OVERVIEW

The SM8142B is a transformer-less electroluminescent (EL) driver IC, capable of driving sheets up to 30cm^2 in size. It employs a high-efficiency driver output circuit configuration to control power dissipation. It is available in ultra-small 8-pin SON (Small Outline Non-leaded) packages*, making possible the construction of small, thin, low-power driver units.

* : SM8142BD

FEATURES

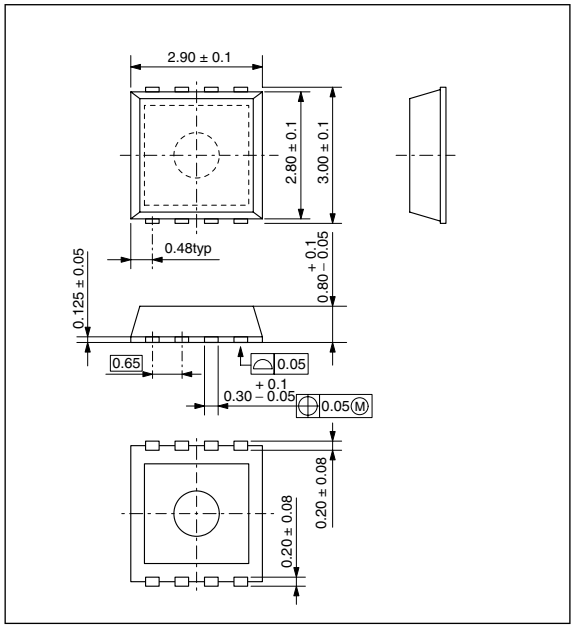
- Dedicated EL driver
- Noise-less smooth drive waveform
- High-efficiency output circuit
- Stand-by function
- Stable temperature characteristics
- Ultra-small package
- 1.6 to 5.5V supply voltage
- 0.3mA typ. (V_{DD} = 3.0V) current consumption (excluding coil current)
- 200Vp-p maximum EL driver voltage
- 31 to 1000Hz EL drive frequency range
- 0.22mH minimum coil inductance

ORDERING INFORMATION

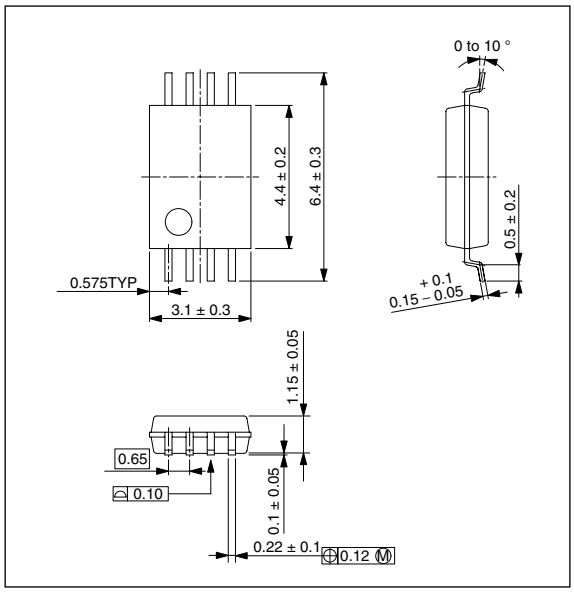
Device	Package
SM8142BD	8-pin SON
SM8142BV	8-pin VSOP

PACKAGE DIMENSIONS (Unit: mm)

- 8-pin SON

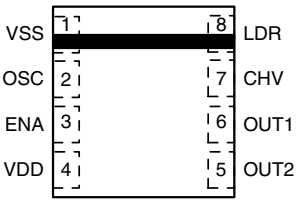


- 8-pin VSOP

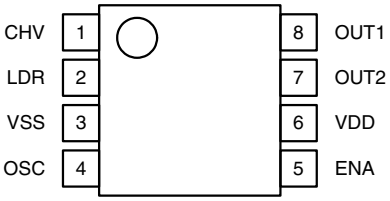


PINOUT (Top view)

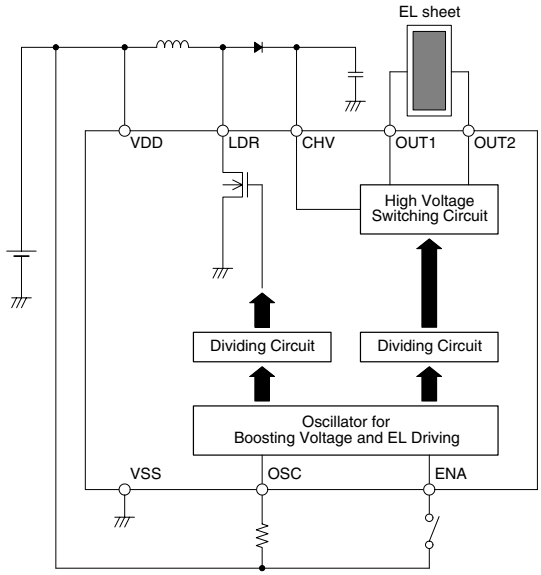
■ 8-pin SON



■ 8-pin VSOP



BLOCK DIAGRAM



PIN DESCRIPTION

Pin number		Name	I/O	Function
VSOP-8	SON-8			
1	7	CHV	I	High-voltage DC input
2	8	LDR	O	Booster coil driver output
3	1	VSS	–	Ground
4	2	OSC	I	Coil and EL driver oscillator (oscillator frequency determined by external resistor)
5	3	ENA	Ip[1]	Enable input (HIGH: enable, LOW: disable)
6	4	VDD	–	Supply
7	5	OUT2	O	Output 2
8	6	OUT1	O	Output 1

1. Built-in pull-down resistor

SPECIFICATIONS

Absolute Maximum Ratings

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
Power dissipation	P_D	Ta ≤ 85°C	100	mW
Storage temperature range	T_{stg}		– 55 to 125	°C

Note. The device may be damaged or deteriorated if any of the above parameter ratings is exceeded.

Recommended Operating Conditions

Parameter	Symbol	Condition	Rating			Unit
			min	typ	max	
Supply voltage range	V_{DD2}		1.6	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	
Current limit resistance	R_{CHV}	V_{DD} = 1.6 to 4.0V	–	0	–	kΩ
		V_{DD} = 4.0 to 5.5V	10	20	–	
	R_{OUT}	EL ≤ 30cm^2	–	0	–	kΩ
		EL ≥ 30cm^2	–	1.0	–	
Coil inductance	L_{LDR}	f_{LDR} = 64kHz	–	0.47	–	mH

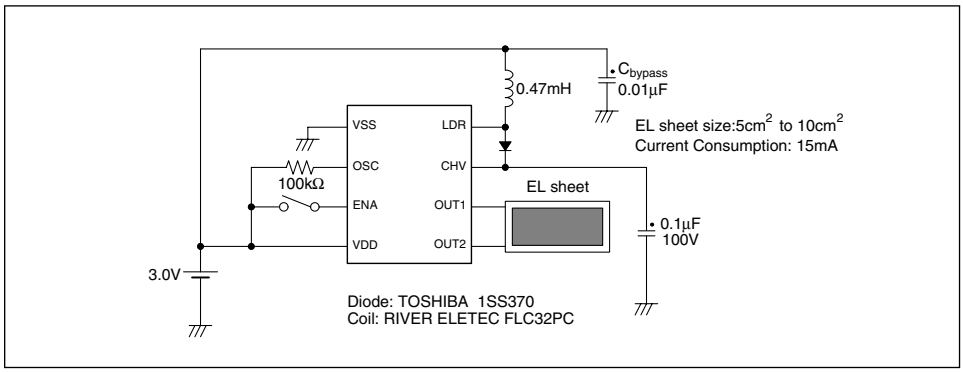
1. Max value is as same as Absolute Maximum Ratings.

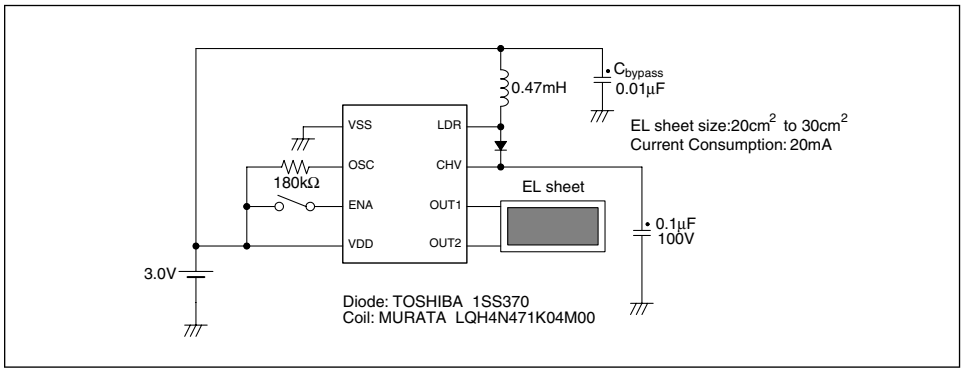
DC Characteristics

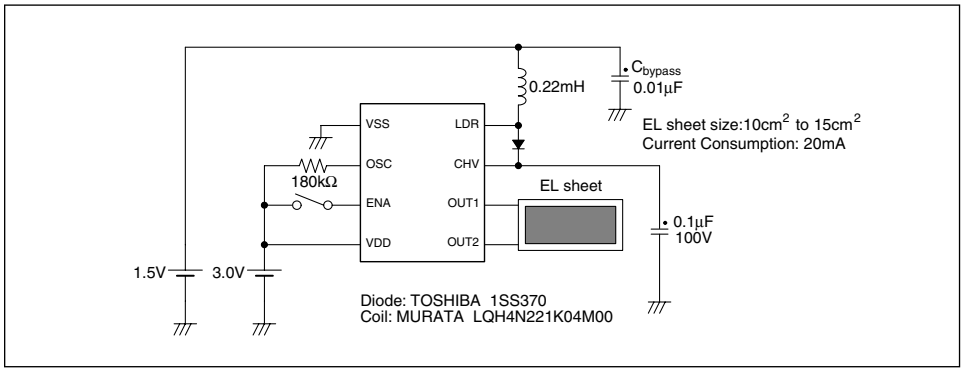
V_{DD} = 3.0V, Ta = 25°C unless otherwise noted.

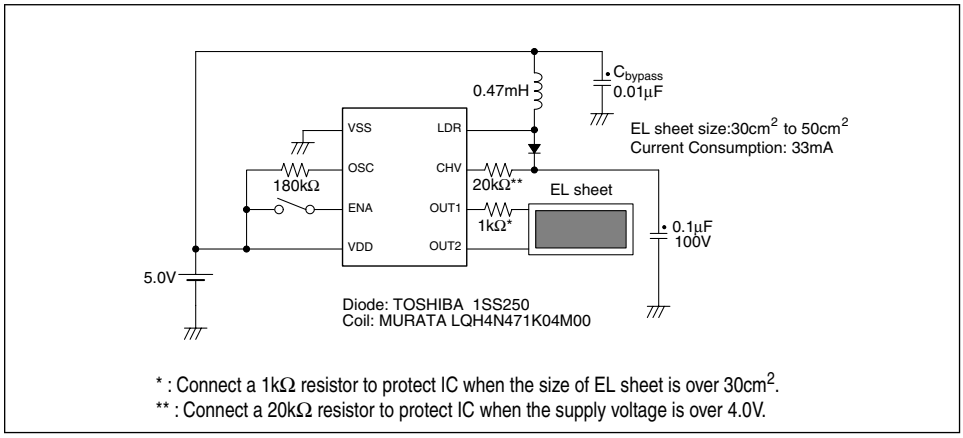
Parameter	Symbol	Condition	Rating			Unit
			min	typ	max	
Supply voltage	V_{DD}		1.6	3.0	5.5	V
CHV output voltage	V_{CHV}		0.5	–	100	V
OUT1, OUT2 HIGH-level output voltage	V_{OUTH}		–	–	100	V
OUT1, OUT2 LOW-level output voltage	V_{OUTL}		–	–	0.5	V
LDR output resistance	R_{LDR}	I_{LDR} = 50mA	–	8.0	12.0	Ω
OSC oscillator frequency	f_{OSC1}	R_{OSC} = 180kΩ	205	256	307	kHz
OSC oscillator frequency range	f_{OSC2}		32	–	1024	
OUT1, OUT2 output frequency	f_{OUT1}	R_{OCE}/R_{OSC} = 180kΩ	200	250	300	Hz
OUT1, OUT2 output frequency range	f_{OUT2}		31	–	1000	
LDR inductance driver frequency	f_{LDR1}	R_{OCL}/R_{OSC} = 180kΩ	51	64	77	kHz
LDR inductance driver frequency range	f_{LDR2}		8	–	256	
ENA HIGH-level input voltage	V_{ENAH}	ENA = "H", V_{DD} = 1.6 to 5.5V	V_{DD} – 0.5	–	V_{DD} + 0.3	V
ENA LOW-level input voltage	V_{ENAL}	ENA = "L", V_{DD} = 1.6 to 5.5V	V_{SS} – 0.3	–	V_{SS} + 0.5	
ENA input current	I_{ENAH}	V_{ENAH} = V_{DD} = 3.0V	2.0	4.0	6.0	µA
Operating current	I_{DD1}	Excluding coil current	–	–	0.5	mA
Stand-by current	I_{STB}	ENA = "L"	–	–	1.0	µA

TYPICAL APPLICATIONS









Note) Do not operate the SM8142B with the EL sheet NOT connected (no load to OUT1/OUT2) since the IC will be damaged.

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