MPM3570E

75V, 0.3A, High Efficiency, Synchronous Step-Down Power Module With Integrated Inductor

The Future of Analog IC Technology

PRELIMINARY SPECIFICATIONS SUBJECT TO CHANGE

DESCRIPTION

The MPM3570E is a high density, non-isolated DC-DC power module for space sensitive applications. The module offers a very compact solution to achieve 0.3A output current over a 4.5V to 75V wide input supply range, and can provide an adjustable output voltage from 1.0V to 5.0V via an external FB resistor (Default 3.3V output).

The MPM3570E integrates switching controller, power switches, inductors, a modest amount of input and output capacitors and all support components with an advanced 10×10×4.2mm size. And it requires a minimal number of standard external components. This compact solution significantly helps in system design and productivity by offering greatly simplified board design, layout and manufacturing requirements.

Ultra-high efficiency is achieved through the use of synchronous rectification and control techniques, especially under light-load condition. A 5μA shutdown quiescent current in full temperature range is good for battery-powered applications.

The module offers standard features, including of internal fixed soft-start, remote enable control and power OK indicator. It has fully integrated protections that include over-current protection, under-voltage lockout and thermal shutdown.

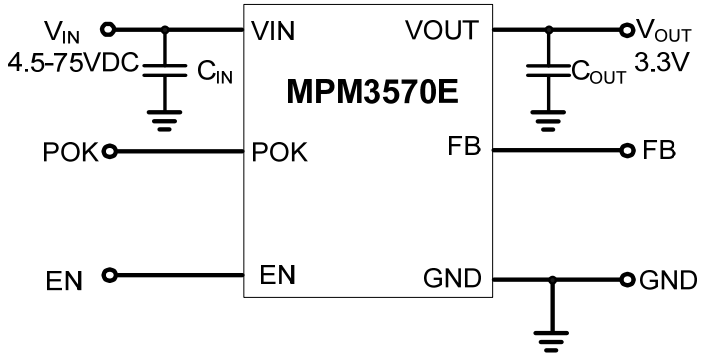
FEATURES

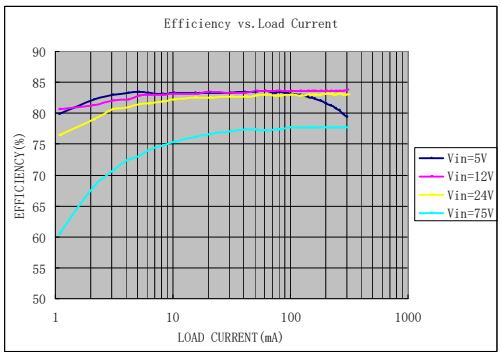
- Integrated Inductor, Switches, Controller
- High Efficiency Synchronous Mode Control
- Low Component Count and Small Size
- Ease of Design and Fastest Time to Market
- Wide 4.5V to 75V Operating Input Range
- Output Adjustable from 1.0V to 5.0V
- 0.3A Output Current
- 30μA Quiescent Current
- Ultra-fast Transient Response
- Internal Fixed Soft-Start Time
- Power OK Indicator
- Non-latch OCP and UVLO
- Thermal Shutdown Protection
- Remote Enable Control
- Dimension: 10mm×10mm×4.2mm
- Weight: 0.80g
- Operating Temperature: -40℃ to +125℃
- CISPR25 Class 5 Compliant

APPLICATIONS

- Automotive Systems
- Industrial Supplies
- Telecom and Networking Systems
- Distributed Power and POL Systems

TYPICAL APPLICATION





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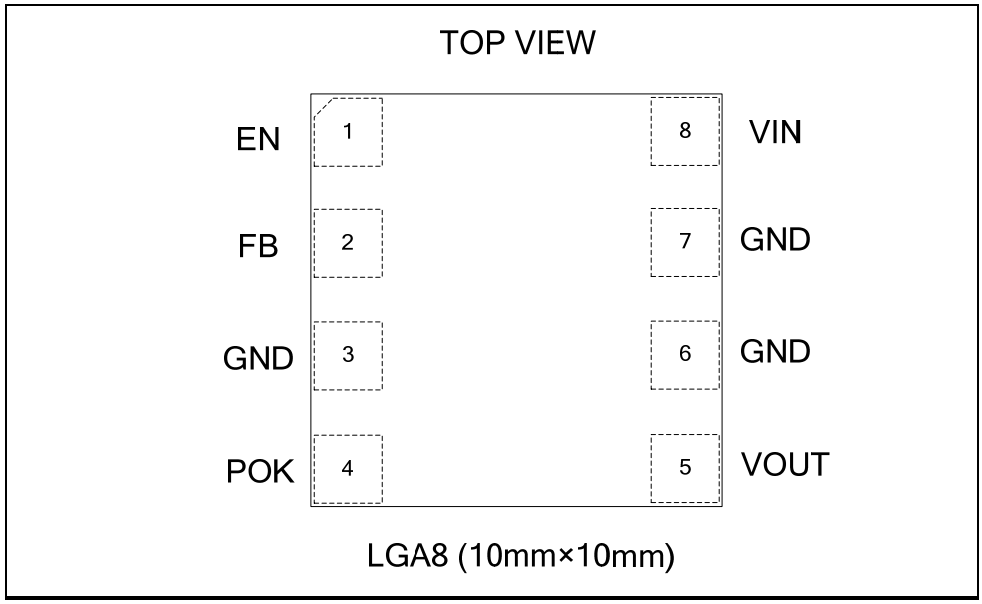
ORDERING INFORMATION

Part Number*	Package	Top Marking

PACKAGE REFERENCE



ABSOLUTE MAXIMUM RATINGS (1)

V_{IN} .....-0.3V to +80V
All Other Pins.....-0.3V to +6.0V
Continuous Power Dissipation (T_A = +25°C) (2)
LGA8 (10mmx10mm)..... TBDW
Junction Temperature.....150°C
Lead Temperature .....260°C
Storage Temperature..... -65°C to 150°C

Recommended Operating Conditions (3)

Continuous Supply Voltage V_{IN}.....4.5V to 75V
Output Voltage V_{OUT}.....1.0V to 5.0V
Operating Temperature (T_O) .... -40°C to +125°C

Thermal Resistance (4) θ_{JA} θ_{JC}

LGA8 (10mmx10mm)……..TBD.. ..TBD...°C/W

Notes:

1) Absolute maximum ratings are rated under room temperature unless otherwise noted. 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 module 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 63.5mm×63.5mm, 4-layer PCB.

   θ_{JA}, the thermal resistance from junction-to-ambient, is the natural convection junction-to-ambient air thermal resistance measured in a one cubic foot sealed enclosure.

   θ_{JC}, the thermal resistance from junction to the metal lid of the module, is the junction-to-board thermal resistance with all of the component power dissipation flowing through the whole package.