MP2130

High Efficiency, 3.5A, 6V, 1.2MHz Synchronous Step-Down Converter in an Ultra–Small QFN12 (2x2mm) Package

The Future of Analog IC Technology

PRELIMINARY SPECIFICATIONS SUBJECT TO CHANGE

MPS CONFIDENTIAL AND PROPRIETARY INFORMATION – INTERNAL USE ONLY

DESCRIPTION

The MP2130 is a monolithic step-down switch mode converter with built-in internal power MOSFETs. It achieves 3.5A continuous output current from a 2.7V to 6V input voltage with excellent load and line regulation. The MP2130 is ideal for powering portable equipment that runs from a single cell Lithium-Ion (Li+) Battery. The output voltage can be regulated as low as 0.6V.

The Constant-On-time (COT) control scheme provides fast transient response high light-load efficiency and easy loop stabilization.

Fault condition protection includes cycle-by-cycle current limit and thermal shutdown.

The MP2130 requires a minimum number of readily available standard external components and is available in an ultra-small QFN12 (2x2mm) package.

The MP2130 is ideal for a wide range of applications including PDAs, portable instruments, DVD drives, small handhold and battery–powered devices.

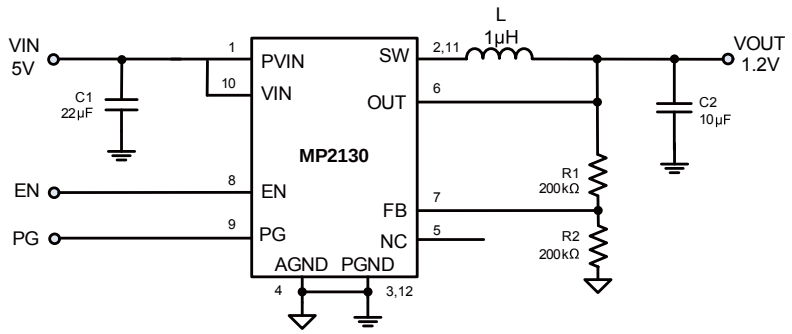
FEATURES

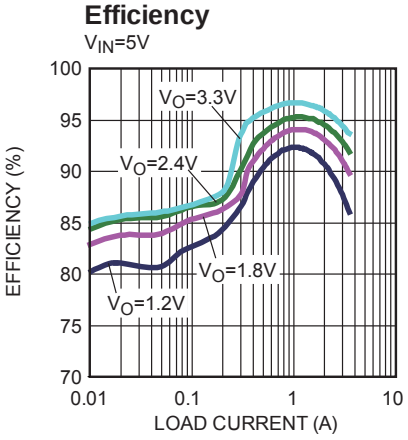
- Above 95% Peak Efficiency
- Above 80% Light Load Efficiency.
- Wide 2.7V to 6V Operating Input Range
- Output Voltage as Low as 0.6V
- 100% Duty Cycle in Dropout
- 3.5A Output Current
- 50mΩ and 40mΩ Internal Power MOSFET
- 1.2MHz Frequency
- EN and Power Good for Power Sequencing
- Cycle-by-Cycle Over Current Protection
- Auto Discharge at Power-off
- Short Circuit Protection with Hiccup Mode
- Thermal Shutdown
- Stable with Low ESR Output Ceramic Capacitors
- Available in a QFN12 (2x2mm) Package

APPLICATIONS

- Storage Drives
- Portable/Handheld Devices
- Wireless/Networking Cards
- Low Voltage I/O System Power

TYPICAL APPLICATION



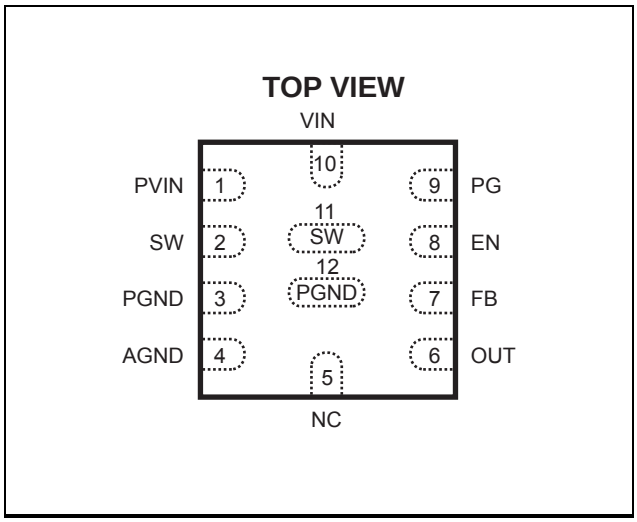


ORDERING INFORMATION

Part Number	Package	Top Marking	Free Air Temperature
MP2130DG	QFN12 (2x2mm)	AB	-40°C to +85°C

* For Tape & Reel, add suffix –Z (e.g. MP2130DG–Z);
For RoHS Compliant Packaging, add suffix –LF (e.g. MP2130DG–LF–Z)

PACKAGE REFERENCE



ABSOLUTE MAXIMUM RATINGS (1)

Supply Voltage V_{IN} 6.5V
V_{SW} ..... -0.3V to V_{IN} + 0.3V
All Other Pins ..... -0.3V to +6.5V
Continuous Power Dissipation (T_A = +25°C) (2) 1.6W
Junction Temperature ..... 150°C
Lead Temperature ..... 260°C
Storage Temperature ..... -65°C to +150°C

Recommended Operating Conditions (3)

Supply Voltage V_{IN} ..... 2.7V to 6V
Output Voltage V_{OUT} ..... 0.6V to 5.5V
Maximum Junction Temp. (T_J) ..... +125°C

Thermal Resistance (4)

	θ_{JA}	θ_{JC}
QFN12 (2x2mm)	80	16 °C/W

Notes:

1) Exceeding these ratings may damage the device.
2) The maximum allowable power dissipation is a function of the maximum junction temperature T_J(MAX), the junction-to-ambient thermal resistance θ_{JA}, and the ambient temperature T_A. The maximum allowable continuous power dissipation at any ambient temperature is calculated by P_D(MAX)=(T_J(MAX)-T_A)/ θ_{JA}. Exceeding the maximum allowable power dissipation will cause excessive die temperature, and the regulator will go into thermal shutdown. Internal thermal shutdown circuitry protects the device from permanent damage.
3) The device is not guaranteed to function outside of its operating conditions.
4) Measured on JESD51-7, 4-layer PCB.