

## LM3404/04HV

# 1.0A Constant Current Buck Regulator for Driving High Power LEDs

### General Description

The LM3404/04HV are monolithic switching regulators designed to deliver constant currents to high power LEDs. Ideal for automotive, industrial, and general lighting applications, they contain a high-side NFET switch with a minimum over-temperature current limit of 1.2A for step-down (Buck) regulators. Hysteretic control with controlled on-time coupled with an external resistor allow the converter output voltage to adjust as needed to deliver constant current to series and series-parallel connected LED arrays of varying number and type. Output current dimming via PWM, broken/open LED protection, low-power shutdown and thermal shutdown complete the feature set.

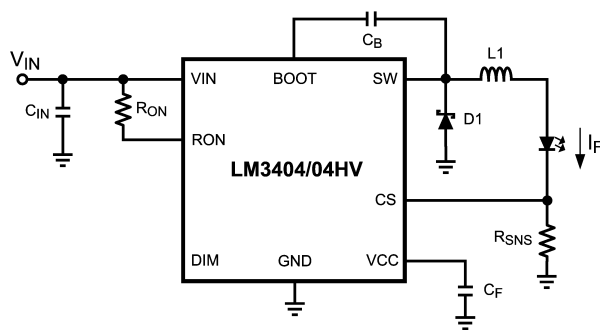
### Features

- Integrated 1.2A NFET
- $V_{IN}$  Range 6V to 42V (LM3404)
- $V_{IN}$  Range 6V to 75V (LM3404HV)
- 1.2A Output Current Over Temperature
- Cycle-by-Cycle Current Limit
- No Control Loop Compensation Required
- Separate PWM Dimming and Low Power Shutdown
- Supports all-ceramic output capacitors and capacitor-less outputs
- Thermal shutdown protection
- SO-8 Package

### Applications

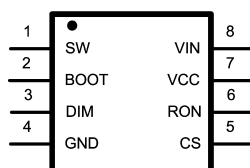
- LED Driver
- Constant Current Source
- Automotive Lighting
- General Illumination
- Industrial Lighting

### Typical Application



20205401

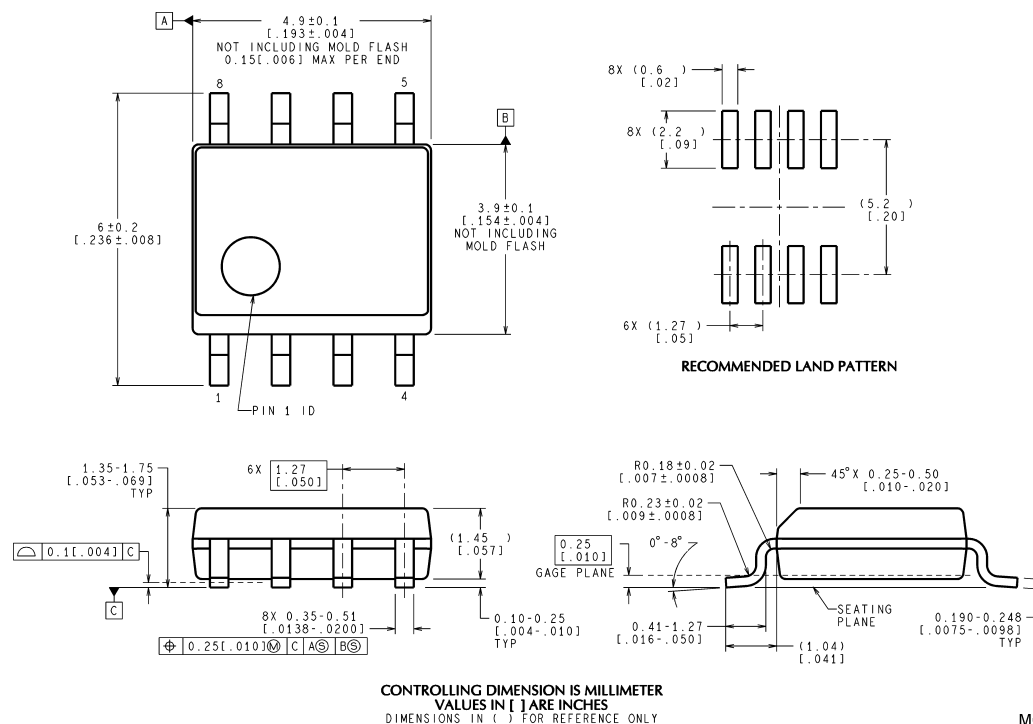
### Connection Diagram



20205402

**8-Lead Plastic SO-8 Package**  
**NS Package Number M08A**

## Physical Dimensions inches (millimeters) unless otherwise noted



**SO-8 Package**  
**NS Package Number M08A**

M08A (Rev L)

National does not assume any responsibility for use of any circuitry described, no circuit patent licenses are implied and National reserves the right at any time without notice to change said circuitry and specifications.

For the most current product information visit us at [www.national.com](http://www.national.com).

### LIFE SUPPORT POLICY

NATIONAL'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT AND GENERAL COUNSEL OF NATIONAL SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

### BANNED SUBSTANCE COMPLIANCE

National Semiconductor follows the provisions of the Product Stewardship Guide for Customers (CSP-9-111C2) and Banned Substances and Materials of Interest Specification (CSP-9-111S2) for regulatory environmental compliance. Details may be found at: [www.national.com/quality/green](http://www.national.com/quality/green).

Lead free products are RoHS compliant.



**National Semiconductor**  
**Americas Customer**  
**Support Center**  
Email: [new.feedback@nsc.com](mailto:new.feedback@nsc.com)  
Tel: 1-800-272-9959

[www.national.com](http://www.national.com)

**National Semiconductor**  
**Europe Customer Support Center**  
Fax: +49 (0) 180-530 85 86  
Email: [europe.support@nsc.com](mailto:europe.support@nsc.com)  
Deutsch Tel: +49 (0) 69 9508 6208  
English Tel: +44 (0) 870 24 0 2171  
Français Tel: +33 (0) 1 41 91 8790

**National Semiconductor**  
**Asia Pacific Customer**  
**Support Center**  
Email: [ap.support@nsc.com](mailto:ap.support@nsc.com)

**National Semiconductor**  
**Japan Customer Support Center**  
Fax: 81-3-5639-7507  
Email: [jpn.feedback@nsc.com](mailto:jpn.feedback@nsc.com)  
Tel: 81-3-5639-7560