



The Future of Analog IC Technology®

EV8725EL-00A

High Efficiency 5A, 21V, 500kHz Synchronous Step-down Converter EV Board

DESCRIPTION

The EV8725EL-00A is an evaluation board for the MP8725, a high frequency synchronous rectified step-down switch mode converter with built in internal power MOSFETs. It offers a very compact solution to achieve 5A continuous output current over a wide input supply range with excellent load and line regulation. The MP8725 operates at high efficiency over a wide output current load range.

Current mode operation provides fast transient response and eases loop stabilization.

Full protection features include OCP and thermal shut down.

The MP8725 requires a minimum number of readily available standard external components and is available in a space saving 3mm x 4mm 14-pin QFN package.

FEATURES

- Wide 6V to 21V Operating Input Range
- 5A Output Current
- Fixed 500kHz Switching Frequency
- Sync from 300kHz to 2MHz External Clock
- OCP Protection and Thermal Shutdown

APPLICATIONS

- Notebook Systems and I/O Power
- Networking Systems
- Digital Set Top Boxes
- Personal Video Recorders
- Flat Panel Television and Monitor
- Distributed Power Systems

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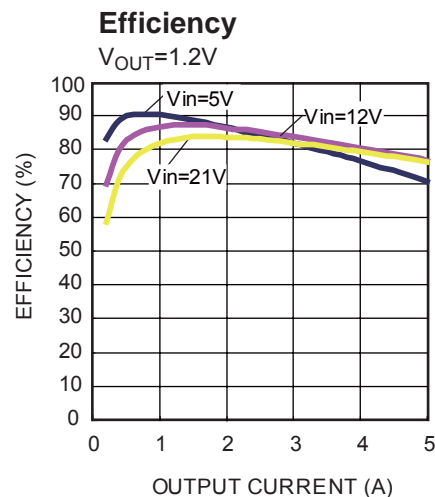
ELECTRICAL SPECIFICATIONS

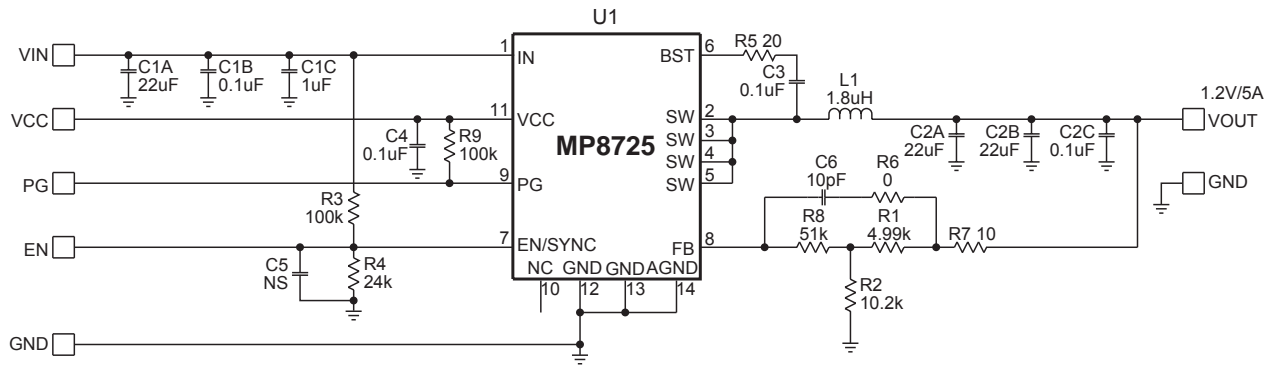
| Parameter | Symbol | Value | Units |
|----------------|-----------|--------|-------|
| Input Voltage | V_{IN} | 6 – 21 | V |
| Output Voltage | V_{OUT} | 1.2 | V |
| Output Current | I_{OUT} | 5 | A |

EV8725EL-00A EVALUATION BOARD



| Board Number | MPS IC Number |
|--------------|---------------|
| EV8725EL-00A | MP8725EL |



EVALUATION BOARD SCHEMATIC

EV8708EN-00A BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Part Number |
|-----|---------|-------|-------------------------|---------|--------------|--------------------|
| 1 | C1A | 22uF | Ceramic Cap., 25V, X5R | 1210 | Murata | GRM32ER61E226KE15L |
| 1 | C1B | 0.1uF | Ceramic Cap., 25V, X7R | 0805 | Any | |
| 1 | C1C | 1uF | Ceramic Cap., 25V, X7R | 0805 | Any | |
| 2 | C2A,C2B | 22uF | Ceramic Cap., 6.3V, X5R | 1210 | Murata | GRM32DR60J226KA01L |
| 1 | C2C | 0.1uF | Ceramic Cap., 16V, X7R | 0805 | Any | |
| 2 | C3,C4 | 0.1uF | Ceramic Cap., 25V, X7R | 0603 | Yageo | CC0603KRX7R8BB104 |
| 0 | C5 | NS | | 0603 | | |
| 1 | C6 | 10pF | Ceramic Cap., 50V,C0G | 0603 | TDK | C1608C0G1H100D |
| 1 | R1 | 4.99K | Film Res., 1% | 0603 | Yageo | RC0603FR-074K99L |
| 1 | R2 | 10.2K | Film Res., 1% | 0603 | Yageo | RC0603FR-0710K2L |
| 2 | R3,R9 | 100KΩ | Film Res., 5% | 0603 | Any | |
| 1 | R4 | 24kΩ | Film Res., 5% | 0603 | Any | |
| 1 | R5 | 20Ω | Film Res., 5% | 0603 | Any | |
| 1 | R6 | 0Ω | Film Res., 5% | 0603 | Any | |
| 1 | R7 | 10Ω | Film Res., 5% | 0603 | Any | |
| 1 | R8 | 51KΩ | Film Res., 5% | 0603 | Any | |
| 1 | L1 | 1.8uH | 7.6mΩ, 10.4A | SMD | TOKO | D104C-919AS-1R8N |
| | | 2.2uH | 14mΩ, 13A | SMD | Würth | 744311220 |
| 1 | U1 | | Step-Down Converter | QFN14 | MPS | MP8725EL |

PRINTED CIRCUIT BOARD LAYOUT

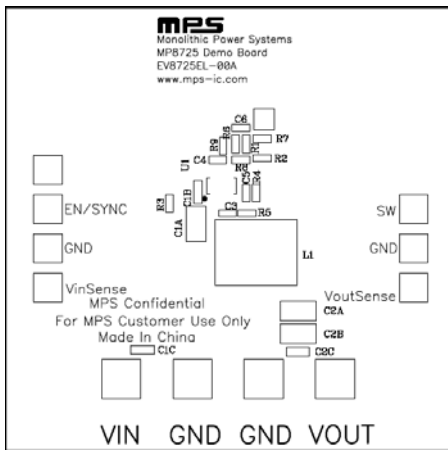


Figure 1—Top Silk Layer

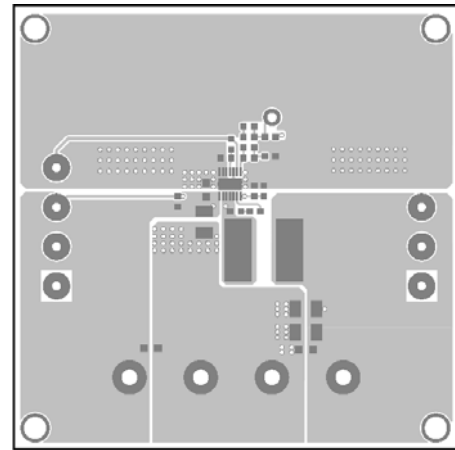


Figure 2—Top Layer

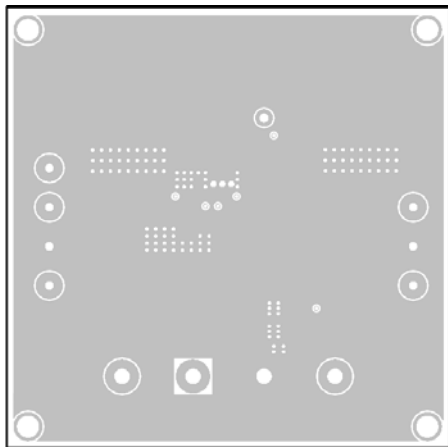


Figure 3—Inner Layer 1

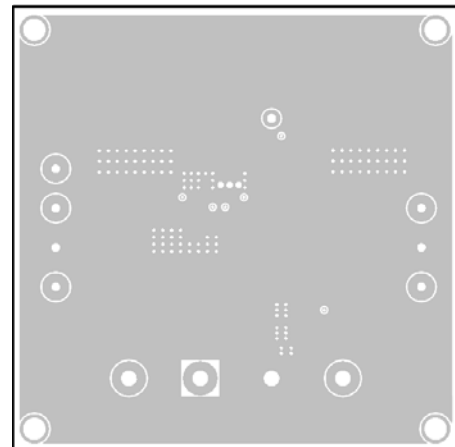


Figure 4—Inner Layer 2

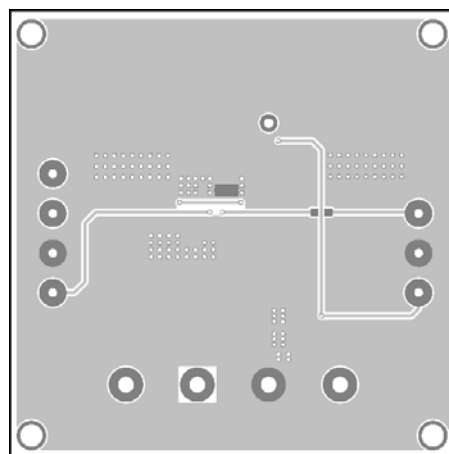


Figure 5—Bottom Layer

QUICK START GUIDE

1. Connect the positive and negative terminals of the load to the VOUT and GND pins, respectively.
2. Preset the power supply output between 6V and 21V, then turn off the power supply.
3. Connect the positive and negative terminals of the power supply output to the VIN and GND pins, respectively.
4. Turn the power supply on, the board will automatically startup.
5. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 2V to turn on the regulator or less than 0.4V to turn it off.
6. Apply up to 2MHz frequency logic level clock signal to the EN pin to synchronize the device to an external clock. The duty cycle is not critical.

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