National Semiconductor

ADVANCE INFORMATION
October 2007

LM3410
525kHz/1.6MHz, Constant Current Boost and SEPIC LED Driver with Internal Compensation

General Description

The LM3410 constant current LED driver is a monolithic, high frequency, PWM step-up DC/DC converter in 5-pin SOT23, 6-pin LLP, & 8-pin eMSOP packages. With a minimum of external components the LM3410 is easy to use. It can drive 2.5A typical peak currents with an internal 160mΩ NMOS switch. Switching frequency is internally set to either 525kHz or 1.60MHz, allowing the use of extremely small surface mount inductors and chip capacitors. Even though the operating frequency is high, efficiencies up to 88% are easy to achieve. External shutdown is included, featuring an ultra-low stand-by current of 80nA. The LM3410 utilizes current-mode control and internal compensation to provide high-performance over a wide range of operating conditions. Additional features include dimming, pulse-by-pulse current limit, and thermal shutdown.

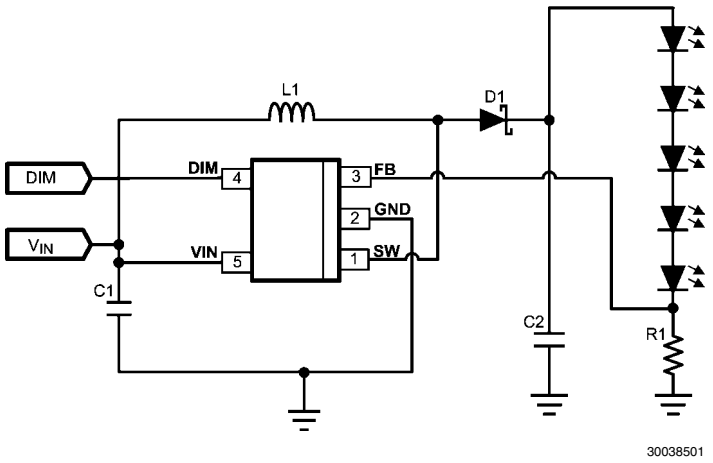
Features

- Space Saving SOT23-5 & 6-LLP Package
- Wide Input voltage range of 2.7V to 5.5V
- Wide Output voltage range of 3V to 24V
- 2.1A switch current over full temperature range
- Two High Switching Frequencies Available:
  - 525 kHz (LM3410-Y)
  - 1.6 MHz (LM3410-X)
- 160 mΩ NMOS Switch
- 190 mV Internal Voltage Reference
- Internal Soft-Start
- Current-Mode, PWM Operation

Applications

- Portable Illumination
- LED Backlight Current Source
- LiIon Backlight OLED Driver
- Handheld Devices

Typical Boost Application Circuit



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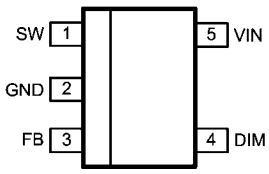
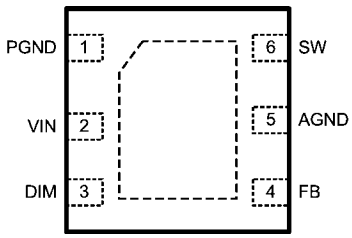
Connection Diagrams

Top View



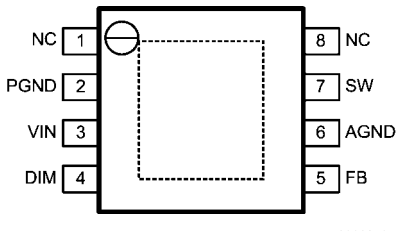
5-Pin SOT23

Top View



6-Pin LLP

Top View



8-Pin eMSOP

Ordering Information

Frequency	Order Number	Package Type	Package Drawing	Supplied As
525 kHz	LM3410YMF	SOT23-5	MF05A	1000 units tape & reel
	LM3410YMFX			3000 units tape & reel
	LM3410YSD	LLP-6	SDE06A	1000 units tape & reel
	LM3410YSDX			4500 units tape & reel
	LM3410YMY	eMSOP-8	MUY08A	1000 units tape & reel
	LM3410YMYX			3500 units tape & reel
1.6 MHz	LM3410XMF	SOT23-5	MF05A	1000 units tape & reel
	LM3410XMFX			3000 units tape & reel
	LM3410XSD	LLP-6	SDE06A	1000 units tape & reel
	LM3410XSDX			4500 units tape & reel
	LM3410XMY	eMSOP-8	MUY08A	1000 units tape & reel
	LM3410XMYX			3500 units tape & reel

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Pin Description - 5-Pin SOT23

Pin	Name	Function
1	SW	Output switch. Connect to the inductor, output diode.
2	GND	Signal and power ground pin. Place the bottom resistor of the feedback network as close as possible to this pin.
3	FB	Feedback pin. Connect FB to external resistor divider to set output voltage.
4	DIM	Dimming & shutdown control input. Logic high enables operation. Duty Cycle from 0 to 100%. Do not allow this pin to float or be greater than VIN + 0.3V.
5	VIN	Supply voltage for power stage, and input supply voltage.

Pin Description - 6 Pin LLP

Pin	Name	Function
1	PGND	Power ground pin. Place PGND and output capacitor GND close together.
2	VIN	Supply voltage for power stage, and input supply voltage.
3	DIM	Dimming & shutdown control input. Logic high enables operation. Duty Cycle from 0 to 100%. Do not allow this pin to float or be greater than VIN + 0.3V.
4	FB	Feedback pin. Connect FB to external resistor divider to set output voltage.
5	AGND	Signal ground pin. Place the bottom resistor of the feedback network as close as possible to this pin & pin 4.
6	SW	Output switch. Connect to the inductor, output diode.
DAP	GND	Signal & Power ground. Connect to pin 1 & pin 5 on top layer. Place 4-6 vias from DAP to bottom layer GND plane.

Pin Description - 8 Pin eMSOP

Pin	Name	Function
1	-	No Connect
2	PGND	Power ground pin. Place PGND and output capacitor GND close together.
3	VIN	Supply voltage for power stage, and input supply voltage.
4	DIM	Dimming & shutdown control input. Logic high enables operation. Duty Cycle from 0 to 100%. Do not allow this pin to float or be greater than VIN + 0.3V.
5	FB	Feedback pin. Connect FB to external resistor divider to set output voltage.
6	AGND	Signal ground pin. Place the bottom resistor of the feedback network as close as possible to this pin & pin 5
7	SW	Output switch. Connect to the inductor, output diode.
8	-	No Connect
DAP	GND	Signal & Power ground. Connect to pin 2 & pin 6 on top layer. Place 4-6 vias from DAP to bottom layer GND plane.

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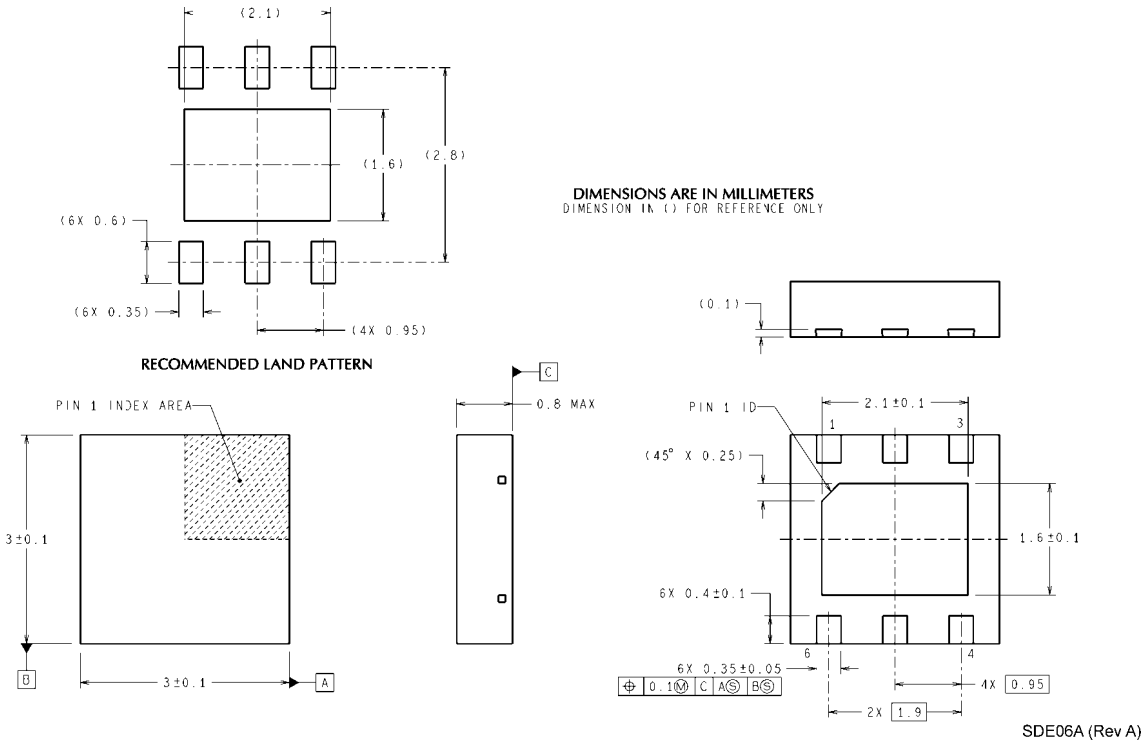
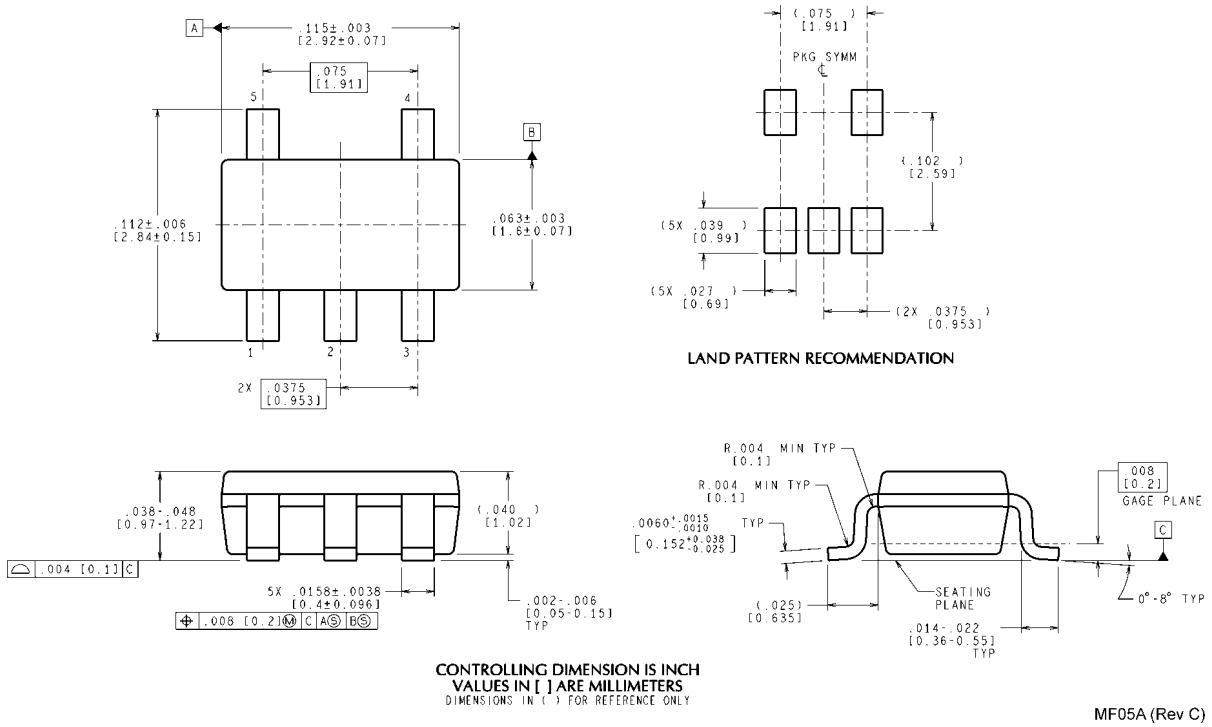
Physical Dimensions inches (millimeters) unless otherwise noted



6-Lead LLP Package
NS Package Number SDE06A



5-Lead SOT23-5 Package
NS Package Number MF05A

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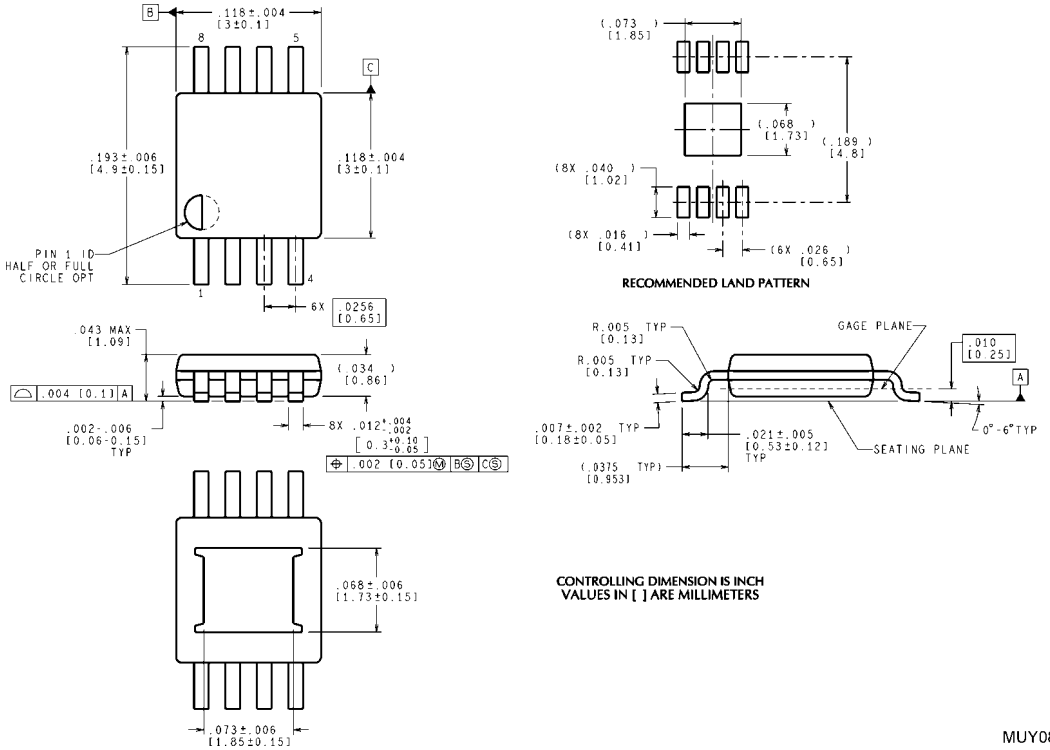

MUY08A (Rev A)

8-Lead eMSOP Package
NS Package Number MUY08A

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