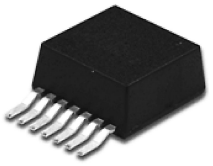
National Semiconductor

# LMZ12003

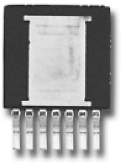
**PRELIMINARY**
December 17, 2009

# 3A Simple Switcher® Power Module with 20V Maximum Input Voltage

**Easy to use 7 pin package**



Top View



Bottom View

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**TO-PMOD 7 Pin Package**
**10.16 x 13.77 x 4.57 mm (0.4 x 0.542 x 0.18 in)**
**$\theta_{JA}$ = 20°C/W, $\theta_{JC}$ = 1.35°C/W**
**RoHS Compliant**

## Electrical Specifications

- 18W maximum total power output
- Up to 3A output current
- Input voltage range 4.5V to 20V
- Output voltage range 0.8V to 6V
- 2% output accuracy over temperature
- Efficiency up to 92%

## Key Features

- Integrated shielded inductor
- Simple PCB layout
- Flexible startup sequencing using external soft-start capacitor and precision enable
- Protection against inrush currents and faults such as input UVLO and output short circuit
- -40°C to 80°C operating temperature at full load
- Single exposed pad and standard pinout for easy mounting and manufacturing
- Fast transient response for FPGAs and ASICs
- Low output voltage ripple
- Pin-to-pin compatible family:
  LMZ14203/2/1 (42V max 3A, 2A, 1A)
  LMZ12003/2/1 (20V max 3A, 2A, 1A)
- Fully Webench® Power Designer enabled

## Applications

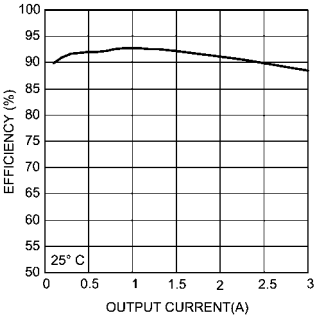
- Point of load conversions from 6V and 12V input rail
- Time critical projects
- Space constrained high thermal requirement applications
- Negative output voltage applications

## Performance Benefits

- Operates at high ambient temperature with no thermal derating
- High efficiency reduces system heat generation
- Low radiated emissions (EMI) complies with EN55022 class B standard
- Passes 10V/m radiated immunity EMI test standard EN61000 4-3

## System Performance

**Efficiency $V_{IN}$ = 12V $V_{OUT}$ = 5.0V,**

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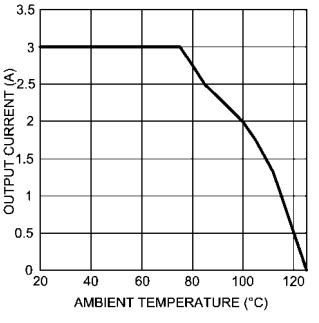
**Thermal derating curve**
**$V_{IN}$ = 12V $V_{OUT}$ = 5.0V**

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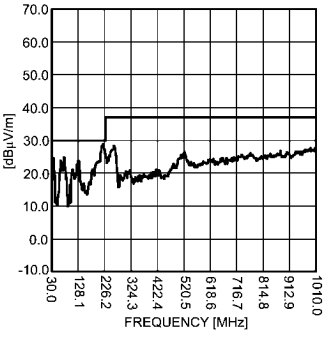
**Radiated Emissions (EN 55022 Class B)**
**Evaluation Board**

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# Notes

**For more National Semiconductor product information and proven design tools, visit the following Web sites at: www.national.com**

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