

SB6543	P.1
DUAL VOLTAGE HIGH BRIGHTNESS EL DRIVER IC	

GENERAL DESCRIPTION

The SB6543 is specially designed as a dual voltage high brightness Electroluminescent Lamp Driver IC. Built-in RC OSC, transistors and only requires 4~5 external components. It is capable of supplying up to 250V_{pp} signals with 1μA low standby current. Separate voltage supply for Driver IC and the Electroluminescent Lamp to attain maximum brightness.

FEATURE

- * BIPOLAR TECHNOLOGY
- * DUAL OPERATING VOLTAGE :
3.0V ~ 5.0V DC
3.0V – 12.0V DC
- * TOTAL SUPPLY CURRENT:
100mA (at V_{dd1}=5.0V, V_{dd2}=8.0V)
- * Built-in RC OSC & TRANSISTORS
- * EL FREQUENCY more suitable for BLUE Electroluminescent Lamp
- * Low Current Standby Mode

APPLICATIONS

- * PDA BACKLIGHT
- * HANDHELD COMPUTER LCD BACKLIGHT
- * LCD DISPLAY PANEL FOR INSTRUMENTATION APPARATUS

ABSOLUTE MAXIMUM RATINGS

Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

V _{dd1}	7.0V
V _{dd2}	12.0V
Input Voltages/Current	
HON (pin 1)	-0.5V to (V _{dd} + 0.5V)
COIL (pin 3)	300mA
Lamp Outputs	250 V _{pp}
Power Dissipation	500mW

SB6543**P.2****DUAL VOLTAGE
HIGH BRIGHTNESS
EL DRIVER IC**

SPECIFICATION

(T=25°C, V_{dd1}=5.0V, V_{dd2}=8.0V Lamp Capacitance=30nF, Coil=680 μf (R=5.5 ohms),

C_{osc}=150pF, unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNIT	CONDITIONS
Supply Voltage, V _{dd1}	3.0	-	5.0	V	
Supply Voltage, V _{dd2}	3.0	-	12.0	V	
Total Supply Current	-	-	100	mA	H _{ON} =5.0V V _{dd1} =5.0V; V _{dd2} =8.0V
Quiescent Supply Current	-	100	1000	nA	H _{ON} =0V V _{dd1} =5.0V; V _{dd2} =12.0V
Hon Voltage, On	V _{dd1} -0.5	-	V _{dd1}	V	
Hon Current, On	-	15	60	μA	
Hon Voltage, Off	-	-	V _{dd1} -4	V	V _{dd1} =5.0V;

INDUCTOR DRIVE

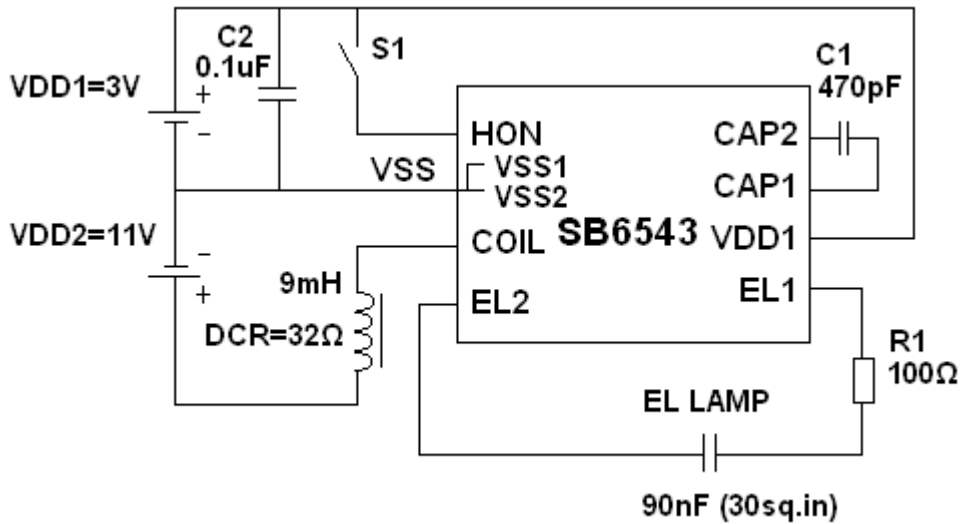
Peak Coil Current, I _{pk-coil}	-	-	300	mA	
Coil Duty Cycle		75		%	

EL LAMP OUTPUT

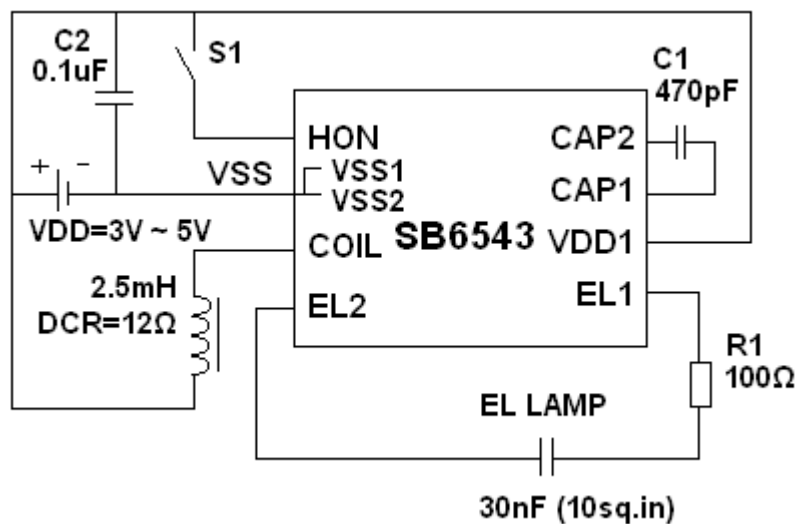
EL Lamp Frequency, f _{lamp}	200	400	600	Hz	V _{dd1} =5.0V; V _{dd2} =8.0V
Peak to Peak Output Voltage	110	160	-	V _{pp}	V _{dd1} =5.0V; V _{dd2} =8.0V

APPLICATION CIRCUIT

1. LARGER SIZE EL LAMP (30sq. in EL Lamp)



2. SMALLER SIZE EL LAMP (10sq. in EL Lamp)

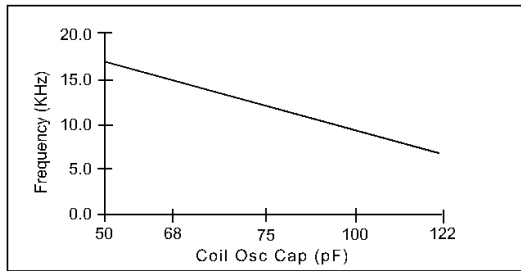


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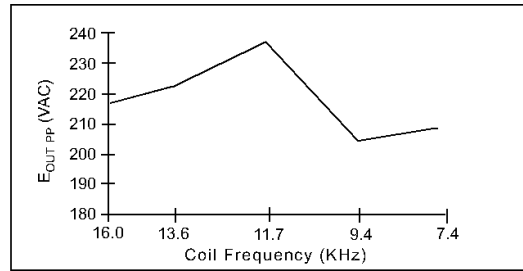
NOTES

1. Larger inductance values may be required depending upon supply impedance.
2. Electrolytic capacitor 10uF~47uF is connected across HON & VSS for delay function.
3. S1 is connected to VDD1 to enable.

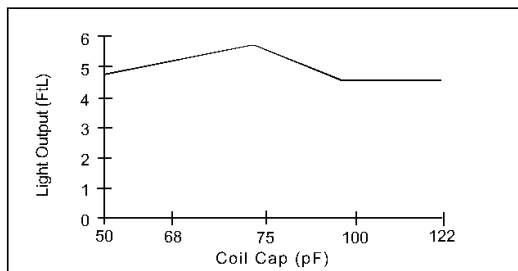
The following performance curves are intended to give the designer a relative scale from which to optimize specific applications. Absolute measurements may vary depending upon the brand of components chosen.



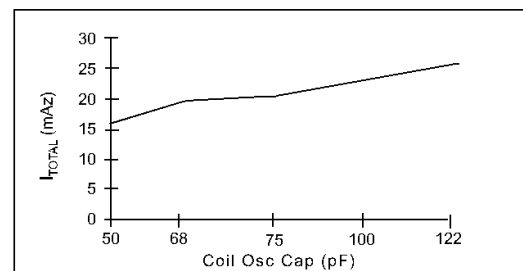
Coil Frequency vs. Coil Osc Cap Value



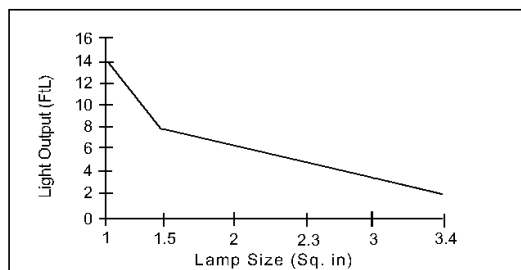
Coil Frequency vs. E_{OUT_PP}



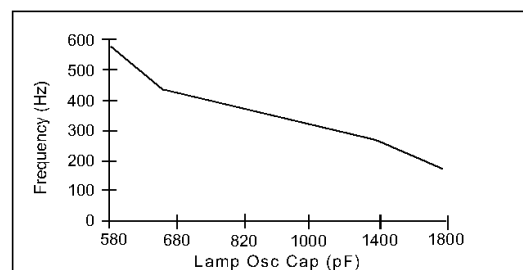
Coil Cap vs. Light Output



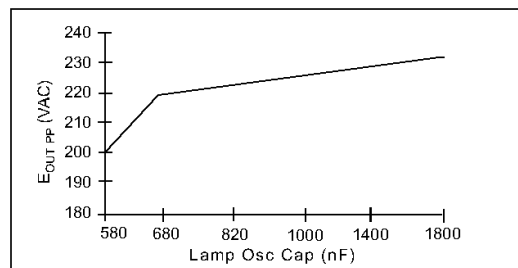
I_{TOTAL} vs. Coil Osc Cap



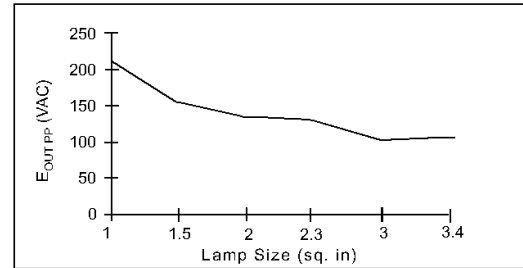
Lamp Size vs. Light Output



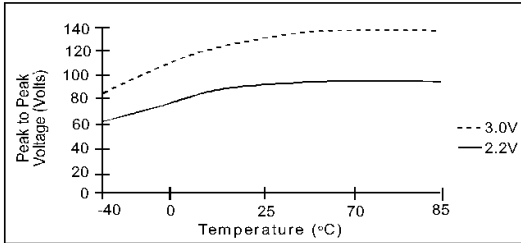
Lamp Frequency vs. Lamp Osc Cap Value



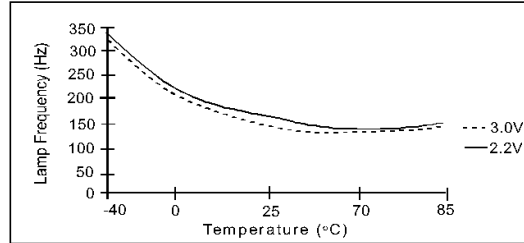
Lamp Osc Cap vs. E_{OUT_PP}



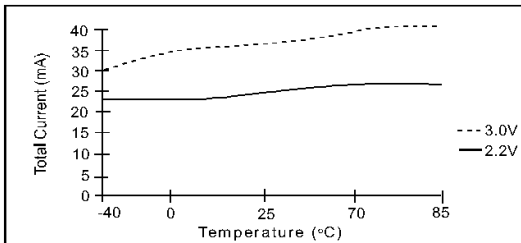
Lamp Size vs. E_{OUT_PP}

SB6543**P.5****LOW FREQUENCY
EL DRIVER IC**

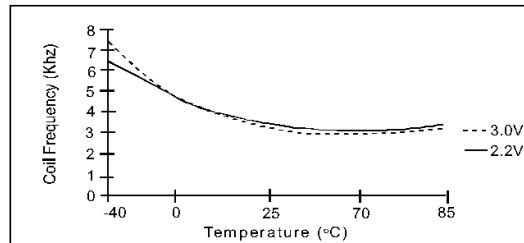
Peak to Peak Voltage vs. Temperature
 $C_{COIL}=220pF$; $C_{LAMP}=1500pF$; $Load=55nF$



Lamp Frequency vs. Temperature
 $C_{COIL}=220pF$; $C_{LAMP}=1500pF$; $Load=55nF$



Total Current vs. Temperature
 $C_{COIL}=220pF$; $C_{LAMP}=1500pF$; $Load=55nF$



Coil Frequency vs. Temperature
 $C_{COIL}=220pF$; $C_{LAMP}=1500pF$; $Load=55nF$

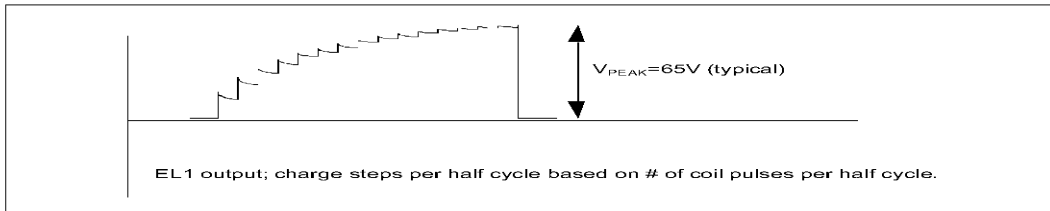


Figure 1. EL output voltage in discrete steps at EL1 output

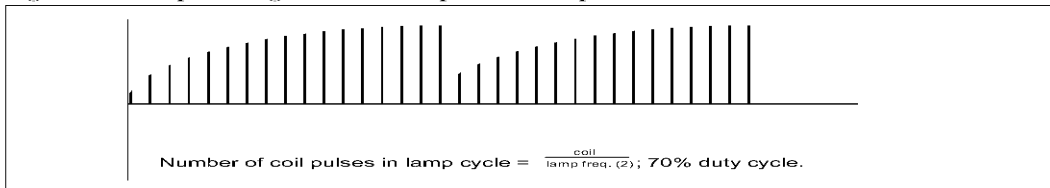


Figure 2. Voltage pulses released from the coil to the EL driver circuitry

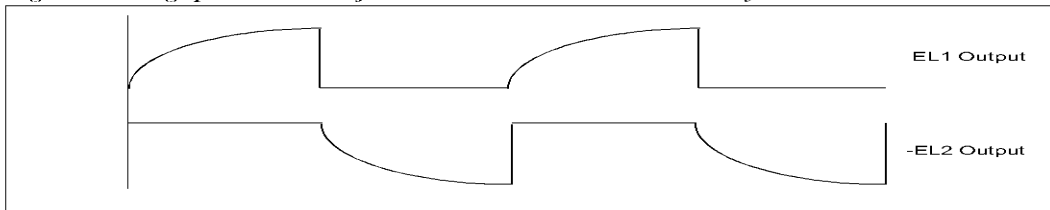


Figure 3. EL voltage waveforms from the EL1 and EL2 outputs

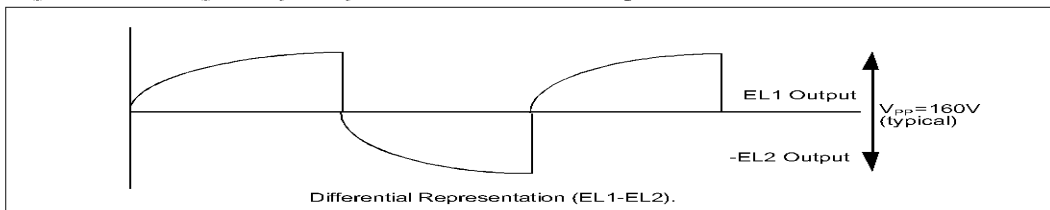
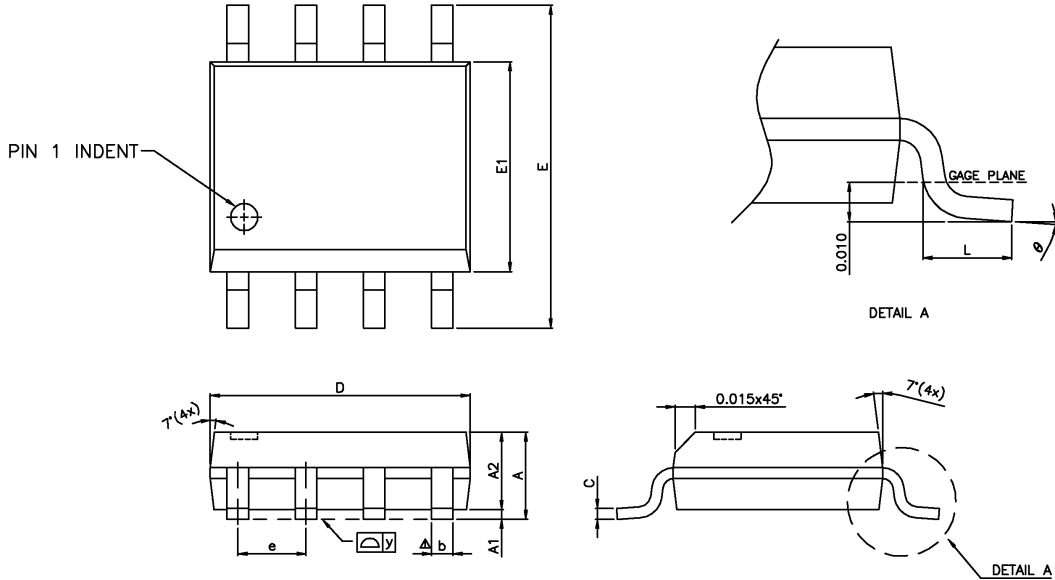


Figure 4. EL differential output waveform of the EL1 and EL2 outputs

SB6543	P.6
LOW FREQUENCY EL DRIVER IC	

SOP PIN CONFIGURATION & DIMENSION



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	—	1.27	—	—	0.050	—
L	0.38	0.71	1.27	0.015	0.028	0.050
Δy	—	—	0.076	—	—	0.003
θ	0°	—	8°	0°	—	8°

PIN CONFIGURATION

PIN NUMBER	1	2	3	4	5	6	7	8
NAME	HON	VSS	COIL	EL2	EL1	VDD	CAP1	CAP2