OVERVIEW

The SM8141 is a transformer-less electroluminescent (EL) sheet lamp driver, capable of driving sheets up to 50cm^2 in size. It employs built-in high withstand voltage output MOS transistors and requires few external components, making it ideal for compact driver units in portable equipment.

FEATURES

- Dedicated EL driver
- 50cm^2 maximum EL sheet drive capability
- Noise-less smooth drive waveform
- Two oscillators (EL and coil)(SM8141A)
- Stand-by function (SM8141B)
- High-efficiency MOS transistor driver
- Dual supply operation possible
  (See TYPICAL APPLICATIONS)
- 2.0 to 5.5V supply operation
- 200Vp-p maximum drive voltage
- 250Hz standard drive frequency
- 8-pinVSOP package
- Chip form

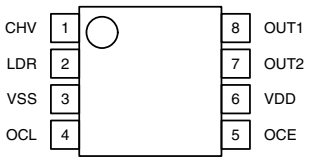
ORDERING INFORMATION

Device	Package
SM8141AV	8pin VSOP
SM8141BV	
CF8141A	Chip form
CF8141B	

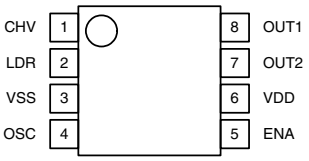
PINOUT

(Top view)

SM8141A

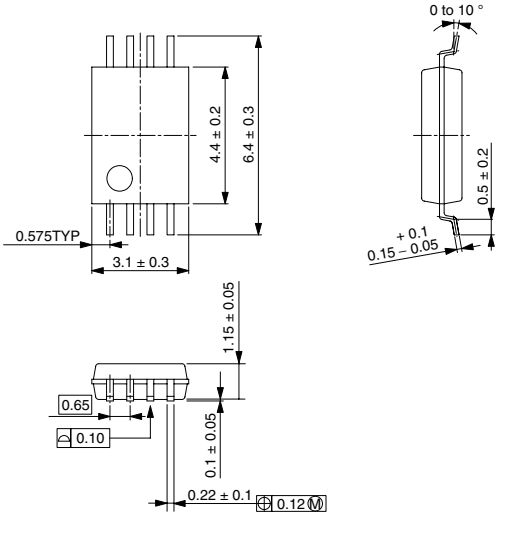


SM8141B



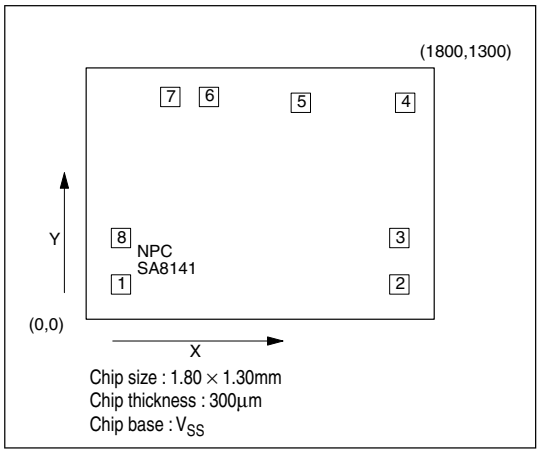
PACKAGE DIMENSIONS

(Unit: mm)



PAD DIMENSIONS

(Unit: mm)



PIN DESCRIPTION

- **SM8141A**

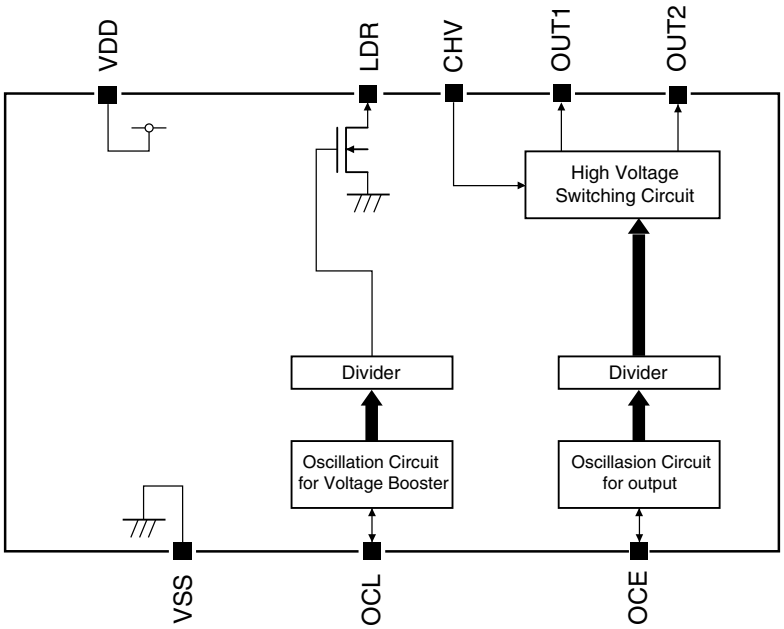
Pin number	Pad number	Name	Pad dimensions		I/O	Function
			X [µm]	Y [µm]		
1	6	CHV	635	1150	I	High-voltage DC input
2	7	LDR	435	1150	O	Booster coil driver output
3	8	VSS	180	420	–	Ground
4	1	OCL	180	180	I	Coil driver oscillator (oscillator frequency determined by external variable resistor)
5	2	OCE	1620	180	I	EL driver oscillator (oscillator frequency determined by external variable resistor)
6	3	VDD	1620	420	–	Supply
7	4	OUT2	1650	1120	O	Output 2
8	5	OUT1	1110	1120	O	Output 1

- **SM8141B**

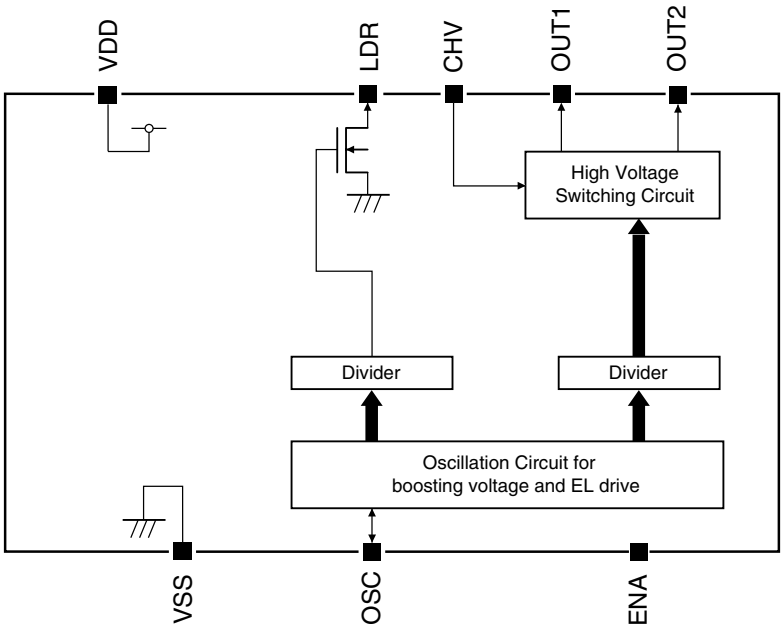
Pin number	Pad number	Name	Pad dimensions		I/O	Function
			X [µm]	Y [µm]		
1	6	CHV	635	1150	I	High-voltage DC input
2	7	LDR	435	1150	O	Booster coil driver output
3	8	VSS	180	420	–	Ground
4	1	OSC	180	180	I	Coil and EL driver oscillator (oscillator frequency determined by external variable resistor)
5	2	ENA	1620	180	I	Enable input (built-in pull-down resistor)
6	3	VDD	1620	420	–	Supply
7	4	OUT2	1650	1120	O	Output 2
8	5	OUT1	1110	1120	O	Output 1

BLOCK DIAGRAM

- **SM8141A**



- **SM8141B**



SPECIFICATIONS

Absolute Maximum Ratings

V_{SS} = 0V

Parameter	Symbol	Condition	Rating	Unit
Supply voltage range	V_{DD}		– 0.3 to 7.0	V
Input voltage range	V_{IN}	All Input pins	V_{SS} – 0.3 to V_{DD} + 0.3	V
Output voltage	V_{CHV}	CHV pin	0.5 to 120	V
	V_{LDR}	LDR pin	0.5 to 120	V
	$V_{OUT1/2}$	OUT1 , OUT2 pin	0.5 to 120	V
Storage temperature range	T_{STG}		– 55 to 125	°C
Power dissipation	P_D	Ta ≤ 85°C	100	mW

Recommended Operating Conditions

V_{SS} = 0V

Parameter	Symbol	Condition	Rating			Unit
			min	typ	max	
Supply voltage	V_{DD}		2.0	3.0	5.5	V
Operating temperature	T_{OPR}		– 40	–	85	°C
Operating current[1]	I_{DD2}	Including coil current, V_{DD} = 3.0V	–	–	60	mA
		Including coil current, V_{DD} = 5.0V	–	–	36	
Coil inductance	L_{LDR2}	f_{LDR} = 64kHz	–	0.47	–	mH

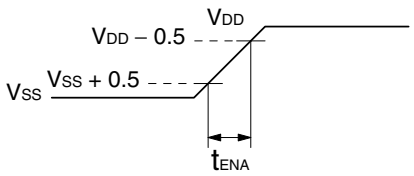
1. Max value is as same as Absolute Maximum Ratings.

DC Characteristics

Ta = 25°C, V_{SS} = 0V, V_{DD} = 3.0V unless otherwise noted

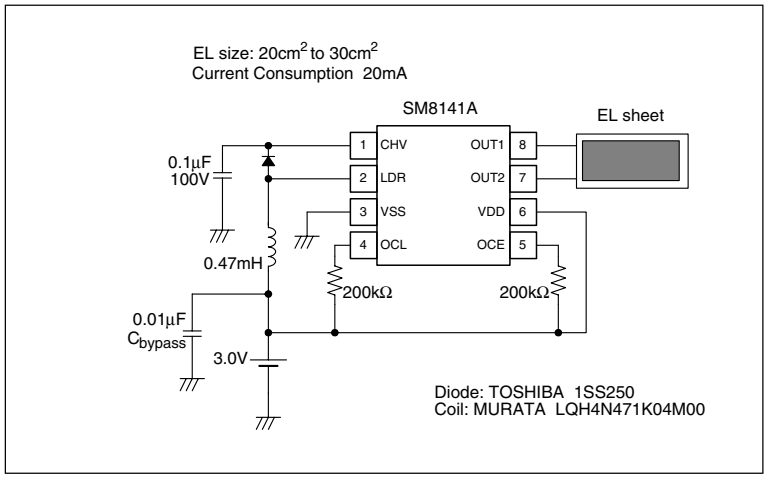
Parameter	Ver.	Symbol	Condition	Rating			Unit
				min	typ	max	
Supply voltage	A/B	V_{DD}		2.0	3.0	5.5	V
CHV output voltage	A/B	V_{CHV}		0.5	–	100	V
OUT1, OUT2 HIGH-level output voltage	A/B	V_{OUTH}		–	–	100	V
OUT1, OUT2 LOW-level output voltage	A/B	V_{OUTL}		–	–	0.5	V
LDR output resistance	A/B	R_{LDR}	I_{LDR} = 50mA	–	8.0	12.0	Ω
OCE oscillator frequency	A	f_{OCE1}	R_{OCE} = 200kΩ	205	256	307	kHz
OCE oscillator frequency range		f_{OCE2}		32	–	1024	
OCL oscillator frequency	A	f_{OCL1}	R_{OCL} = 200kΩ	205	256	307	kHz
OCL oscillator frequency range		f_{OCL2}		32	–	1024	
OSC oscillator frequency	B	f_{OSC1}	R_{OSC} = 200kΩ	205	256	307	kHz
OSC oscillator frequency range		f_{OSC2}		32	–	1024	
OUT1, OUT2 output frequency	A/B	f_{OUT1}	R_{OCE}/R_{OSC} = 200kΩ	200	250	300	Hz
OUT1, OUT2 output frequency range		f_{OUT2}		31	–	1000	
LDR inductance driver frequency	A/B	f_{LDR1}	R_{OCL}/R_{OSC} = 200kΩ	51	64	77	kHz
LDR inductance driver frequency range		f_{LDR2}		8	–	256	
ENA HIGH-level input voltage	B	V_{ENAH}	ENA = "H", V_{DD} = 2.0 to 5.5V	V_{DD} – 0.5	–	V_{DD} + 0.3	V
ENA LOW-level input voltage		V_{ENAL}	ENA = "L", V_{DD} = 2.0 to 5.5V	V_{SS} – 0.3	–	V_{SS} + 0.5	
ENA input current	B	I_{ENAH}	V_{ENAH} = 3.0V, V_{DD} = 3.0V	2.0	4.0	6.0	µA
Operating current	A/B	I_{DD1}	Excluding coil current	–	–	1	mA
Stand-by current	B	I_{STB}	ENA = "L"	–	–	1	µA
ENA rise time[1]	B	t_{ENA}	$V_{ENAL} \rightarrow V_{ENAH}$	–	–	100	ms

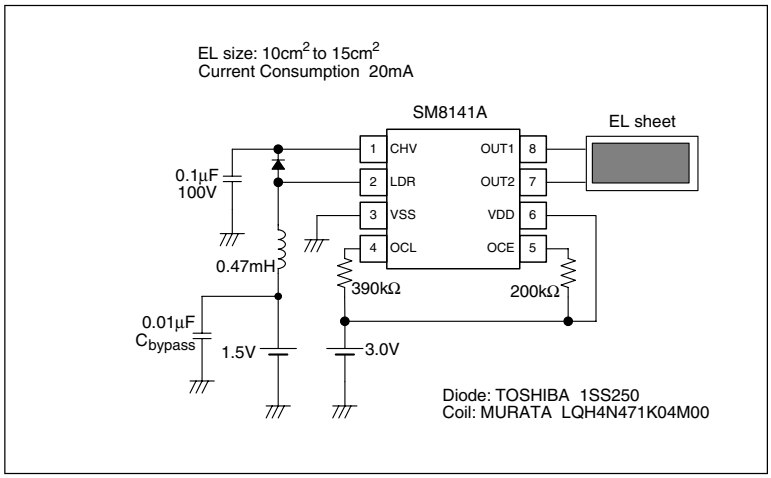
1.

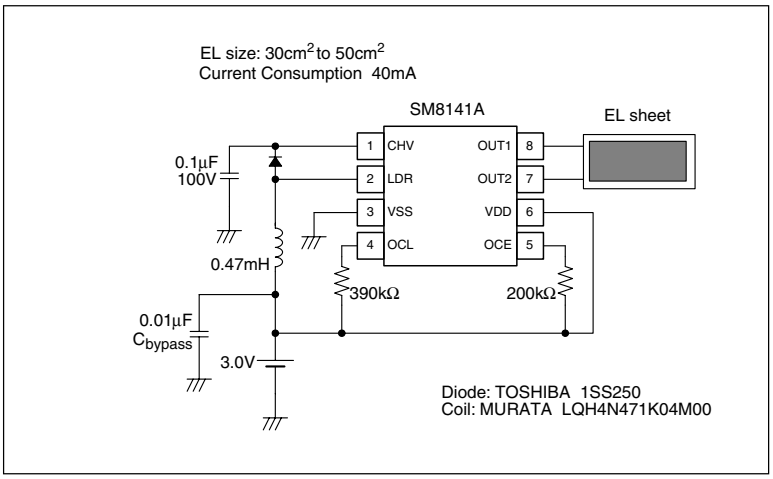


TYPICAL APPLICATIONS

- **SM8141A**

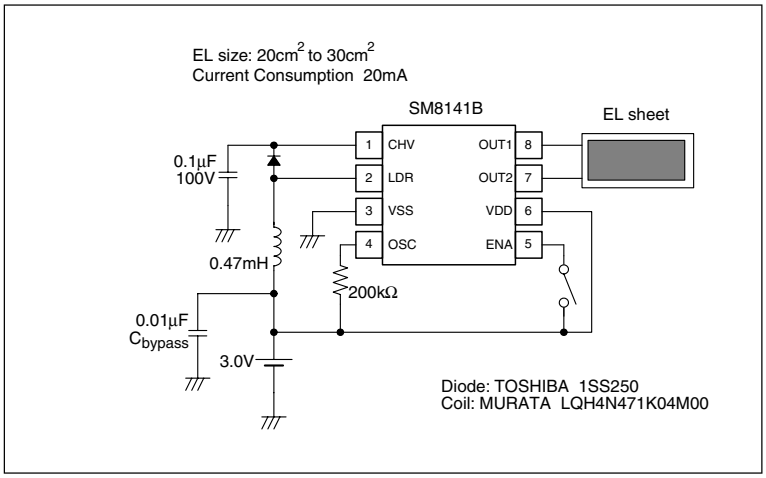


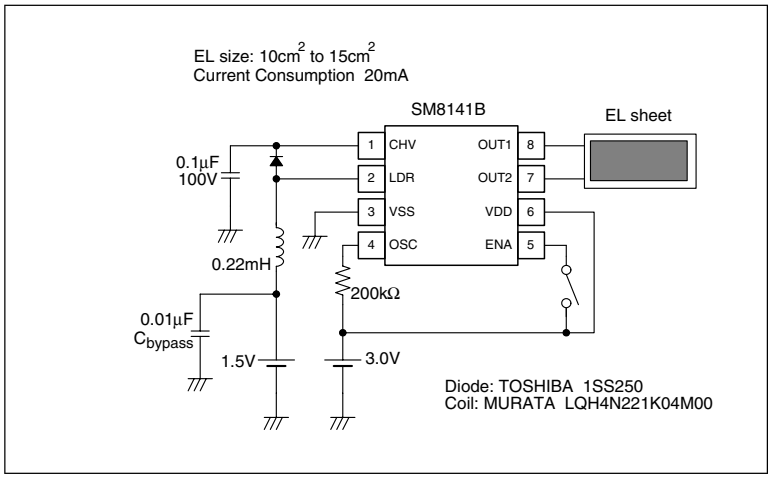


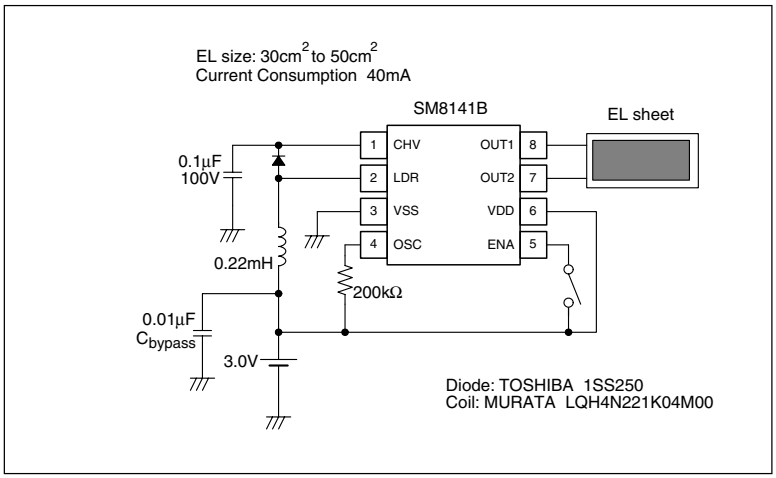


Note) Do not operate the SM8141 with the EL sheet NOT connected (no load to OUT1/OUT2) since the IC will be damaged.

- **SM8141B**







Note) Do not operate the SM8141 with the EL sheet NOT connected (no load to OUT1/OUT2) since the IC will be damaged.

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