

LM3242

LM3242 PRODUCT BRIEF 6MHz, 750mA Miniature, Adjustable, Step-Down DC-DC Converter with Auto Bypass for RF Power Amplifiers



Literature Number: SNOSB48B

6MHz, 750mA Miniature, Adjustable, Step-Down DC-DC Converter with Auto Bypass for RF Power Amplifiers

General Description

The LM3242 is a DC-DC converter optimized for powering RF power amplifiers (PAs) from a single Lithium-Ion cell; however, it may be used in many other applications. It steps down an input voltage from 2.7V to 5.5V to an adjustable output voltage from 0.4V to 3.6V. Output voltage is set using a VCON analog input for controlling power levels and efficiency of the RF PA.

The LM3242 offers five modes of operation. In PWM mode the device operates at a fixed frequency of 6MHz (typ.) at medium-to-heavy load range and minimizes RF interference. At light load, the device enters into ECO mode automatically and operates with reduced switching frequency. In ECO mode, the quiescent current is reduced and extends the battery life. Shutdown mode turns the device off and reduces battery consumption to 0.1 μ A (typ.). In low-battery condition, Bypass mode reduces the voltage dropout to less than 50 mV (typ.). The part also features a Sleep mode.

The LM3242 is available in a 9-bump lead-free micro SMD package. A high switching frequency (6MHz) allows use of only three tiny surface-mount components: one inductor and two ceramic capacitors.

Notice: This document is not a datasheet. For more information regarding this product or to order samples please contact your local National Semiconductor/Texas Instruments sales office or visit <http://focus.ti.com/general/docs/dsnuprt.tsp>.

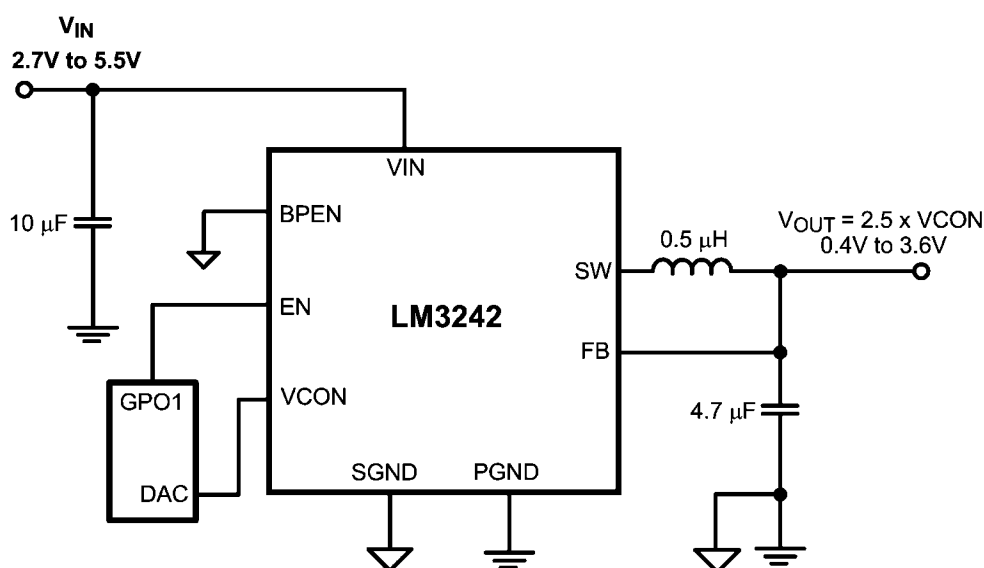
Features

- 6MHz (typ.) PWM Switching Frequency
- Operates from a Single Li-Ion Cell (2.7V to 5.5V)
- Adjustable Output Voltage (0.4V to 3.6V)
- 750 mA Maximum Load Capability (up to 1A in Bypass)
- High Efficiency (95% typ. at 3.9V_{IN}, 3.3V_{OUT} at 500 mA)
- Automatic ECO/PWM/BP mode change
- 9-bump micro SMD Package
- Current Overload Protection
- Thermal Overload Protection
- Soft-Start Function
- Small Chip Inductor in 0805 (2012) case size

Applications

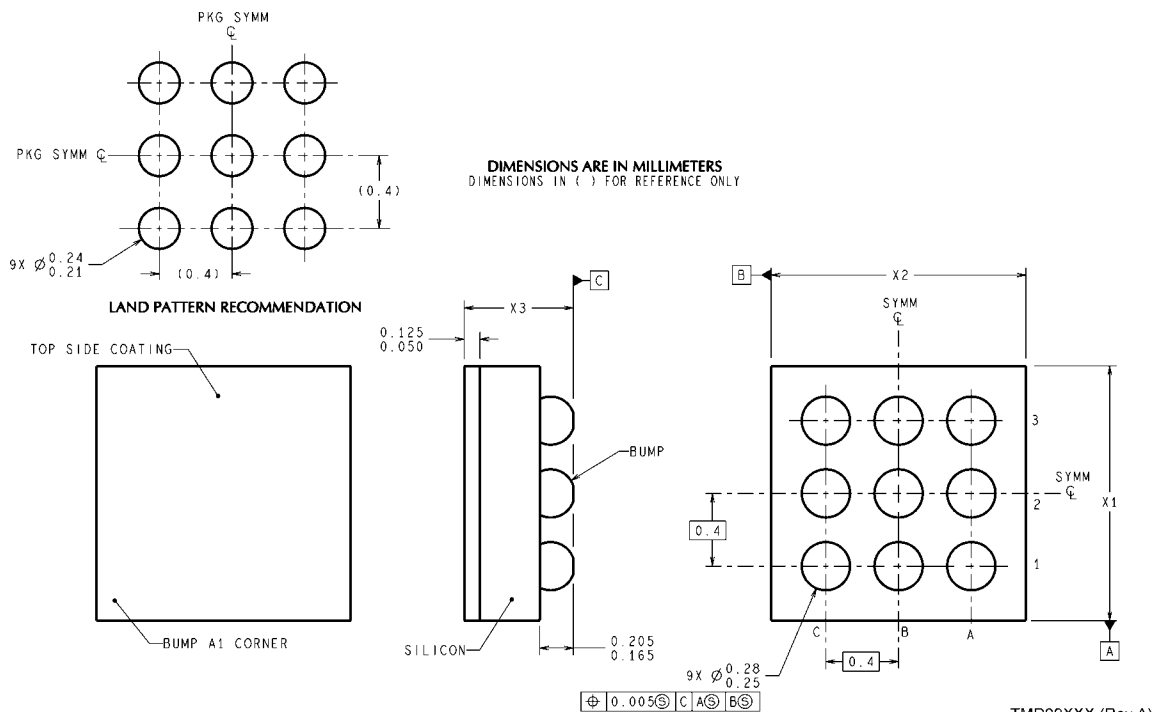
- Battery-Powered 3G/4G RF Power Amplifiers
- Hand-Held Radios
- RF PC Cards
- Battery-Powered RF Devices

Typical Application



30122201

Physical Dimensions inches (millimeters) unless otherwise noted



TMD09XXX (Rev A)

9-Bump Thin Micro SMD, Large Bump (0.4 mm pitch)
NS Package Number TMD09
X1 = 1.35 mm \pm 0.030 mm
X2 = 1.488 mm \pm 0.030 mm
X3 = 0.6 mm \pm 0.075 mm

Notes

Notes

TI/NATIONAL INTERIM IMPORTANT NOTICE

Texas Instruments has purchased National Semiconductor. As of Monday, September 26th, and until further notice, products sold or advertised under the National Semiconductor name or logo, and information, support and interactions concerning such products, remain subject to the preexisting National Semiconductor standard terms and conditions of sale, terms of use of website, and Notices (and/or terms previously agreed in writing with National Semiconductor, where applicable) and are not subject to any differing terms and notices applicable to other TI components, sales or websites. To the extent information on official TI and National websites and business social networking media, etc., pertains to both TI and National-branded products, both companies' instructions, warnings and limitations in the above-referenced terms of use apply.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		Applications	
Audio	www.ti.com/audio	Communications and Telecom	www.ti.com/communications
Amplifiers	amplifier.ti.com	Computers and Peripherals	www.ti.com/computers
Data Converters	dataconverter.ti.com	Consumer Electronics	www.ti.com/consumer-apps
DLP® Products	www.dlp.com	Energy and Lighting	www.ti.com/energy
DSP	dsp.ti.com	Industrial	www.ti.com/industrial
Clocks and Timers	www.ti.com/clocks	Medical	www.ti.com/medical
Interface	interface.ti.com	Security	www.ti.com/security
Logic	logic.ti.com	Space, Avionics and Defense	www.ti.com/space-avionics-defense
Power Mgmt	power.ti.com	Transportation and Automotive	www.ti.com/automotive
Microcontrollers	microcontroller.ti.com	Video and Imaging	www.ti.com/video
RFID	www.ti-rfid.com	Wireless	www.ti.com/wireless-apps
RF/IF and ZigBee® Solutions	www.ti.com/lprf	TI E2E Community Home Page	e2e.ti.com

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265

Copyright© 2011 Texas Instruments Incorporated

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products

Audio	www.ti.com/audio
Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
OMAP Mobile Processors	www.ti.com/omap
Wireless Connectivity	www.ti.com/wirelessconnectivity

Applications

Communications and Telecom	www.ti.com/communications
Computers and Peripherals	www.ti.com/computers
Consumer Electronics	www.ti.com/consumer-apps
Energy and Lighting	www.ti.com/energy
Industrial	www.ti.com/industrial
Medical	www.ti.com/medical
Security	www.ti.com/security
Space, Avionics and Defense	www.ti.com/space-avionics-defense
Transportation and Automotive	www.ti.com/automotive
Video and Imaging	www.ti.com/video

TI E2E Community Home Page

e2e.ti.com

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2011, Texas Instruments Incorporated