

High-Efficiency, 5A Peak, 16V, 500kHz, Sync. Step-Down Converter Evaluation Board

The Future of Analog IC Technology

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)	Α

FEATURES

- Wide 5V to 16V Operating Input Range
- $70m\Omega/25m\Omega$ 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.

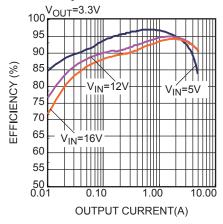
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EV1499-D-00A EVALUATION BOARD



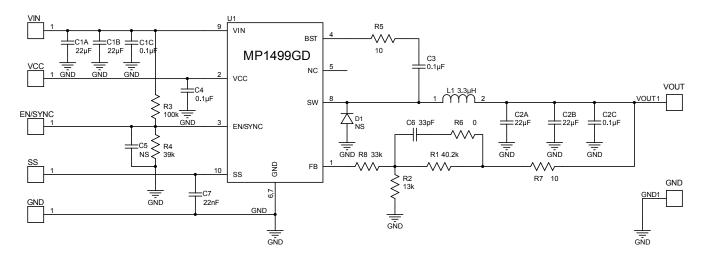
Board Number	MPS IC Number		
EV1499-D-00A	MP1499GD		

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	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		Wurth	744311330
1	U1	MP1499 GD	Synchronous Step- Down Convert	QFN2×3	MPS	MP1499GD



PRINTED CIRCUIT BOARD LAYOUT

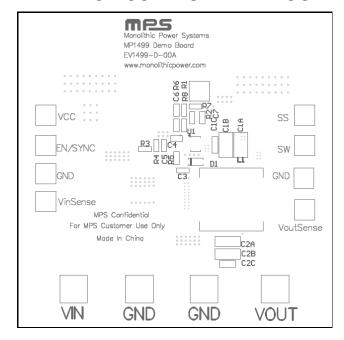


Figure 1—Top Silk Layer

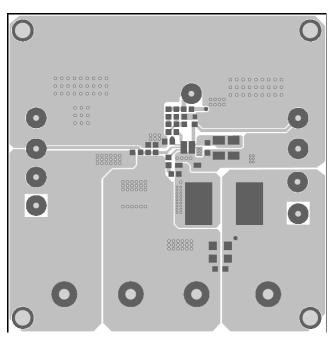


Figure 2—Top Layer

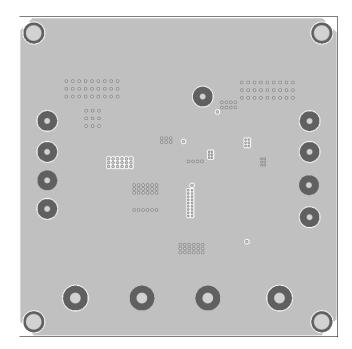


Figure 3—Inner Layer1

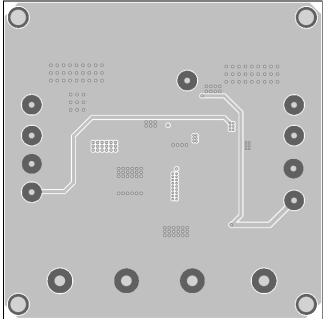


Figure 4—Inner Layer2



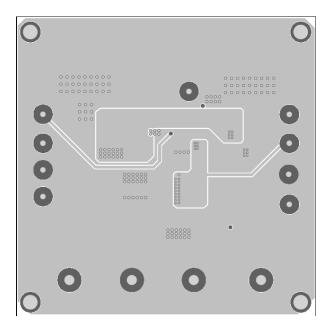


Figure 5—Bottom Layer



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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