

HV823 & HV825 EL Lamp Driver Circuits

by Roshanak Aflatouni, Applications Engineer

This application note presents fourteen EL driver circuits utilizing the Supertex HV823 and HV825 drivers. They have been optimized for a variety of applications and may be used as-is or used as a starting point in designing a circuit for a particular application. For additional assistance in designing a driver circuit, please refer to **Application Note AN-H33, Lamp Driver Circuits**.

When constructing and testing one of the driver circuits listed below, keep in mind that results may differ from those given due to component tolerances and lamp characteristics. For

the HV823, a 1nF capacitor from pin 2 to GND is needed when a 0.01 μ F C_S capacitor is used.

When making component changes, always remove supply voltage first. After making adjustments, bring up the supply voltage slowly starting from the minimum required device input voltage while monitoring input current. A sharp rise in current usually indicates a saturated inductor. Use a higher current rated inductor, a higher value inductor, or increase conversion frequency by lowering R_{SW}.

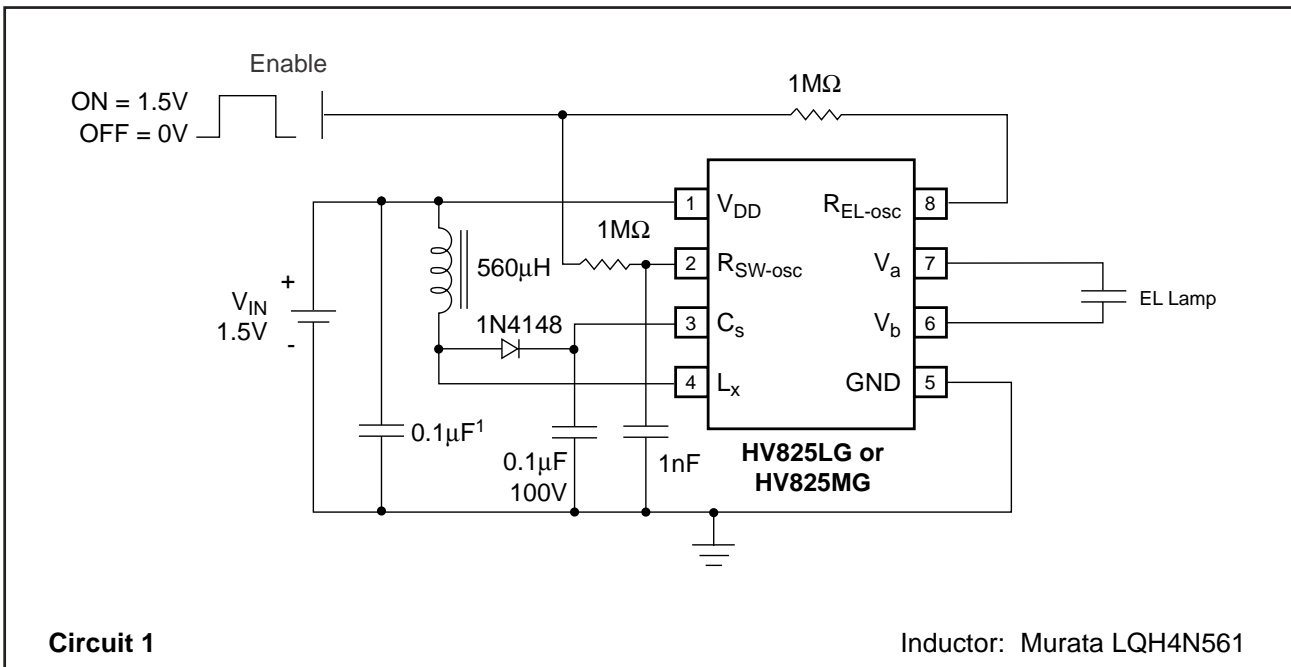
Circuit Selector Guide¹

Application	Lamp Size/Color	Lamp Brightness ^{2,3}	Supply Voltage	Supply Current	Output Voltage	Output Frequency	Circuit
Travel Clocks, Wall Thermostats	1.5in ² Green	3.6ft-lm	1.5V	27mA	110V _{PP}	450Hz	1
Pagers	2.7in ² Green	3.3ft-lm	1.5V	45mA	110V _{PP}	300Hz	2
Pagers (low current)	1.5in ² Green	4.8ft-lm	3.0V	10mA	134V _{PP}	260Hz	3
Pagers	1.7in ² Green	6.6ft-lm	1.5V/3.0V	35mA	140V _{PP}	400Hz	4
GPS Units, Cell Phones, Organizers	3.5in ² Green	6.2ft-lm	3.3V	25mA	148V _{PP}	400Hz	5
GPS, Organizers	6.0in ² Green	3.0ft-lm	3.3V	21mA	149V _{PP}	170Hz	6
PDA, HPC	7.0in ² White	5.8ft-lm	5.0V	30mA	126V _{PP}	400Hz	7
		7.8ft-lm	9.0V	23mA	150V _{PP}	400Hz	
GPS Units, Organizers, RFDC Units, Handheld Scanners, Cell Phones, Clocks, Radios	8.0in ² Green	6.2ft-lm	5.0V	30mA	140V _{PP}	400Hz	8
Instrument Panels, Keyboard Backlight	9.0in ² White	4.7ft-lm	12V/5.0V	12mA	156V _{PP}	800Hz	9
PDA, HPC	10in ² Green	4.1ft-lm	5.0V	22mA	145V _{PP}	260Hz	10
PDA, HPC	12in ² Green	5.2ft-lm	3.3V	51mA	144V _{PP}	260Hz	11
PDA, HPC	12in ² Green	3.2ft-lm	5.0V	19mA	115V _{PP}	260Hz	12
PDA, HPC, Keypad	13in ² White	3.1ft-lm	5.0V	34mA	110V _{PP}	400Hz	13
		6.6ft-lm	9.0V	35mA	140V _{PP}	400Hz	
PDA, HPC	23in ² White	2.1ft-lm	3.3V	48mA	103V _{PP}	250Hz	14

Notes: 1. All values are nominal. 2. Lamp brightness can vary by type and manufacturer. 3. White lamps are inherently less efficient.

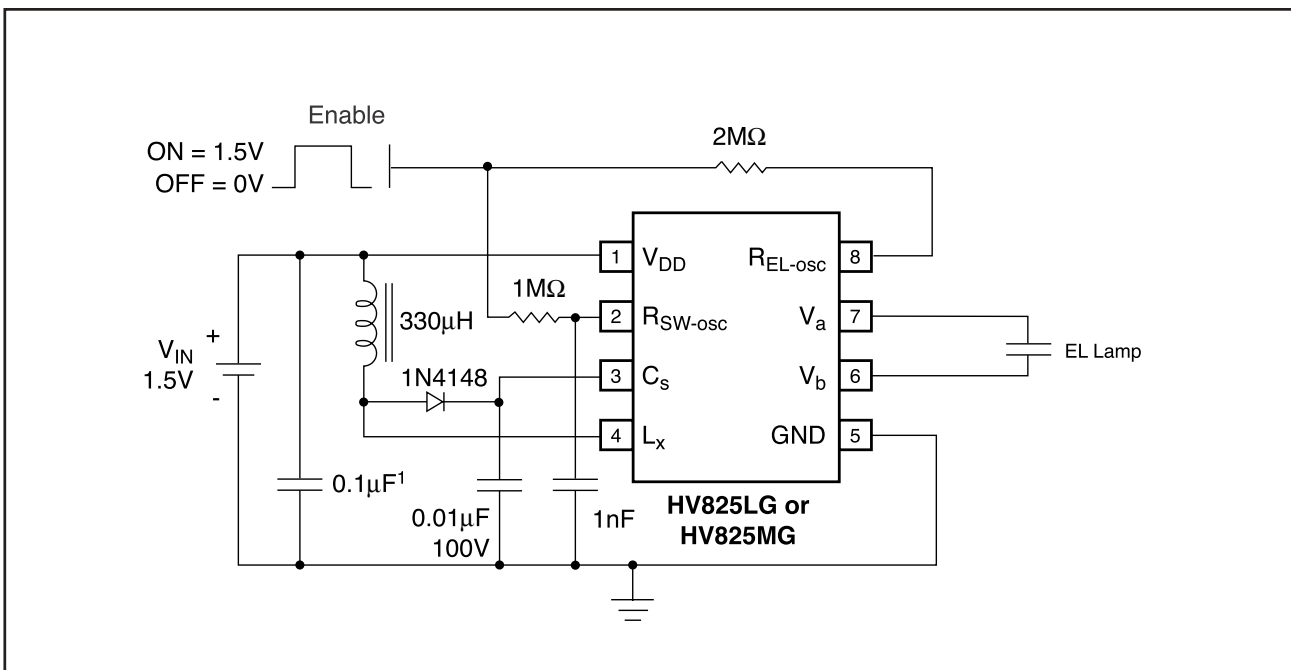
11/12/01

Supertex Inc. does not recommend the use of its products in life support applications and will not knowingly sell its products for use in such applications unless it receives an adequate "products liability indemnification insurance agreement." Supertex does not assume responsibility for use of devices described and limits its liability to the replacement of devices determined to be defective due to workmanship. No responsibility is assumed for possible omissions or inaccuracies. Circuitry and specifications are subject to change without notice. For the latest product specifications, refer to the Supertex website: <http://www.supertex.com>. For complete liability information on all Supertex products, refer to the most current databook or to the Legal/Disclaimer page on the Supertex website.



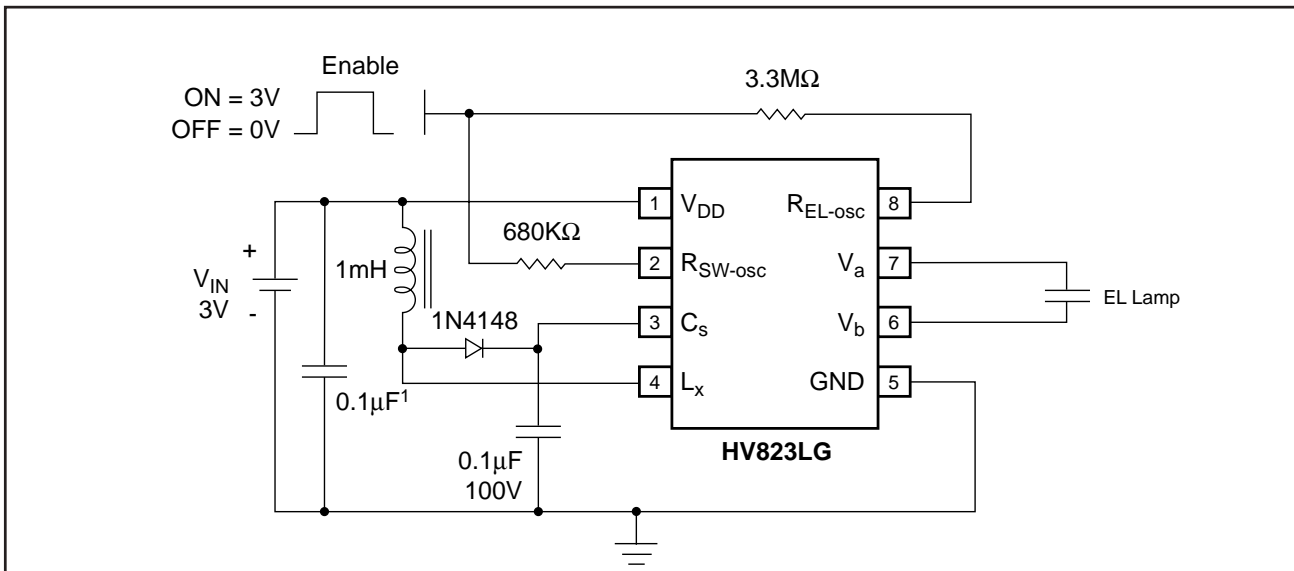
Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
Travel Clocks, Wall Thermostats	1.5in ² Green	3.6ft-lm	1.5V	27mA	110V _{PP}	450Hz

- Note:
1. Larger values may be needed depending upon supply impedance.
 2. Lamp brightness can vary by type and manufacturer.



Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
Pagers	2.7in ² Green	3.3ft-lm	1.5V	45mA	110V _{PP}	300Hz

- Note:
1. Larger values may be needed depending upon supply impedance.
 2. Lamp brightness can vary by type and manufacturer.



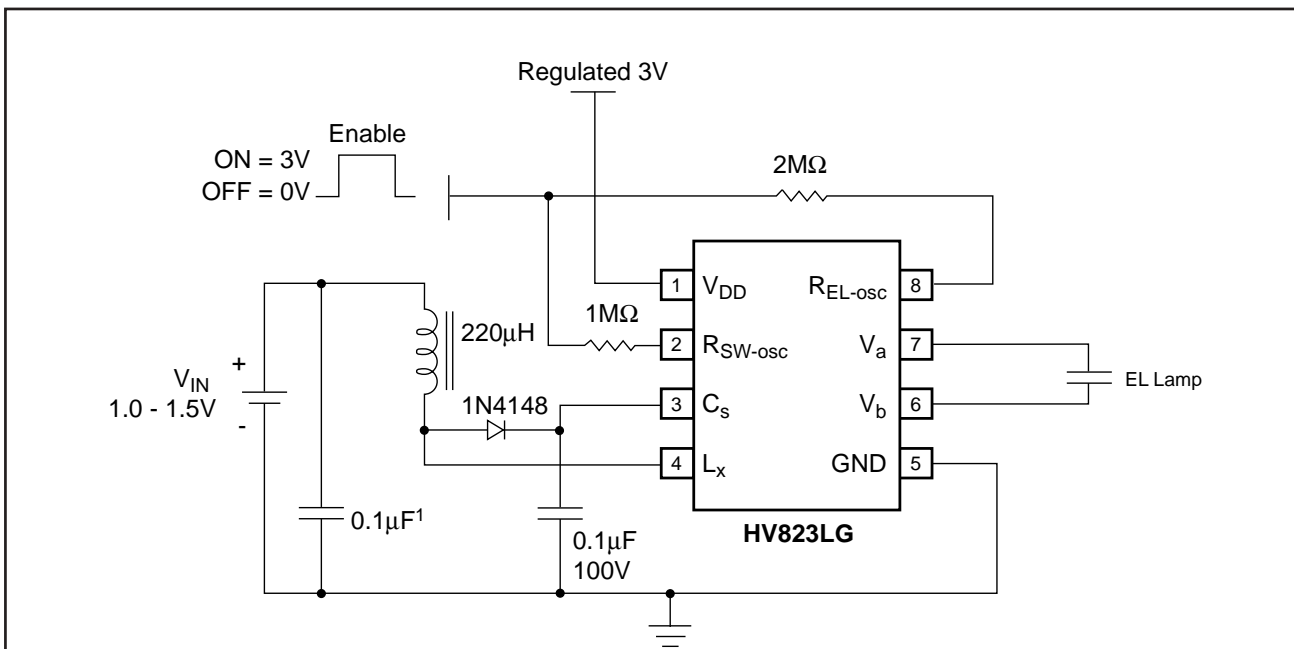
Circuit 3

Inductor: Murata LQH4N102

Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
Pagers (low current)	1.5in ² Green	4.8ft-lm	3.0V	10mA	134V _{PP}	260Hz

Note:

1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



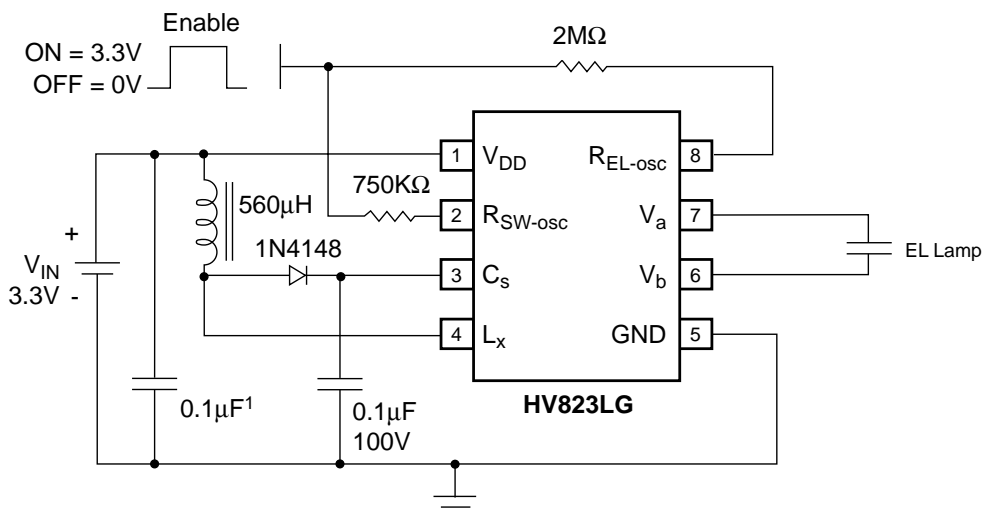
Circuit 4

Inductor: Murata LQH4N221

Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
Pagers	1.7in ² Green	6.6ft-lm	1.5V/3V	35mA	140V _{PP}	400Hz

Note:

1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



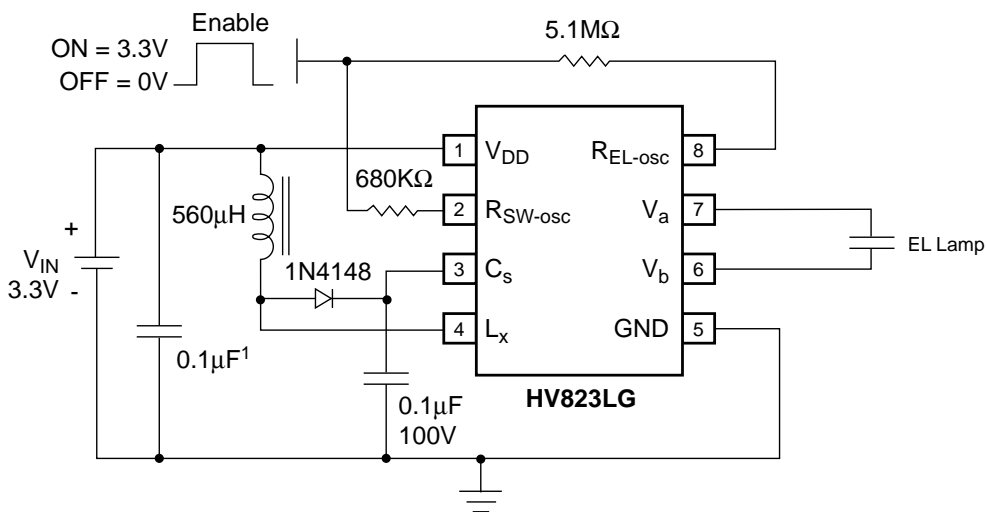
Circuit 5

Inductor: Murata LQH4N561

Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
GPS Units, Cell Phones, Organizers	3.5in ² Green	6.2ft-lm	3.3V	25mA	148V _{PP}	400Hz

Note:

1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



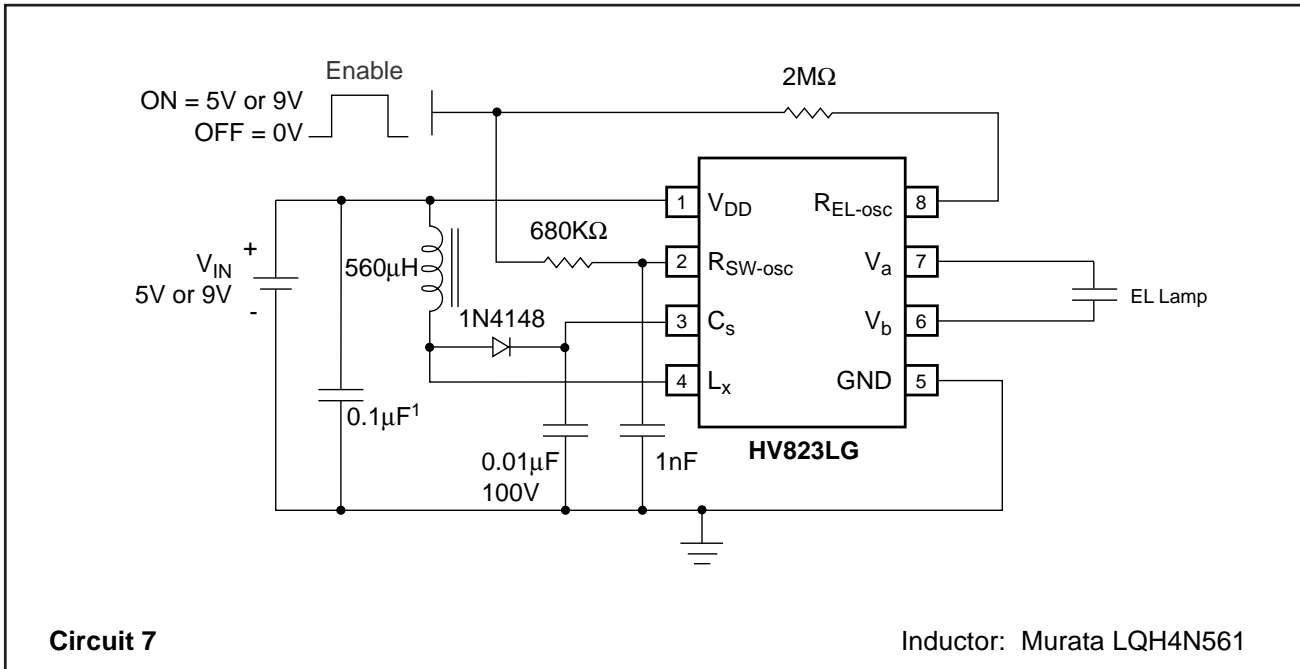
Circuit 6

Inductor: Murata LQH4N561

Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
GPS, Organizers	6in ² Green	3.0ft-lm	3.3V	21mA	149V _{PP}	170Hz

Note:

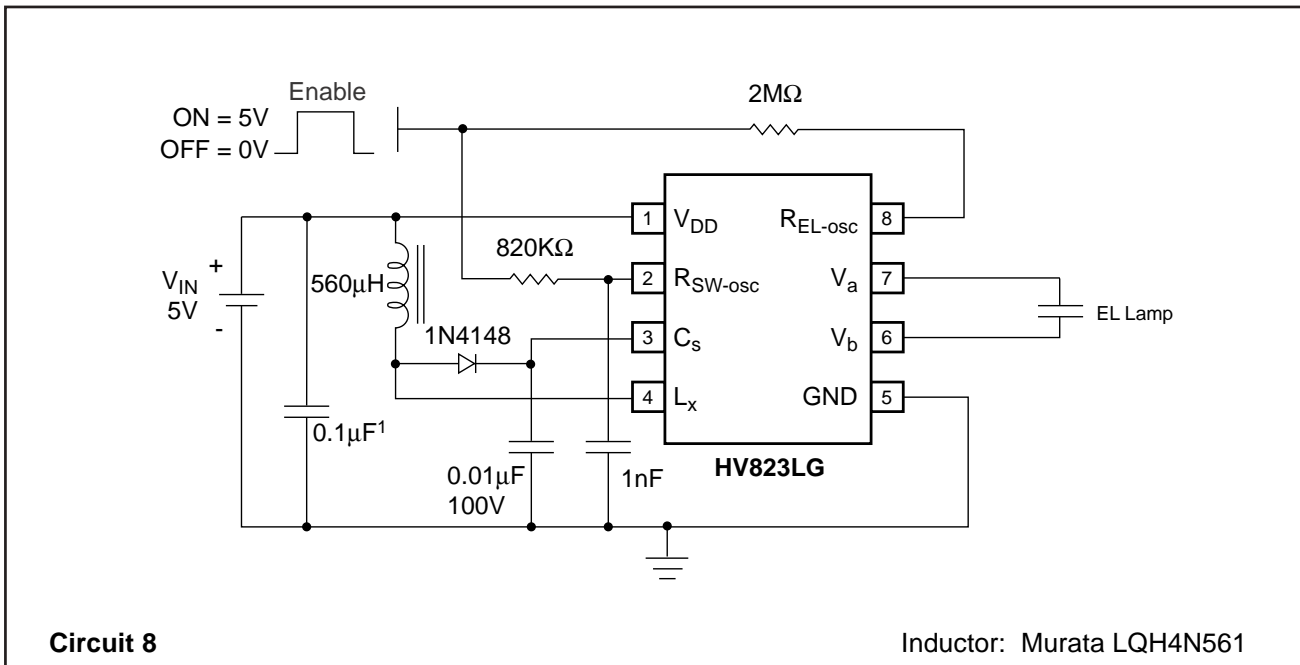
1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
PDA, HPC	7in ²	5.8ft-lm	5V	30mA	126V _{PP}	400Hz
	White	7.8ft-lm	9V	23mA	150V _{PP}	400Hz

Note:

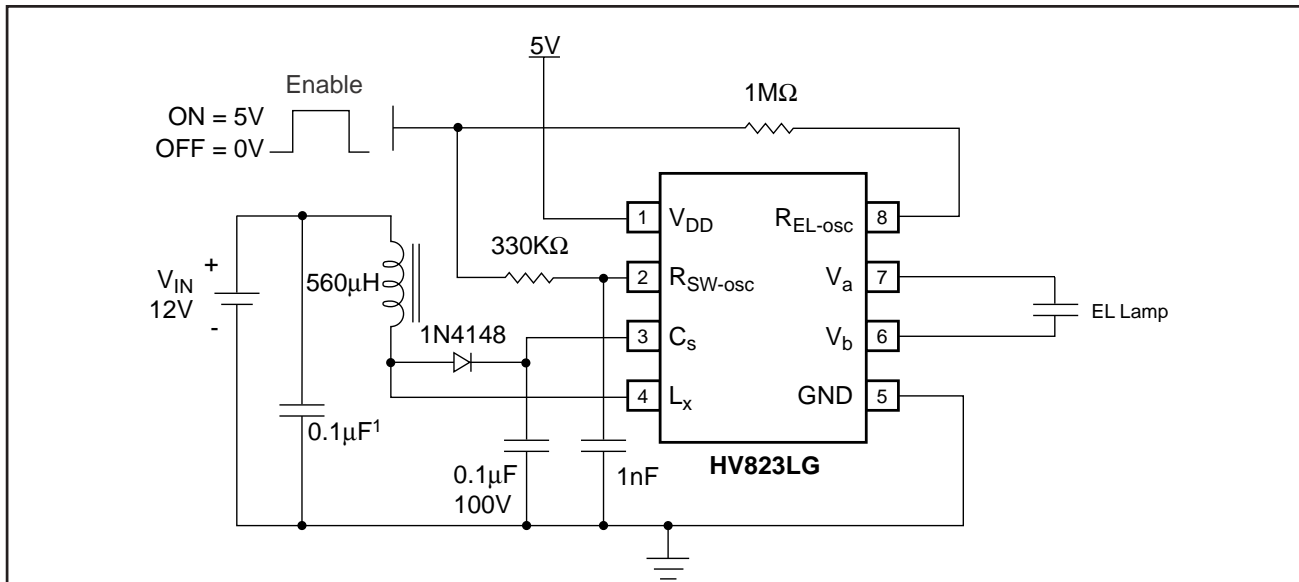
1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
GPS Units, Organizers, RFDC Units, Handheld Scanners, Cell Phones, Clocks, Radios	8in ² Green	6.2ft-lm	5V	30mA	140V _{PP}	400Hz

Note:

1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



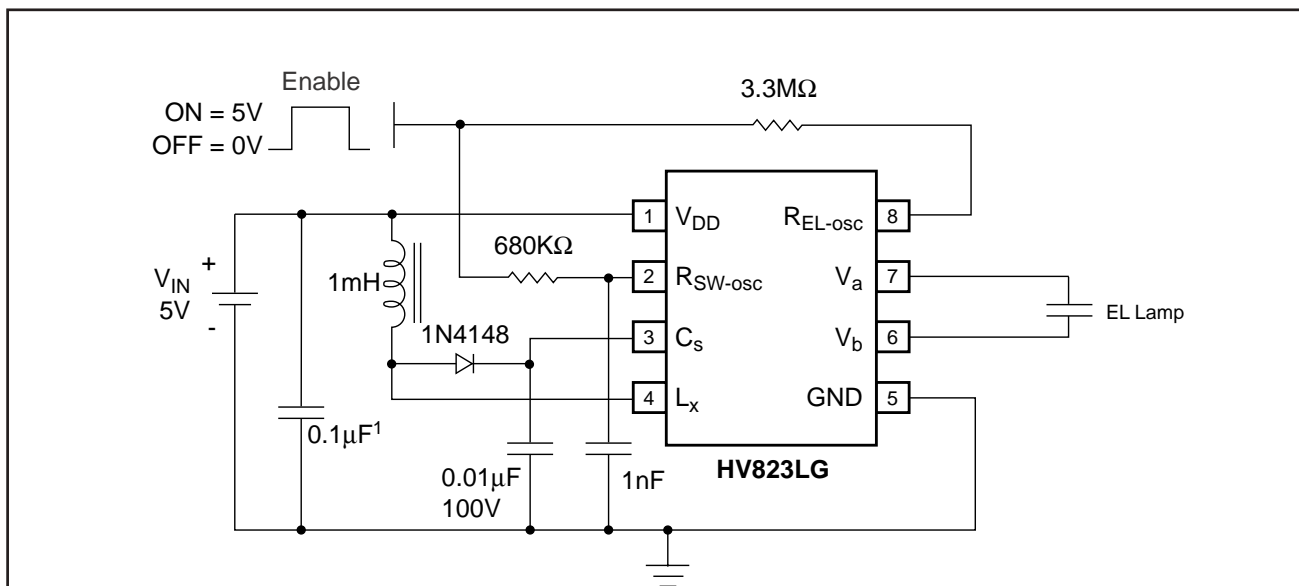
Circuit 9

Inductor: Murata LQH4N561

Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
Instrument Panels, Keyboard Backlight	9in ² White	4.7ft-Im	12V/5V	12mA	156V _{PP}	800Hz

Note:

1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



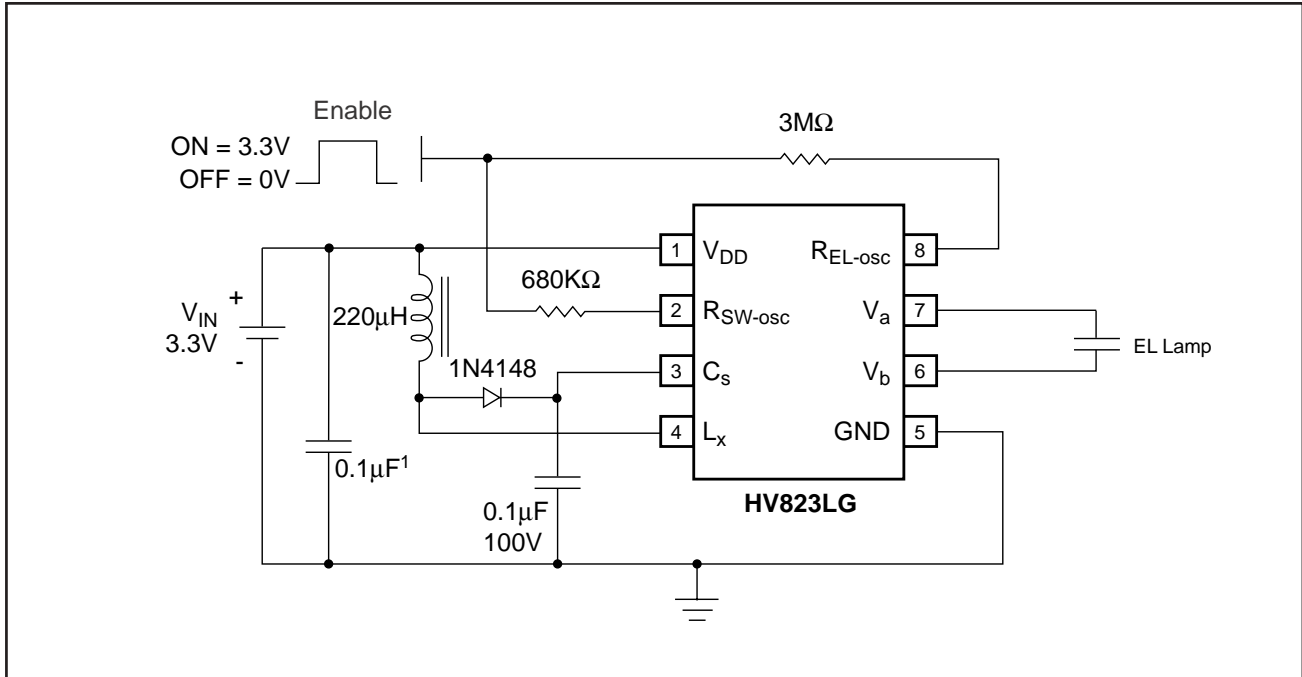
Circuit 10

Inductor: Murata LQH4N102

Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
PDA, HPC	10in ² Green	4.1ft-Im	5V	22mA	145V _{PP}	260Hz

Note:

1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



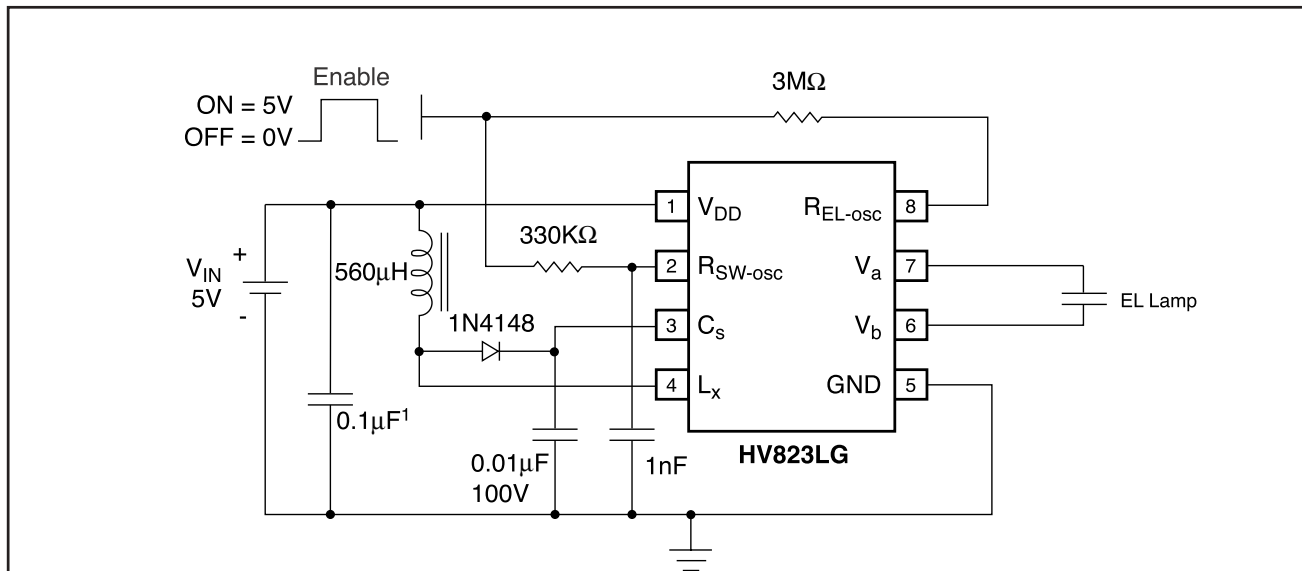
Circuit 11

Inductor: Murata LQH4N221

Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
PDA, HPC	12in ² Green	5.2ft-lm	3.3V	51mA	144V _{PP}	260Hz

Note:

1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



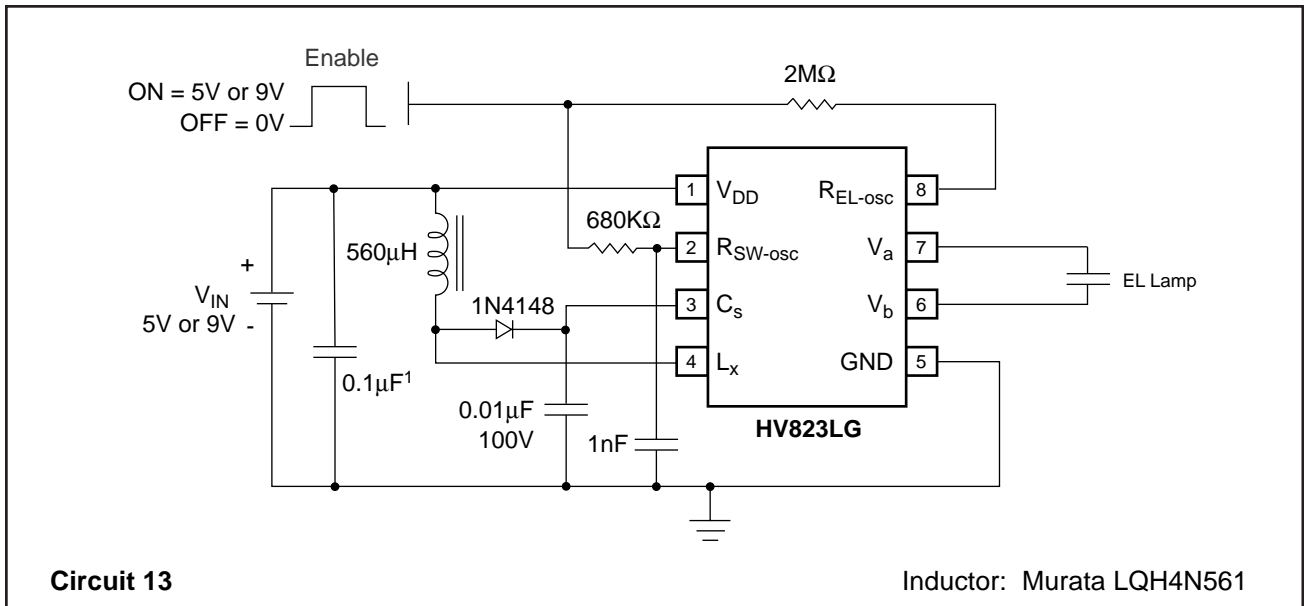
Circuit 12

Inductor: Murata LQH4N561

Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
PDA, HPC	12in ² Green	3.2ft-lm	5V	19mA	115V _{PP}	260Hz

Note:

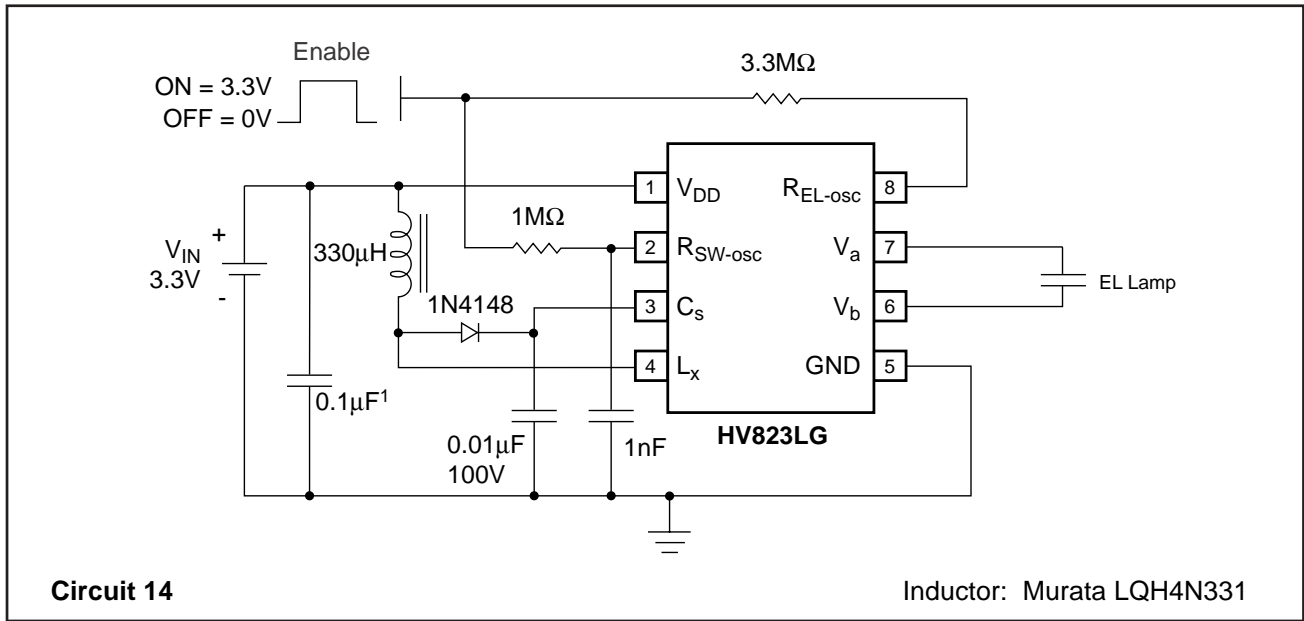
1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
PDA, HPC, Keypad	13in ² White	3.1ft-lm	5V	34mA	110V _{pp}	400Hz
		6.6ft-lm	9V	35mA	140V _{pp}	400Hz

Note:

1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.



Application	Lamp Size/Color	Lamp ² Brightness	Supply Voltage	Supply Current	Output Voltage	Output Frequency
PDA, HPC	23in ² White	2.1ft-lm	3.3V	48mA	103V _{pp}	250Hz

Note:

1. Larger values may be needed depending upon supply impedance.
2. Lamp brightness can vary by type and manufacturer.