March 16, 2012

LM3253
PRODUCT BRIEF

High-Current Step-Down Converter for 2G/3G/4G RF Power Amplifiers

General Description

The LM3253 is a DC-DC converter optimized for powering multi-mode 2G/3G/4G RF power amplifiers (PAs) from a single Lithium-Ion cell. The LM3253 steps down an input voltage from 2.7V to 5.5V to a dynamically adjustable output voltage of 0.4V to 3.6V. The output voltage is set through a VCON analog input that adjusts the output voltage to ensure efficient operation at all power levels of the RF PA. The LM3253 is optimized for USB datacard applications.

The LM3253 operates in constant frequency PWM mode producing a small and predictable amount of output voltage ripple. This enables best ECTEL power requirements in GMSK and EDGE spectral compliance, with the minimal amount of filtering and excess headroom. When operating in PFM mode, the LM3253 enables the lowest DG09 current consumption and therefore maximizes system efficiency.

The LM3253 has a unique **A**ctive **C**urrent assist and analog **B**ypass (ACB) feature to minimize inductor size without any loss of output regulation for the entire battery voltage and RF output power range, until dropout. ACB provides a parallel current path, when needed, to limit the maximum inductor current to 1.84A (typ.) while still driving a 3.0A load. The ACB also enables operation with minimal dropout voltage. The LM3253 is available in a small 2 mm x 2 mm chip-scale 16-bump micro SMD package.

Notice: This document is not a datasheet. For more information regarding this product or to order samples, please contact your local Texas Instruments sales office.

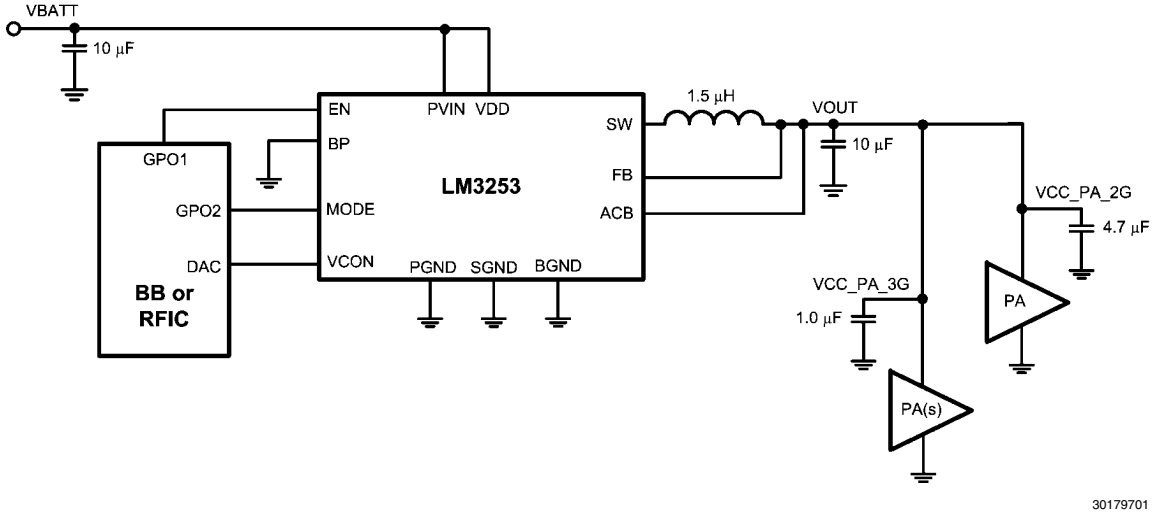
Features

- High-Efficiency PFM and PWM modes with Internal Synchronous Rectification
- Analog Bypass Function with Low Dropout Resistance (45 mΩ typ.)
- Dynamically Adjustable Output Voltage, 0.4V to 3.6V (typ.), in PFM and PWM Modes
- 3.0A Maximum Load Current in PWM Mode
- 2.7 MHz (average) PWM Switching Frequency
- Modulated Switching Frequency to aid Rx Band Compliance
- Operates from a Single Li-ion Cell (2.7V to 5.5V)
- ACB reduces inductor requirements and size
- Minimum total solution size by using small footprint and case size inductor and capacitors
- 16-bump thin micro SMD Package
- Current and Thermal Overload Protection

Applications

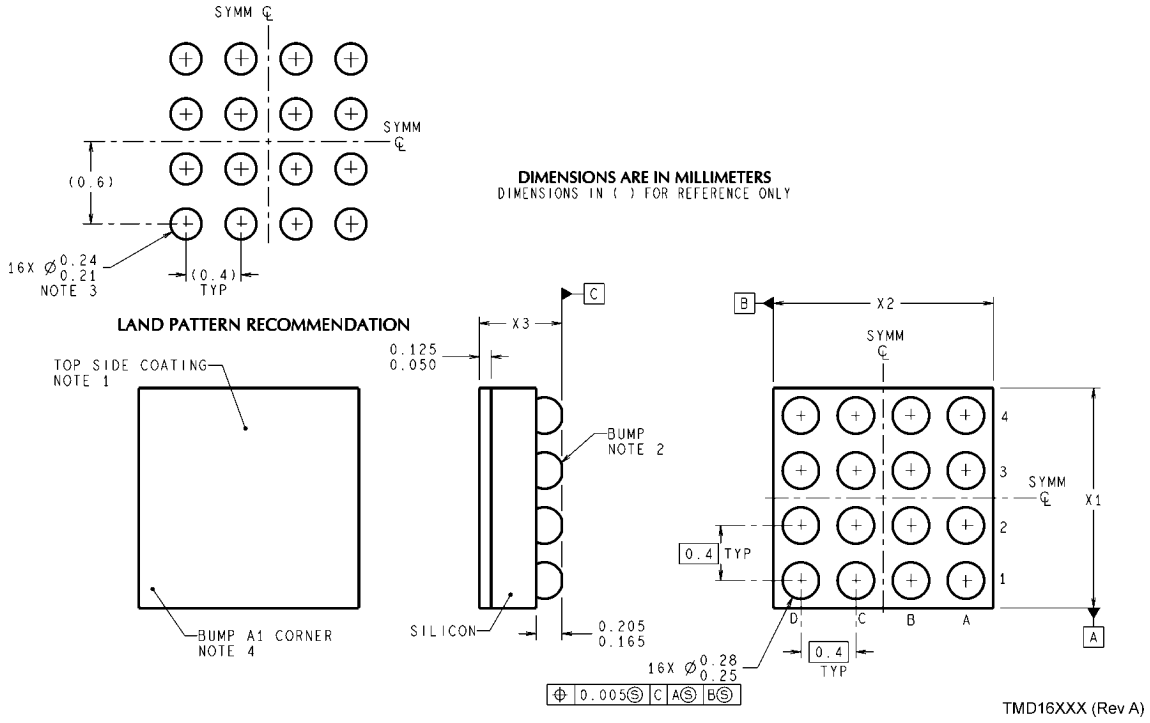
- USB Datacards
- Cellular Phones
- Hand-Held Radios
- RF PC Cards
- Battery-Powered RF Devices

Typical System Application Diagram



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Physical Dimensions inches (millimeters) unless otherwise noted



16-Bump Thin Micro SMD, Large Bump
X1 = 2023 µm ± 30 µm
X2 = 2023 µm ± 30 µm
X3 = 600 µm
Package Number TMD16SSA

Notes

Notes

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