

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

All MPS parts are lead-free and adhere to the RoHS directive. For MPS green status, please visit MPS website under Products, Quality Assurance page.

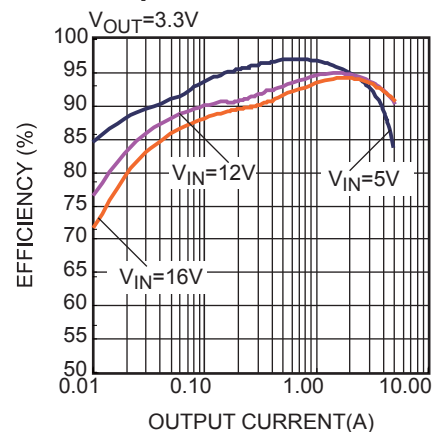
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EV1499-D-00A EVALUATION BOARD

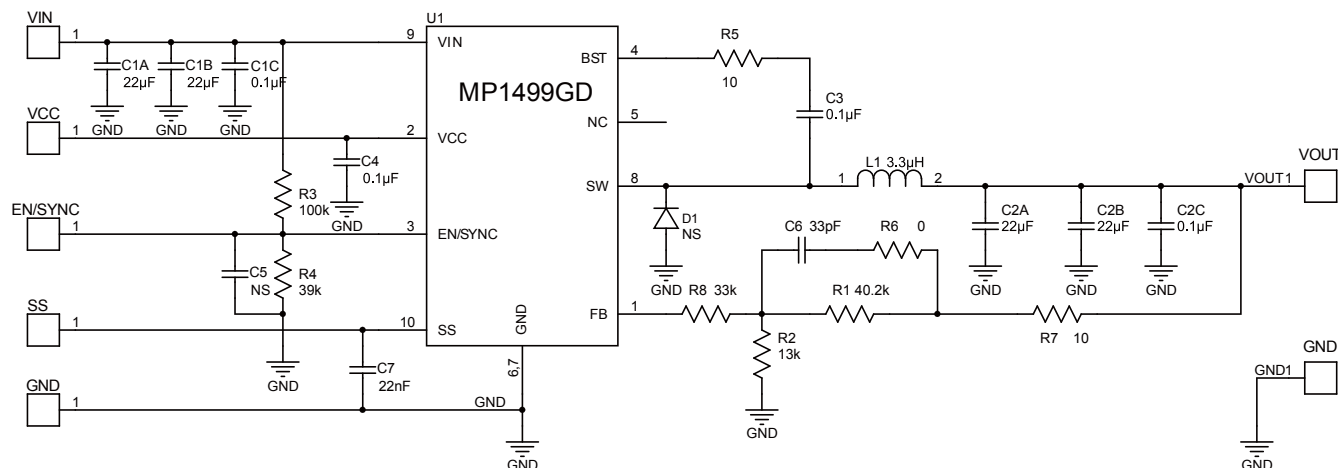


Board Number	MPS IC Number
EV1499-D-00A	MP1499GD

Efficiency vs.
Output Current



EVALUATION BOARD SCHEMATIC



EV1499-D-00A BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer P/N
2	C1A,C1B	22 μ F	Ceramic Cap., 25V, X5R	1210	muRata	GRM32ER61E226KE15L
2	C2A,C2B	22 μ F	Ceramic Cap., 16V, X5R	1206	muRata	GRM31CR61C226ME15L
2	C1C, C2C	0.1 μ F	Ceramic Cap., 25V, X7R	0805	muRata	GRM21BR71E104KA01L
2	C3,C4	0.1 μ F	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	0 Ω	Thick Film Res., 5%	0603	Yageo	RC0603FR-070RL
2	R5,R7	10 Ω	Thick Film Res., 5%	0603	Yageo	RL0603FR-0710RL
1	R8	33k	Thick Film Res., 1%	0603	Yageo	RC0603FR-0733KL
	D1	NS				
1	L1	3.3 μ H	Inductor, DCR=17.2m Ω , Is=11A		Würth	744311330
1	U1	MP1499 GD	Synchronous Step-Down Convert	QFN2 $\times$ 3	MPS	MP1499GD

PRINTED CIRCUIT BOARD LAYOUT

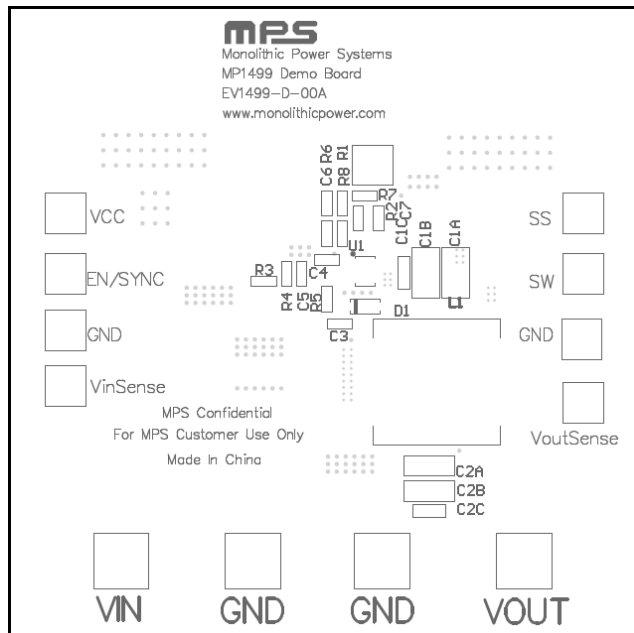


Figure 1—Top Silk Layer

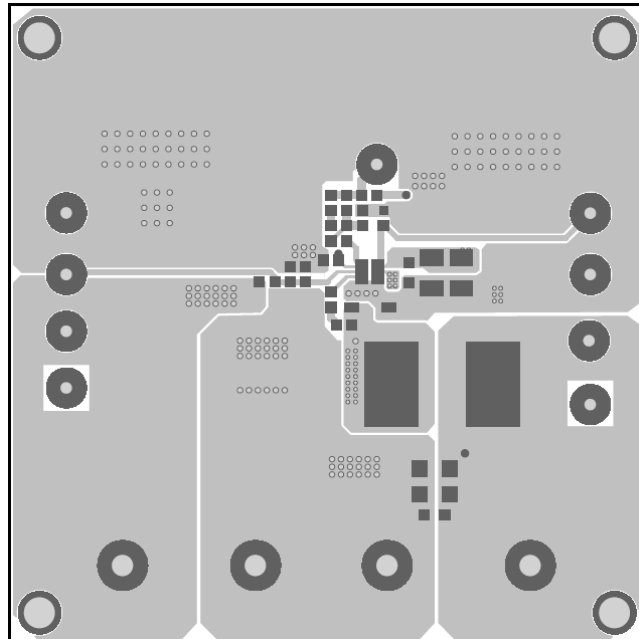


Figure 2—Top Layer

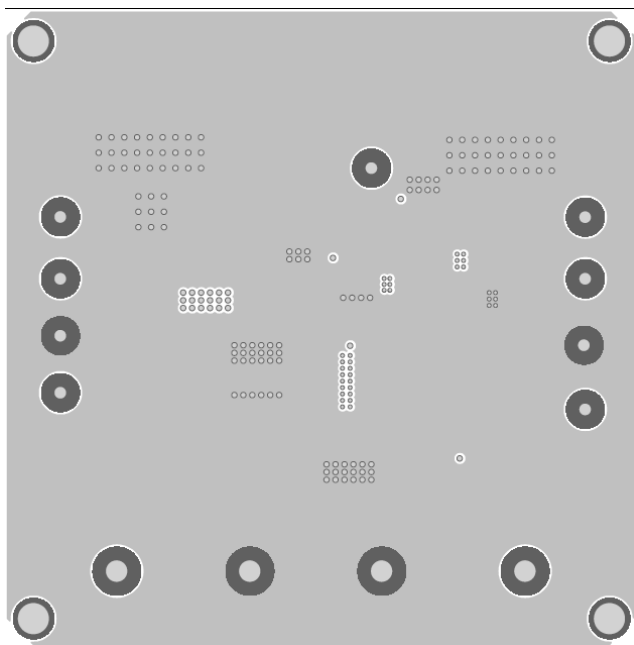


Figure 3—Inner Layer1

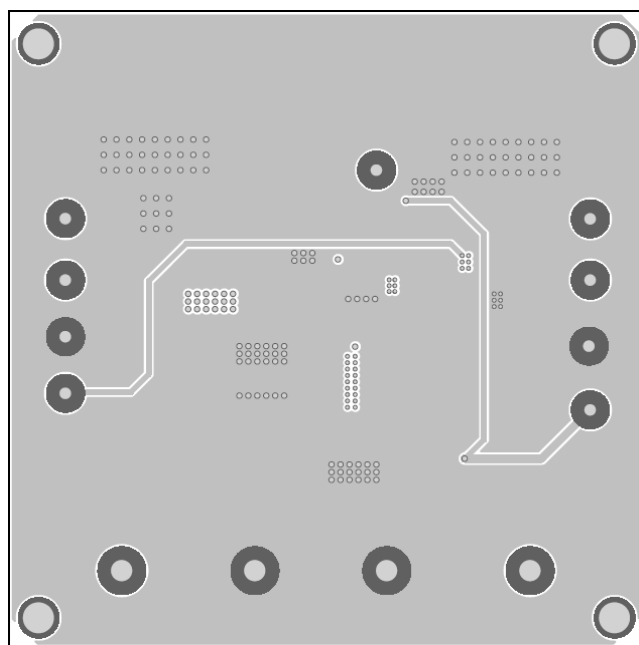


Figure 4—Inner Layer2

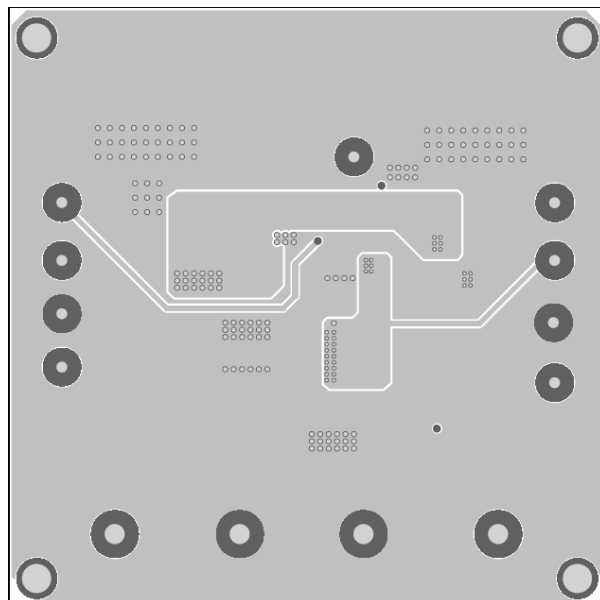


Figure 5—Bottom Layer

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 5V and 16V, and 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 start up.
5. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 1.4V to turn on the regulator or less than 1.25V to turn it off.

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