamp is connected between V<sub>A</sub> and V<sub>B</sub>. 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.

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

**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	$R_{EL-osc} = 1.0\text{M}\Omega$ , $osc1 = \text{GND}$ , $C_L = 350\text{nF}$
		0.8	1.0	1.2	KHz	$R_{EL-osc} = 390\text{K}\Omega$ , $osc1 = \text{GND}$ , $C_L = 150\text{nF}$
$t_r$	Output rise time		180	250	$\mu\text{s}$	$C_L = 150\text{nF}$ , $HV_{IN} = 170\text{V}$
$t_f$	Output fall time		50	100	$\mu\text{s}$	$C_L = 150\text{nF}$ , $HV_{IN} = 170\text{V}$

## Recommended Operating Conditions

Symbol	Parameter	Min	Typ	Max	Units	Conditions
$HV_{IN}$	High voltage input	50		200	V	
$C_L$	Load capacitance			350	nF	$R_{EL-osc} = 1.0\text{M}\Omega$ , $HV_{IN} = 170\text{V}$
				150	nF	$R_{EL-osc} = 390\text{K}\Omega$ , $HV_{IN} = 170\text{V}$
$T_A$	Operating temperature	-25		85	$^\circ\text{C}$	

## Function Table

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



# Typical Application

