LMZ20501 1A SIMPLE SWITCHER ® Nano Module

Check for Samples: LMZ20501

FEATURES

- **Integrated inductor**
- **Miniature 3.5mm x 3.5mm x 1.7mm package**
- **-40°C to 125°C junction temperature range**
- **Power good flag function**
- **Pin selectable switching modes**
- **Adjustable output voltage**
- **3.0MHz Fixed PWM Switching Frequency**
- **Internal compensation and soft-start**
- **Current limit, thermal shutdown, and UVLO protection**
- **Requires only 5 external components**

ELECTRICAL SPECIFICATIONS

- **1A maximum load current**
- **Input voltage range 2.7V to 5.5V**
- **Output voltage range 0.8V to 3.6V**
- **± 1% feedback tolerance over temperature**
- **1 µA (max) quiescent current in shutdown**
- **64 µA (typ) quiescent current**

PERFORMANCE BENEFITS

- **Small solution size**
- **Easy component selection and simple PCB layout**
- **High efficiency reduces system heat generation**

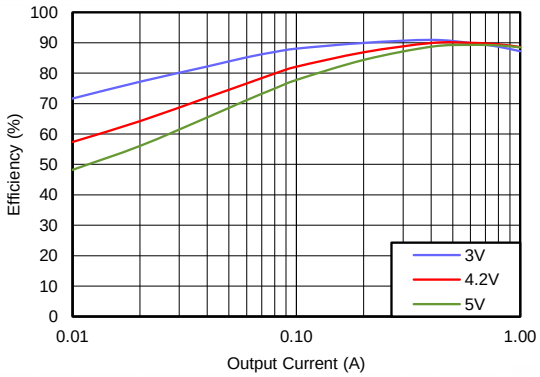


Figure 1. Typical Efficiency for Vout = 1.8V

DESCRIPTION

The LMZ20501 Simple Switcher ® Nano Module regulator is an easy to use synchronous step-down DC-DC converter capable of driving up to 1A of load from an input of up to 5.5V, with exceptional efficiency and output accuracy in a very small solution size. The innovative package contains the regulator and inductor in a small 3.5mm x 3.5mm x 1.7mm volume. Thus saving board space and eliminating the time and expense of inductor selection. The LMZ20501 requires few external components and has a pin out designed for simple, optimum PCB layout. The LMZ20501 is a member of Texas Instruments' SIMPLE SWITCHER ® family. The SIMPLE SWITCHER ® concept provides for an easy to use complete design using a minimum number of external components and the TI WEBENCH ® design tool. TI's WEBENCH ® tool includes features such as external component calculation, electrical simulation, thermal simulation, and Build-It boards for easy design-in.

PRODUCT PREVIEW

Typical Application Circuit

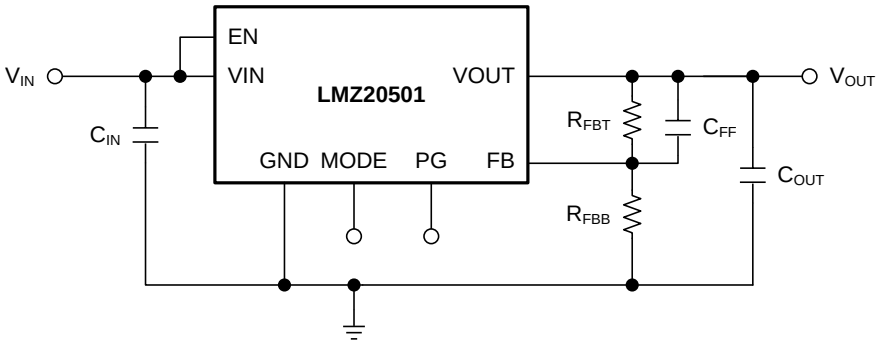
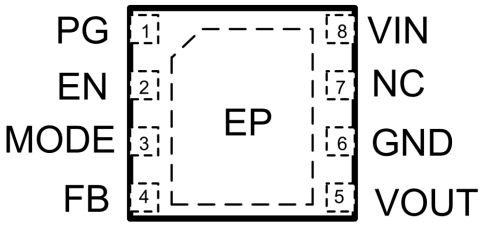


Figure 2. Typical Application Circuit

Connection Diagram



TOP VIEW

Figure 3. Connection Diagram

PIN DESCRIPTIONS

Pin #	NAME	TYPE(1)	Description
1	PG	O	Power good flag; open drain. Connect to logic supply through a resistor. High = power good; Low = power bad
2	EN	I	Enable input. High = On, Low = Off. A valid input voltage must be present before EN is asserted. Do not float
3	MODE	I	Mode selection input. HIgh = forced PWM. Low = auto mode. Do not float.
4	FB	I	Feedback input to controller. Connect to output through feedback divider.
5	VOUT	P	Regulated output voltage.
6	GND	G	Ground for all circuitry. Reference point for all voltages.
7	NC		This pin must be left floating.
8	VIN	P	Input supply to regulator. Connect a bypass capacitor as close as possible to the VIN pin and GND pin of the module
EP	EP	G	Ground and heatsink connection.

(1) G = Ground, I = Input, O = Output, P = Power

PRODUCT PREVIEW

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
LMZ20501SILR	PREVIEW	uSiP	SIL	8	3000	TBD	Call TI	Call TI	-40 to 125		
LMZ20501SILT	PREVIEW	uSiP	SIL	8	250	TBD	Call TI	Call TI	-40 to 125		

(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.
TBD: The Pb-Free/Green conversion plan has not been defined.
Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.
Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.
Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

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