

HV823 & HV825 EL Lamp Driver Circuits

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.

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 1.0nF capacitor from pin 2 to GND is needed when a 0.01μF 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 Guide

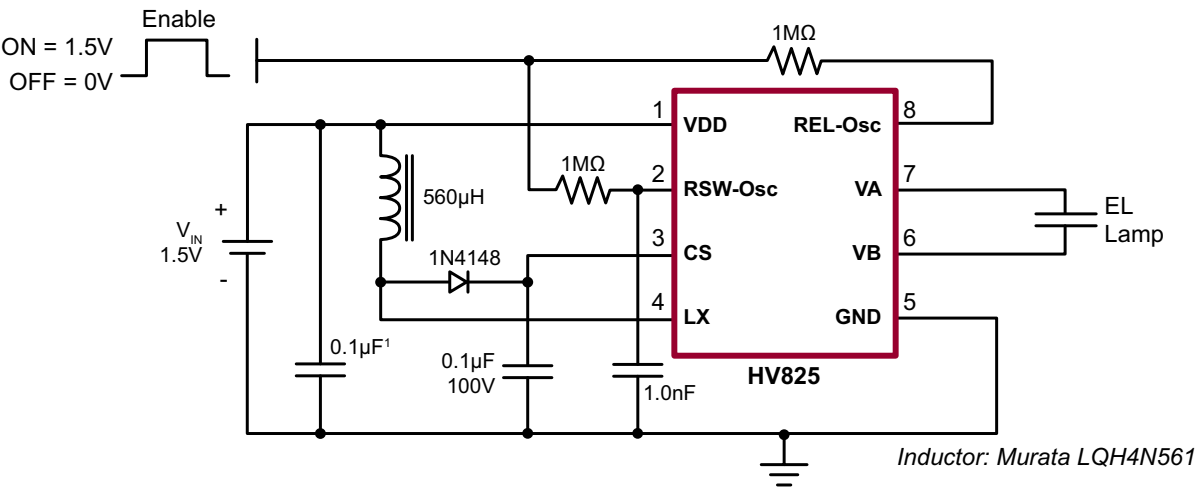
Circuit	Applications	Lamp Color/Size (in ²)	Lamp Brightness ^{1,2} (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
1	Travel clocks, wall thermostats	Green/1.5	3.6	1.5	27	110	450
2	Pagers	Green/2.7	3.3	1.5	45	110	300
3	Pagers (low current)	Green/1.5	4.8	3.0	10	134	260
4	Pagers	Green/1.7	6.6	1.5/3.0	35	140	400
5	GPS units, cell phones, organizers	Green/3.5	6.2	3.3	25	148	400
6	GPS units, organizers	Green/6.0	3.0	3.3	21	149	170
7	PDA, HPC	White/7.0	5.8	5.0	30	126	400
			7.8	9.0	23	150	400
8	GPS units, organizers, RFDC units, handheld scanners, cell phones, clocks, radios	Green/8.0	6.2	5.0	30	140	400
9	Instrument panels, keyboard backlights	White/9.0	4.7	12/5.0	12	156	800
10	PDA, HPC	Green/10.0	4.1	5.0	22	145	260
11	PDA, HPC	Green/12.0	5.2	3.3	51	144	260
12	PDA, HPC	Green/12.0	3.2	5.0	19	115	260
13	PDA, HPC, keypad	White/13.0	3.1	5.0	34	110	400
			6.6	9.0	35	140	400
14	PDA, HPC	White/23.0	2.1	3.3	48	103	250

Notes:

1. Lamp brightness can vary by type and manufacturer.
2. White lamps are inherently less efficient.

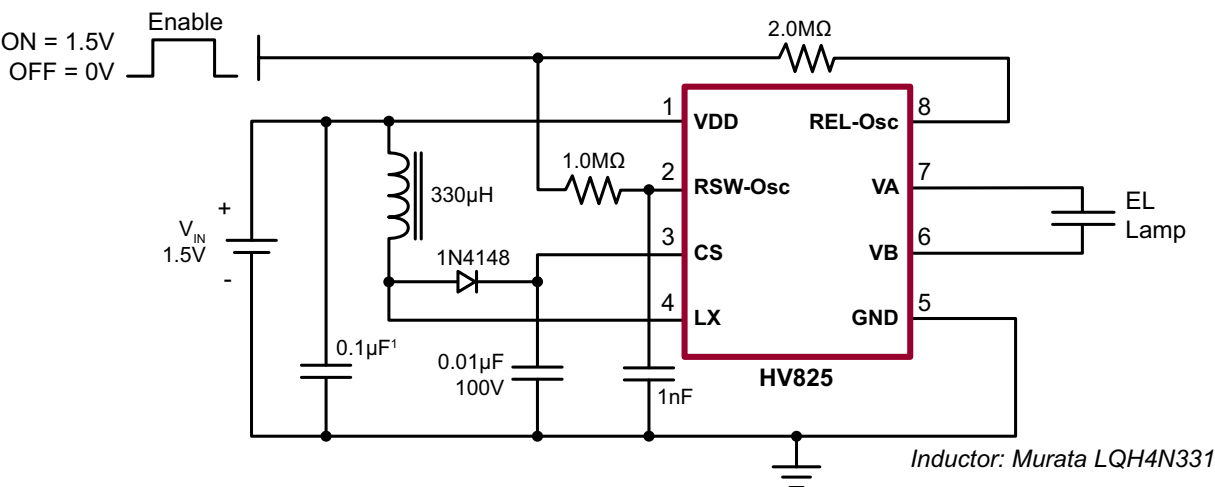
Circuit 1

Application	Lamp Color/Size (in ²)	Lamp Brightness ² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
Travel clocks, wall thermostats	Green/1.5	3.6	1.5	27	110	450



Circuit 2

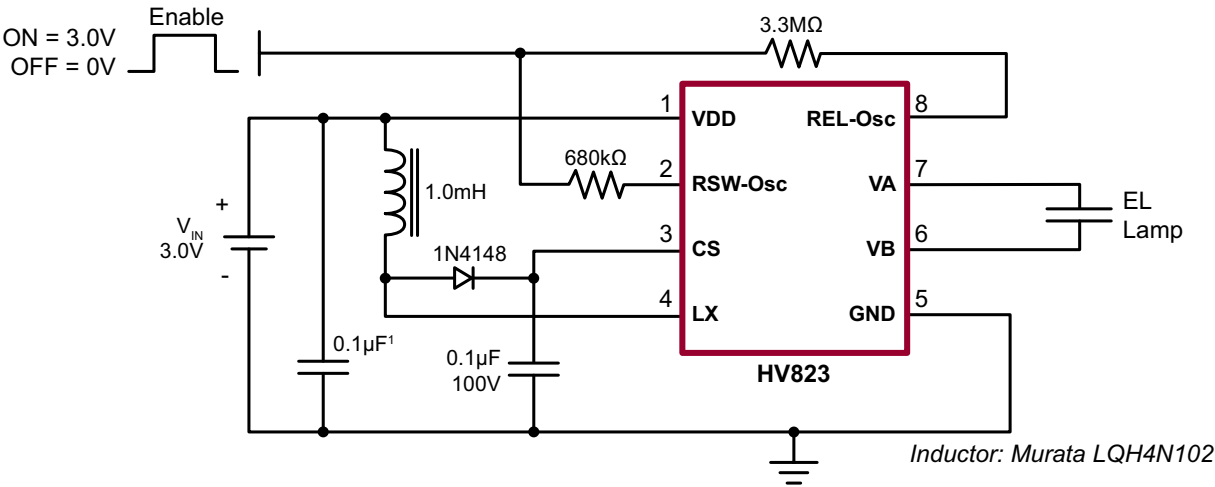
Application	Lamp Color/Size (in ²)	Lamp Brightness ² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
Pagers	Green/2.7	3.3	1.5	45	110	300



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

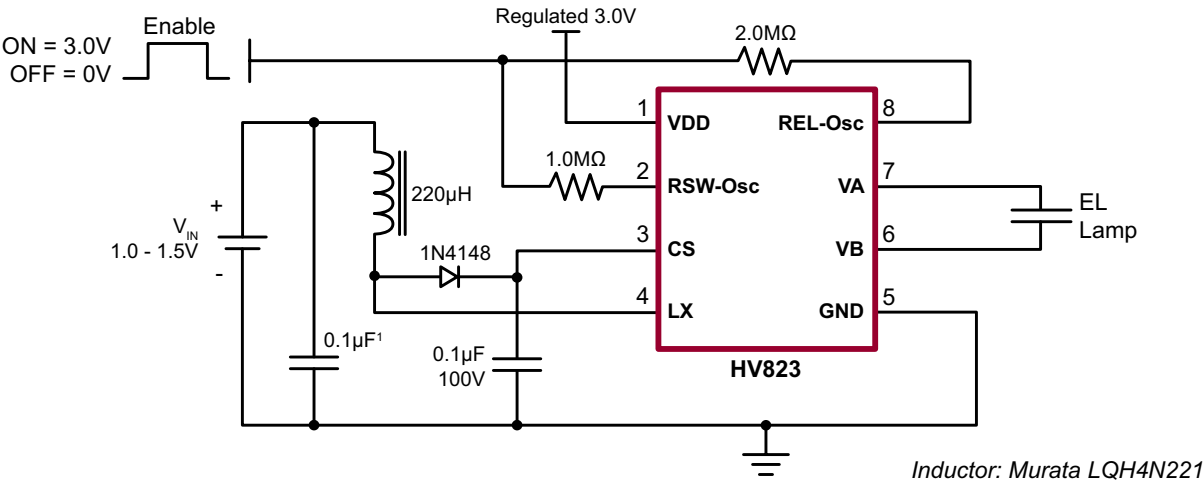
Circuit 3

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



Circuit 4

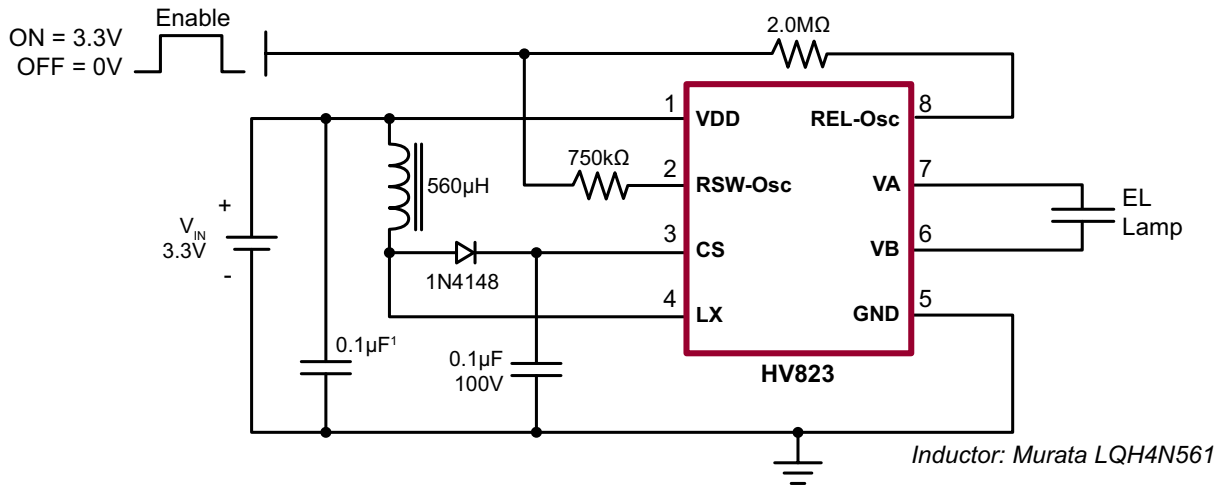
Application	Lamp Color/ Size (in ²)	Lamp Brightness ² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
Pagers	Green/ 1.7	6.6	1.5/3.0	35	140	400



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

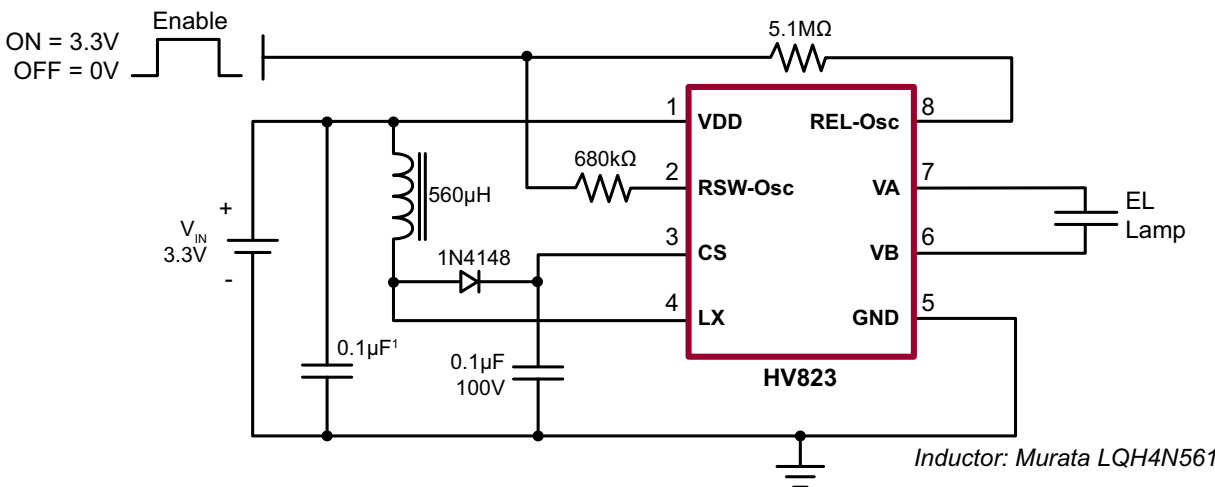
Circuit 5

Application	Lamp Color/ Size (in ²)	Lamp Brightness ² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
GPS units, cell phones, organizers	Green/ 3.5	6.2	3.3	25	148	400



Circuit 6

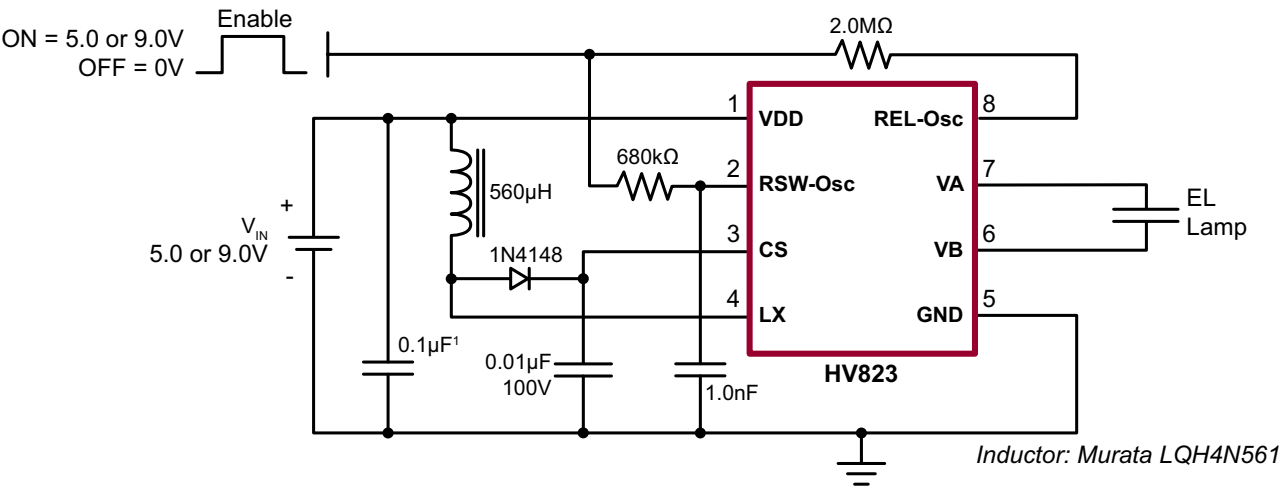
Application	Lamp Color/ Size (in ²)	Lamp Brightness ² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
GPS units, organizers	Green/ 6.0	3.0	3.3	21	149	170



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

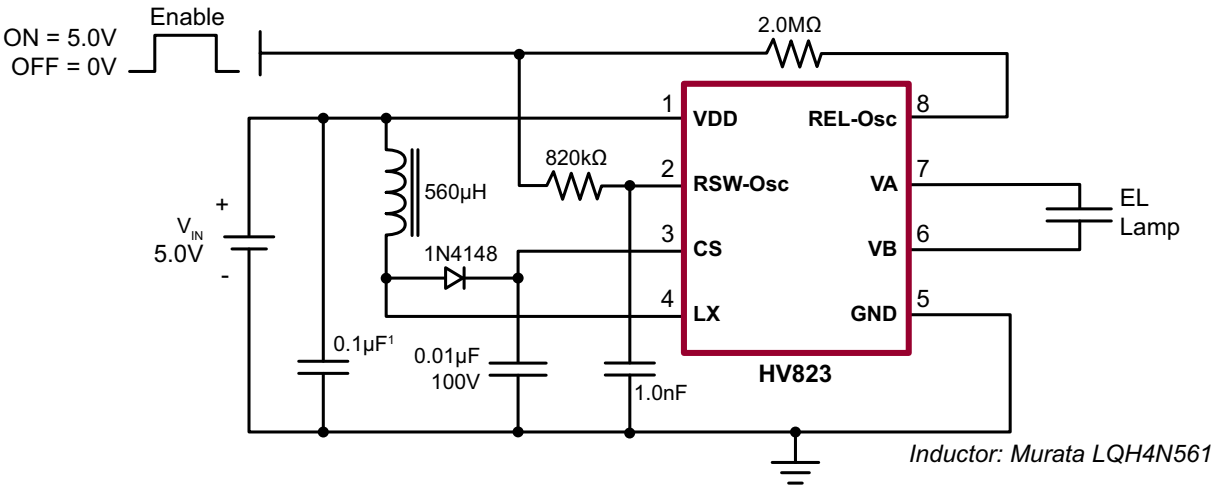
Circuit 7

Application	Lamp Color/ Size (in²)	Lamp Brightness² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
PDA, HPC	White/ 7.0	5.8	5.0	30	126	400
		7.8	9.0	23	150	400



Circuit 8

Application	Lamp Color/ Size (in²)	Lamp Brightness² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
GPS units, organizers, RFDC units, handheld scanners, cell phones, clocks, radios	Green/ 8.0	6.2	5.0	30	140	400



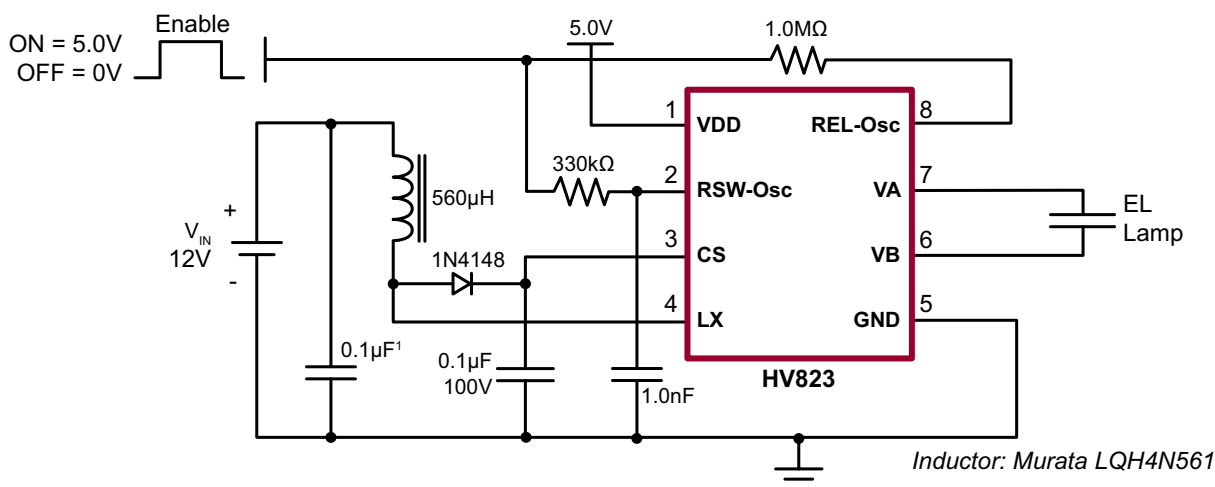
Notes:

1. Larger values may be needed depending upon supply impedance.

2. Lamp brightness can vary by type and manufacturer.

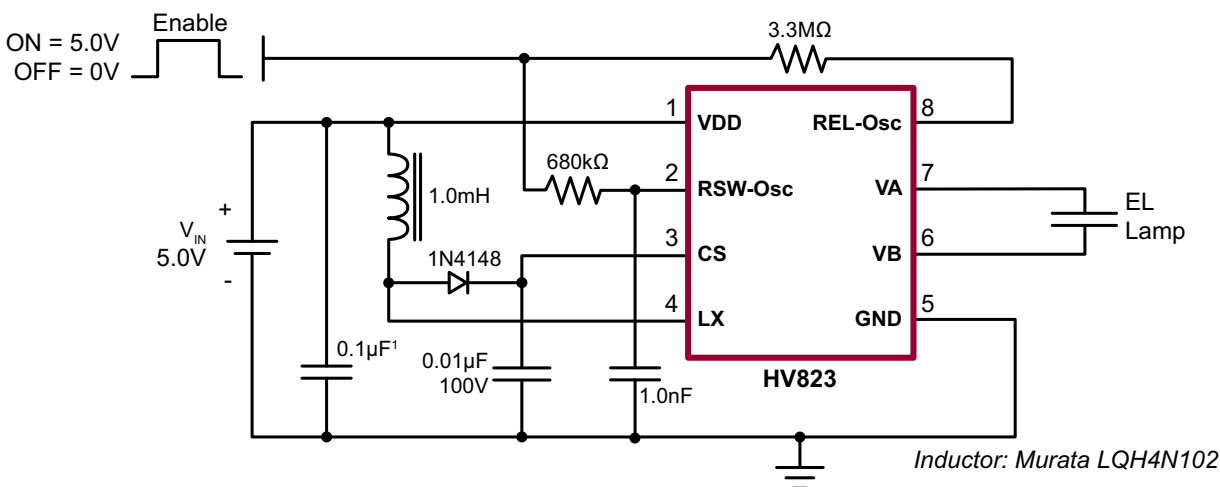
Circuit 9

Application	Lamp Color/ Size (in²)	Lamp Brightness² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
Instrument panels, keyboard backlights	White/ 9.0	4.7	12/5.0	12	156	800



Circuit 10

Application	Lamp Color/ Size (in²)	Lamp Brightness² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p,p})	Output Frequency (Hz)
PDA, HPC	Green/ 10	4.1	5.0	22	145	260

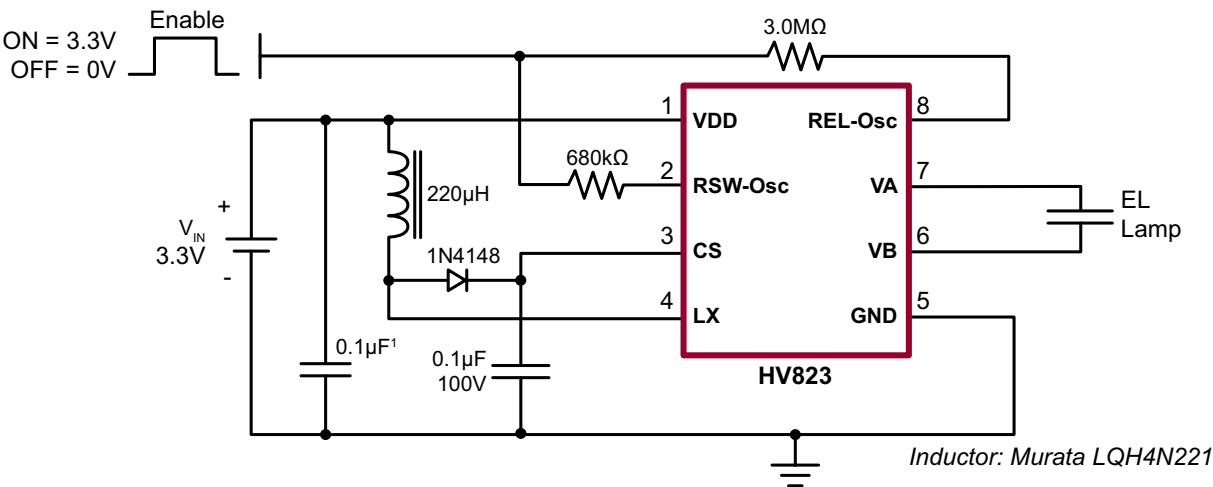


Notes:

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

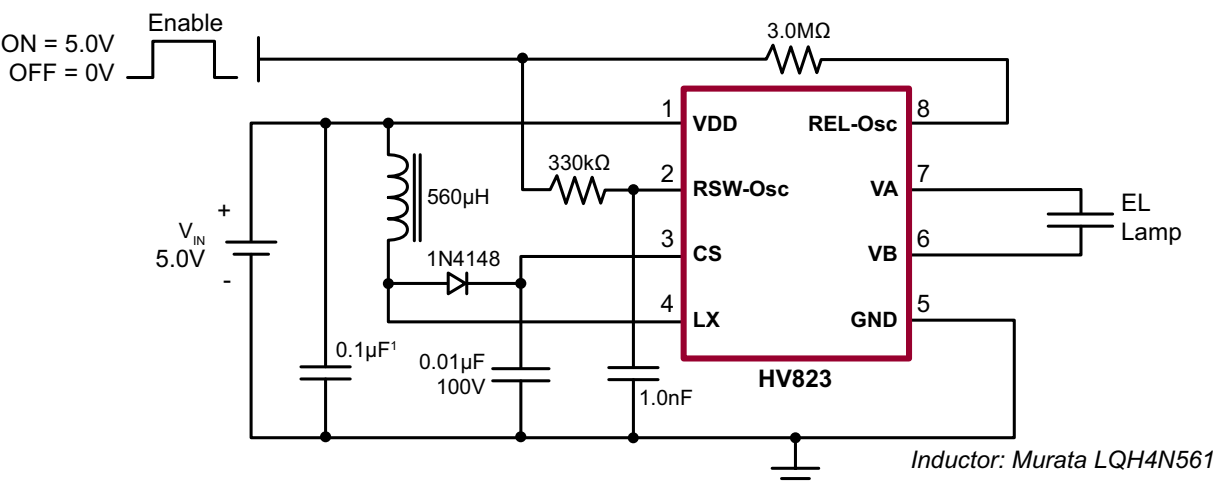
Circuit 11

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



Circuit 12

Application	Lamp Color/ Size (in ²)	Lamp Brightness ² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
PDA, HPC	Green/ 12	3.2	5.0	19	115	260

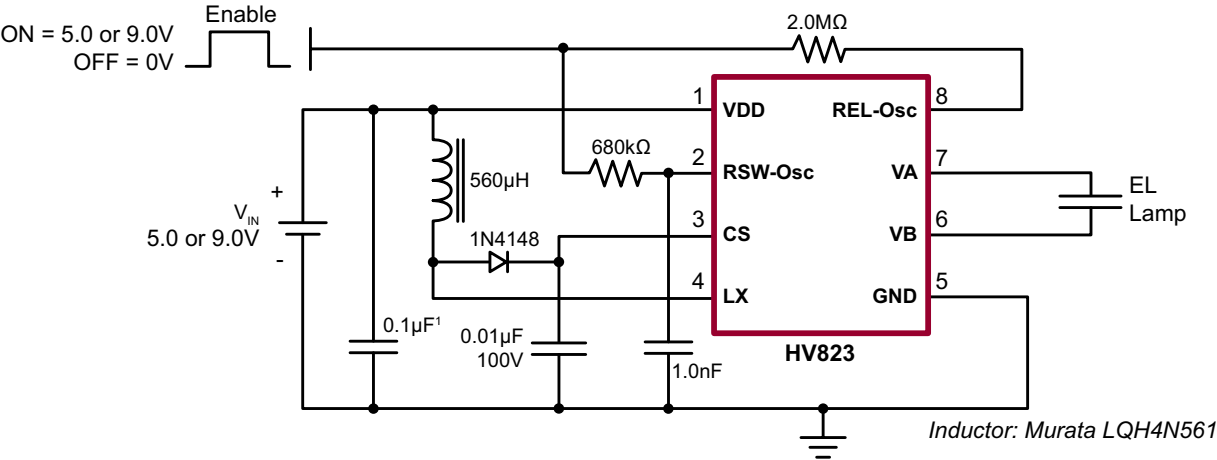


Notes:

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

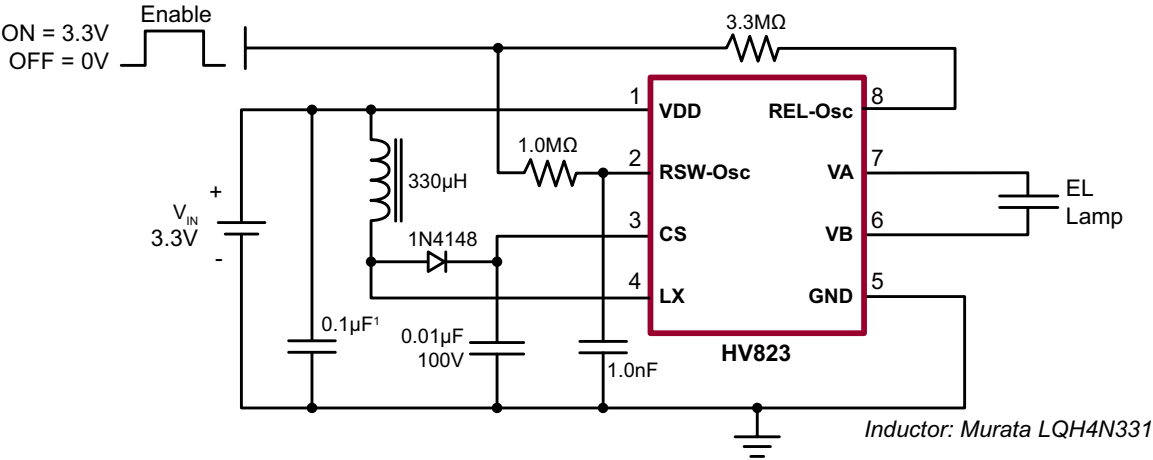
Circuit 13

Application	Lamp Color/ Size (in ²)	Lamp Brightness ² (ft-lm)	Supply Voltage (V)	Supply Current (mA)	Output Voltage (V _{p-p})	Output Frequency (Hz)
PDA, HPC, keypads	White/ 13.0	3.1	5.0	34	110	400
		6.6	9.0	35	140	400



Circuit 14

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



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

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