

OVERVIEW

The SM8141 is a transformer-less electroluminescent (EL) sheet lamp driver, capable of driving sheets up to 50cm² 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

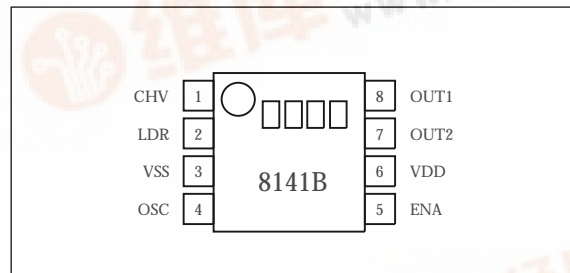
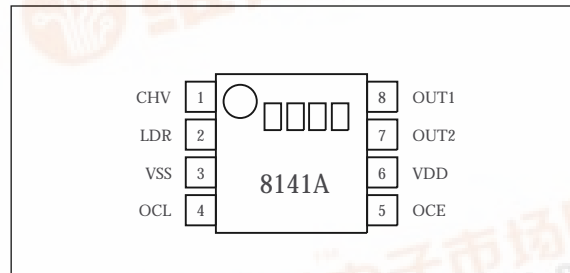
- Dedicated EL driver
- 50cm² maximum EL sheet drive capability
- Noise-less smooth drive waveform
- Two oscillators (EL and coil)(SM8141A)
- Stand-by function (SM8141B)
- High-efficiency MOS transistor driver
- Dual supply operation possible (See TYPICAL APPLICATIONS)
- 2.0 to 5.5V supply operation
- 200Vp-p maximum drive voltage
- 250Hz standard drive frequency
- 8-pinVSOP package
- Chip form

ORDERING INFORMATION

DEVICE	PACKAGE
SM8141AV	8pin VSOP
SM8141BV	8pin VSOP
CF8141A	Chip form
CF8141B	Chip form

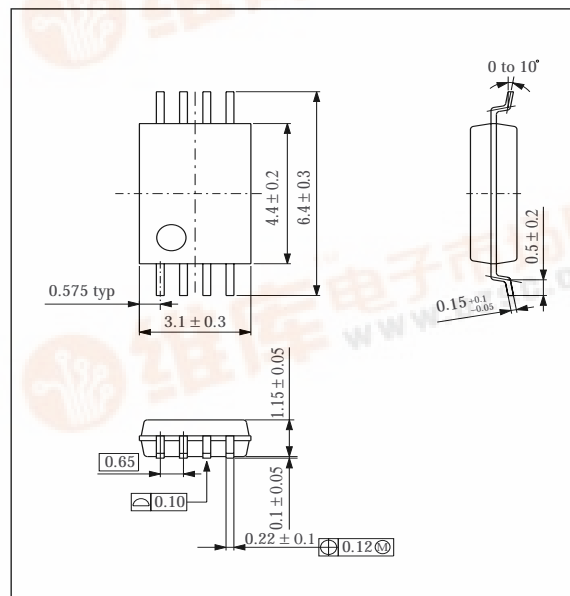
PINOUT

8pin VSOP (TOP VIEW)



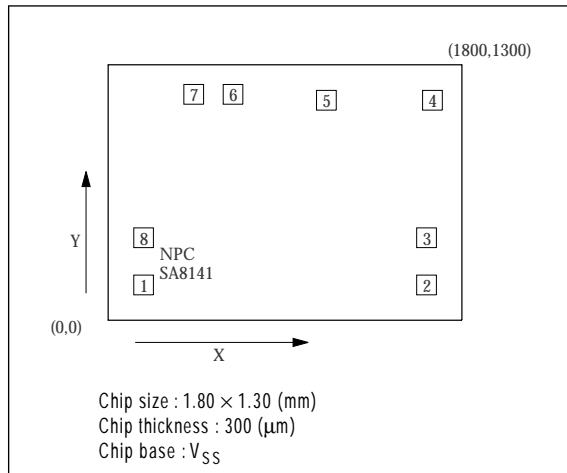
PACKAGE DIMENSIONS

(Unit : mm)



PAD DIMENSIONS

(Unit : mm)



PIN DESCRIPTION

• SM8141A

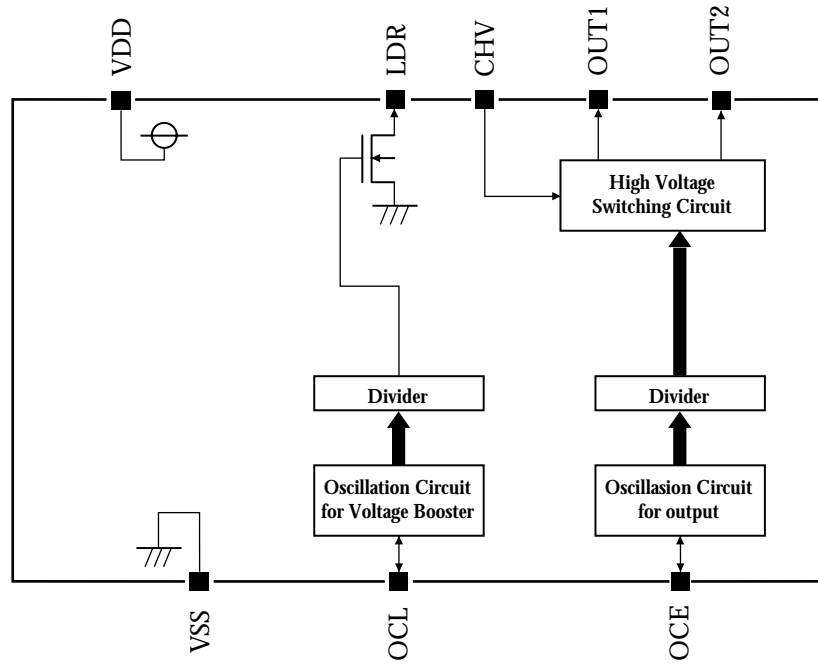
Pin number	Pad number	Name	Pad dimensions		I/O	Function
			X (μm)	Y (μm)		
1	6	CHV	635	1150	I	High-voltage DC input
2	7	LDR	435	1150	O	Booster coil driver output
3	8	VSS	180	420	-	Ground
4	1	OCL	180	180	I	Coil driver oscillator (oscillator frequency determined by external variable resistor)
5	2	OCE	1620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

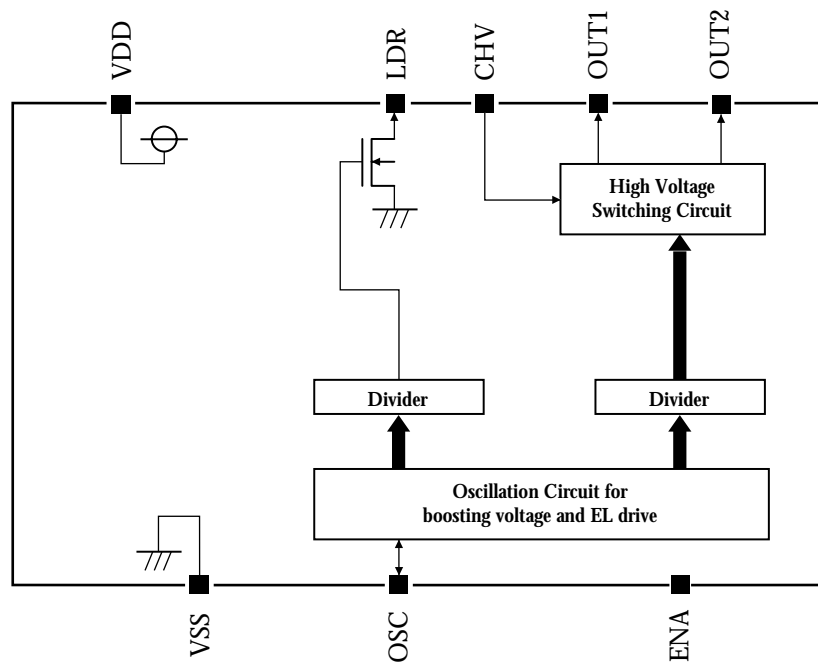
Pin number	Pad number	Name	Pad dimensions		I/O	Function
			X (μm)	Y (μm)		
1	6	CHV	635	1150	I	High-voltage DC input
2	7	LDR	435	1150	O	Booster coil driver output
3	8	VSS	180	420	-	Ground
4	1	OSC	180	180	I	Coil and EL driver oscillator (oscillator frequency determined by external variable resistor)
5	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

$V_{SS} = 0\text{ V}$

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	$T_a \leq 85\text{ °C}$	100	mW
Soldering temperature	T_{SLD}		255	°C
Soldering time	t_{SLD}		10	s

Recommended Operating Conditions

$V_{SS} = 0\text{ V}$

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, $V_{DD} = 3.0\text{ V}$	-	-	60	mA
		Including coil current, $V_{DD} = 5.0\text{ V}$	-	-	36	
Coil inductance	L_{LDR2}	$f_{LDR} = 64\text{ kHz}$	-	0.47	-	mH

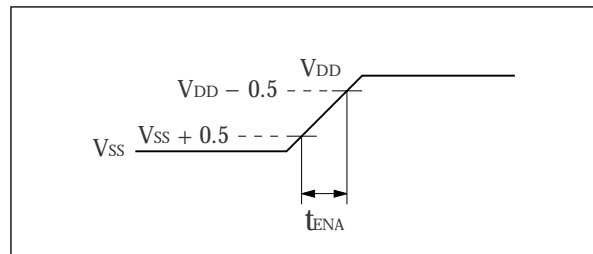
1. Max value is as same as Absolute Maximum Ratings.

SM8141

DC Characteristics

$T_a = 25\text{ }^\circ\text{C}$, $V_{SS} = 0\text{ V}$, $V_{DD} = 3.0\text{ V}$ unless otherwise noted

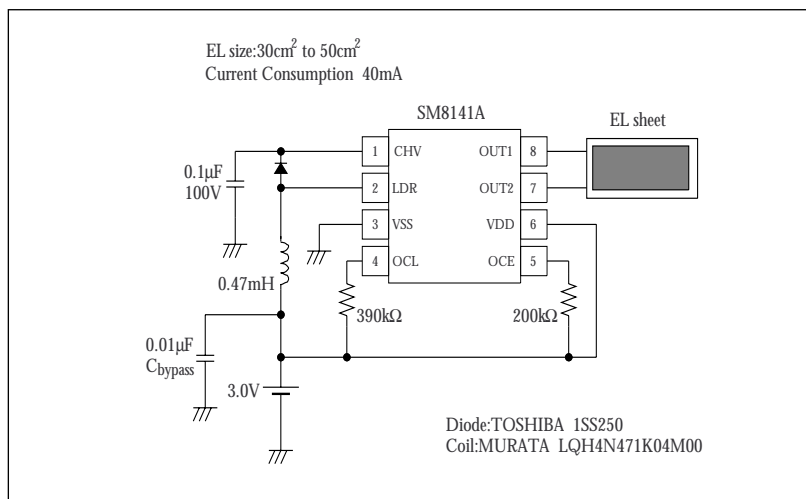
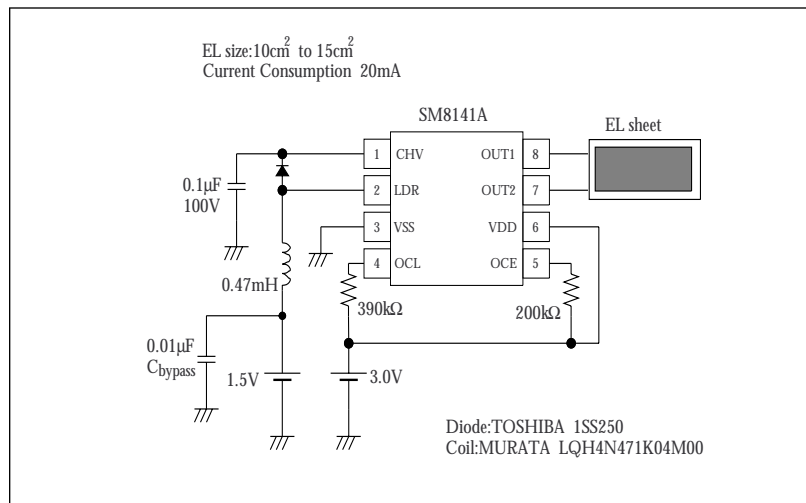
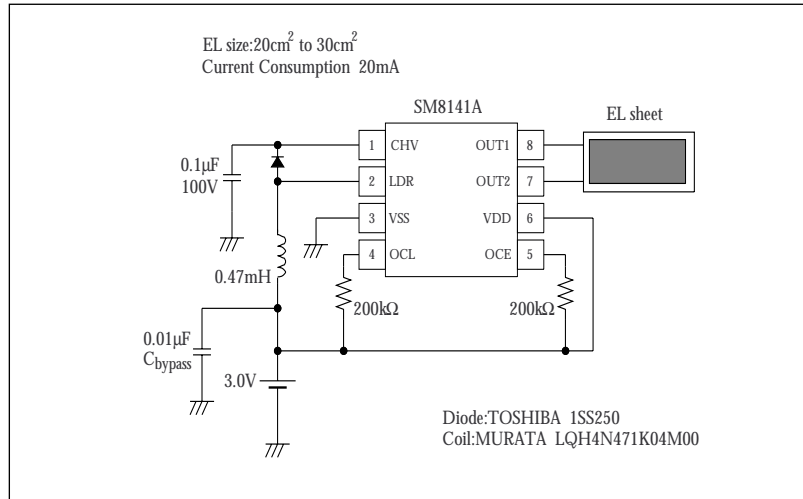
Parameter	Ver.	Symbol	Condition	Rating			Unit
				min	typ	max	
Supply voltage	A / B	V_{DD}		2.0	3.0	5.5	V
CHV output voltage	A / B	V_{CHV}		0.5	-	100	V
OUT1, OUT2 HIGH-level output voltage	A / B	V_{OUTH}		-	-	100	V
OUT1, OUT2 LOW-level output voltage	A / B	V_{OUTL}		-	-	0.5	V
LDR output resistance	A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



Rise time

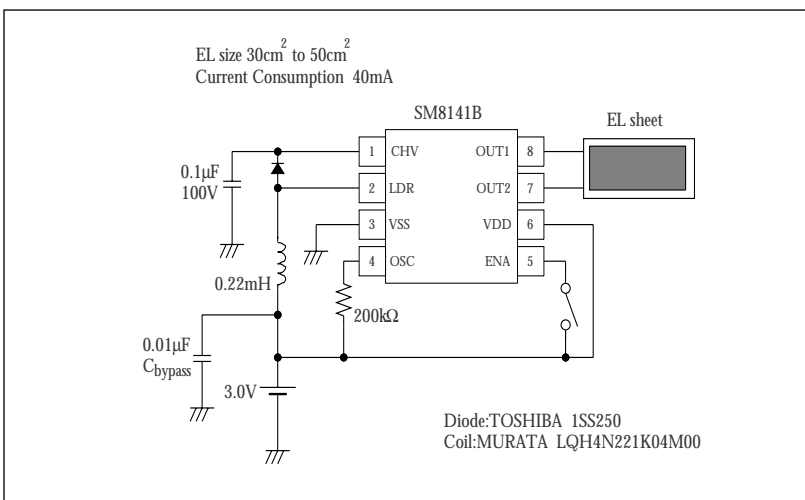
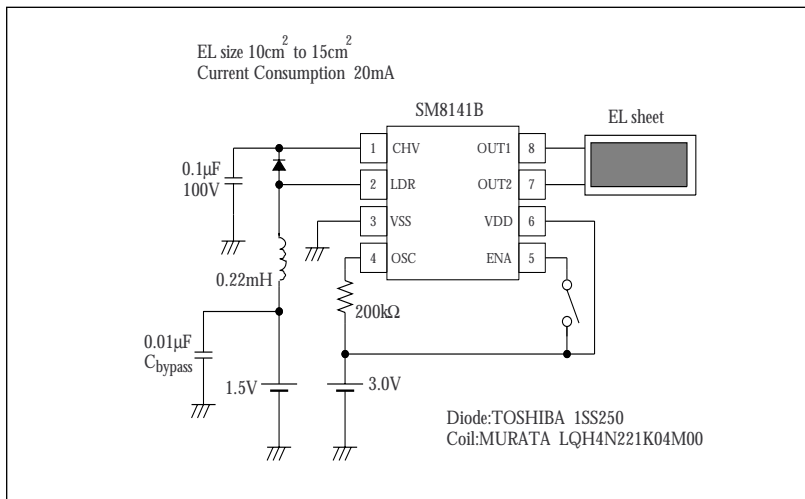
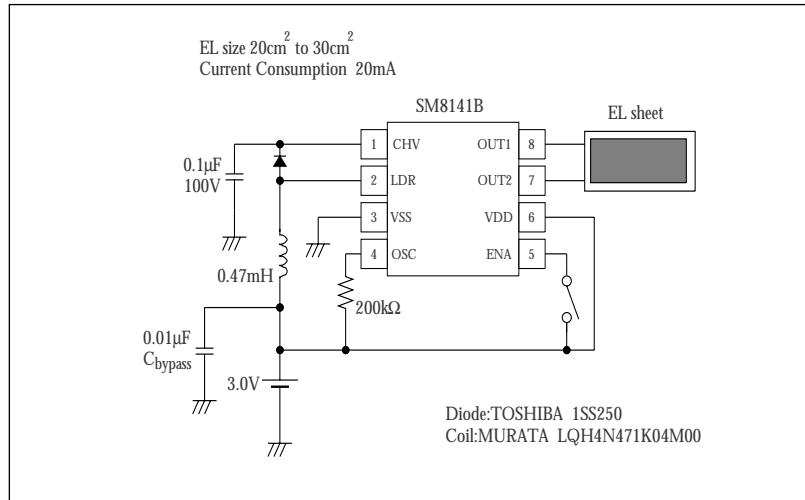
TYPICAL APPLICATIONS

• SM8141A



SM8141

- **SM8141B**



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