

DESCRIPTION

The EV1499-D-00A demonstrates MPS's MP1499, a high-frequency, synchronous, rectified, step-down converter with built-in high-side and low-side power MOSFETs. The MP1499 offers a very compact solution to achieve a 5A peak output current with excellent load and line regulation over a wide input supply range. The MP1499 has synchronous mode operation for higher efficiency over the output current load range.

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

Protective features include over-current protection and thermal shutdown.

The MP1499 is available in a space saving 10-pin QFN (2×3mm) package.

ELECTRICAL SPECIFICATION

| Parameter | Symbol | Value | Units |
|----------------|-----------|----------|-------|
| Input Voltage | V_{IN} | 5 – 16 | V |
| Output Voltage | V_{OUT} | 3.3 | V |
| Output Current | I_{OUT} | 5 (Peak) | A |

FEATURES

- Wide 5V to 16V Operating Input Range
- 70mΩ/25mΩ Low $R_{DS(ON)}$ Internal Power MOSFET
- Proprietary Switching-Loss-Reduction Technique
- Default 500kHz Switching Frequency
- Externally-Programmable Soft-Start
- Sync from 200kHz to 2MHz External Clock
- AAM Power Save Mode
- OCP Protection and Hiccup
- Thermal Shutdown
- Output Adjustable from 0.8V
- Available in an QFN10(2×3mm) Package

APPLICATIONS

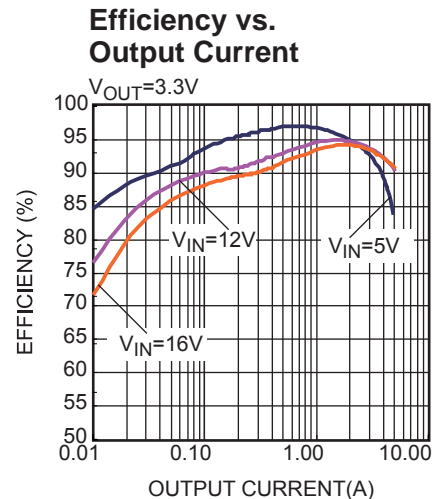
- Digital Set-Top Boxes
- Flat-Panel Television and Monitors
- Distributed Power Systems

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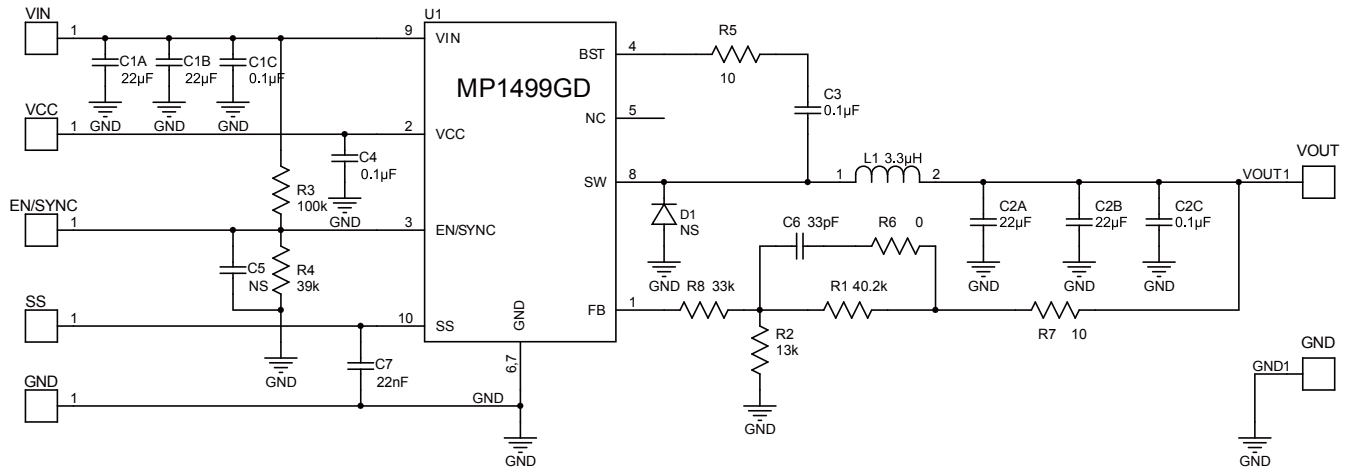
EV1499-D-00A EVALUATION BOARD



| Board Number | MPS IC Number |
|--------------|---------------|
| EV1499-D-00A | MP1499GD |



EVALUATION BOARD SCHEMATIC



EV1499-D-00A BILL OF MATERIALS

| Qty | RefDes | Value | Description | Package | Manufacturer | Manufacturer P/N |
|-----|----------|-----------|-------------------------------|---------|--------------|--------------------|
| 2 | C1A,C1B | 22µF | Ceramic Cap., 25V, X5R | 1210 | muRata | GRM32ER61E226KE15L |
| 2 | C2A,C2B | 22µF | Ceramic Cap., 16V, X5R | 1206 | muRata | GRM31CR61C226ME15L |
| 2 | C1C, C2C | 0.1µF | Ceramic Cap., 25V, X7R | 0805 | muRata | GRM21BR71E104KA01L |
| 2 | C3,C4 | 0.1µF | Ceramic Cap., 16V, X7R | 0603 | muRata | GRM188R71C104KA01D |
| | C5 | NS | | | | |
| 1 | C6 | 33pF | Ceramic Cap., 50V, C0G | 0603 | muRata | GRM1885C1H330JA01D |
| 1 | C7 | 22nF | Ceramic Cap., 50V, X7R | 0603 | muRata | GRM188R71H223KA01D |
| 1 | R1 | 40.2k | Thick Film Res., 1% | 0603 | Yageo | RL0603FR-0740K2L |
| 1 | R2 | 13k | Thick Film Res., 1% | 0603 | Yageo | RL0603FR-0713KL |
| 1 | R3 | 100k | Thick Film Res., 1% | 0603 | Yageo | RL0603FR-07100KL |
| 1 | R4 | 39k | Thick Film Res., 1% | 0603 | Yageo | RL0603FR-0739KL |
| 1 | R6 | 0Ω | Thick Film Res., 5% | 0603 | Yageo | RC0603FR-070RL |
| 2 | R5,R7 | 10Ω | Thick Film Res., 5% | 0603 | Yageo | RL0603FR-0710RL |
| 1 | R8 | 33k | Thick Film Res., 1% | 0603 | Yageo | RC0603FR-0733KL |
| | D1 | NS | | | | |
| 1 | L1 | 3.3µH | Inductor,DCR=17.2mΩ, Is=11A | | Würth | 744311330 |
| 1 | U1 | MP1499 GD | Synchronous Step-Down Convert | QFN2×3 | MPS | MP1499GD |

PRINTED CIRCUIT BOARD LAYOUT

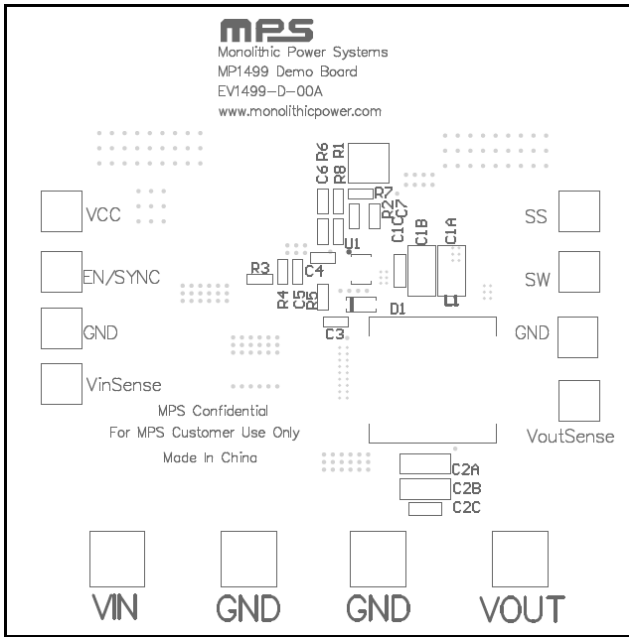


Figure 1—Top Silk Layer

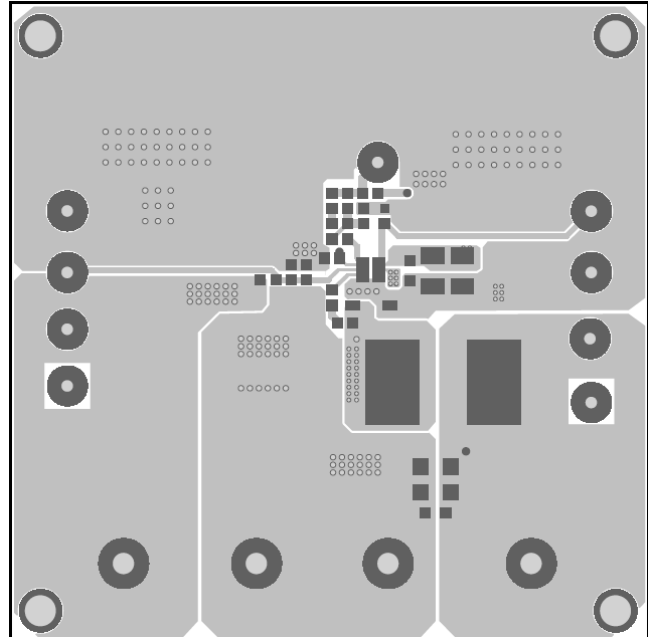


Figure 2—Top Layer

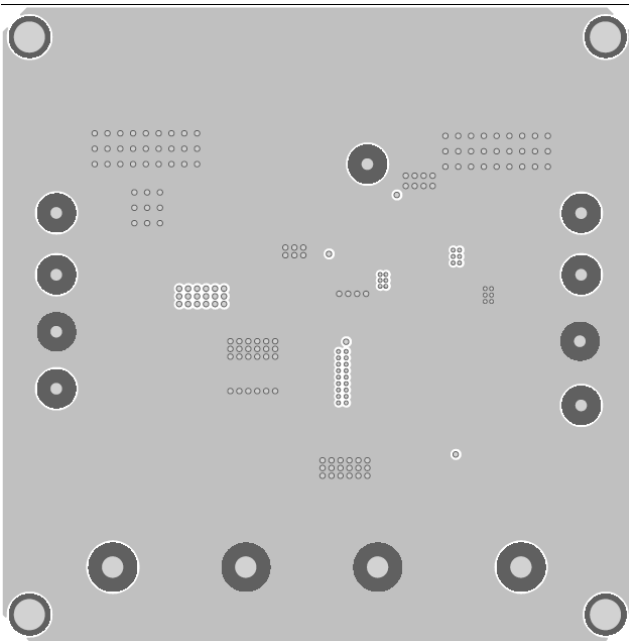


Figure 3—Inner Layer1

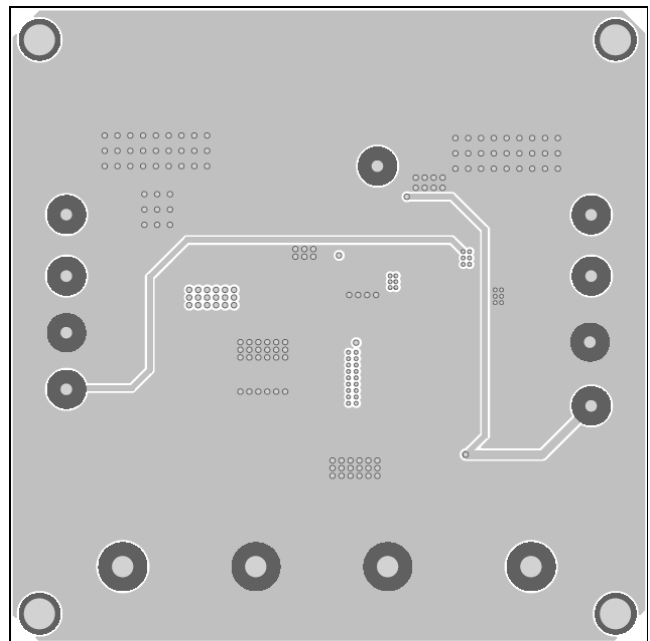


Figure 4—Inner Layer2

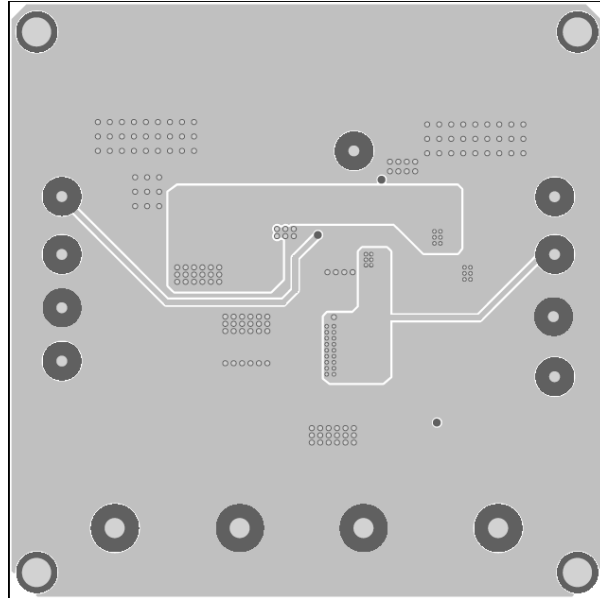


Figure 5—Bottom Layer