



# EVmEZDPD4506A-00A

Programmable 45V DC/DC  
Power Supply up to 6A

## DESCRIPTION

The EVmEZDPD4506A-00A is a programmable, DC/DC, power supply, buck converter featuring the mEZDPD4506A module, which has a multiple-time programmable memory and a simple GUI for programming. The mEZDPD4506A has an input range from 4V to 45V. The output voltage is adjustable from 0.6V to 22V (default 3.3V). The EVmEZDPD4506A-00A can output up to 6A of current continuously.

The EVmEZDPD4506A-00A has one mEZDPD4506A socket that should be placed to the EVB manually. The mEZDPD4506A is a programmable, DC/DC, power supply up to 6A and 0.6 - 22V output voltage. The Virtual Bench Pro 2.2 GUI provides flexible power management functions, including setting the output voltage, switching frequency, output current limit, multiple protection modes, and compensation. For more details, please refer to the mEZDPD4506A datasheet.

## FEATURES

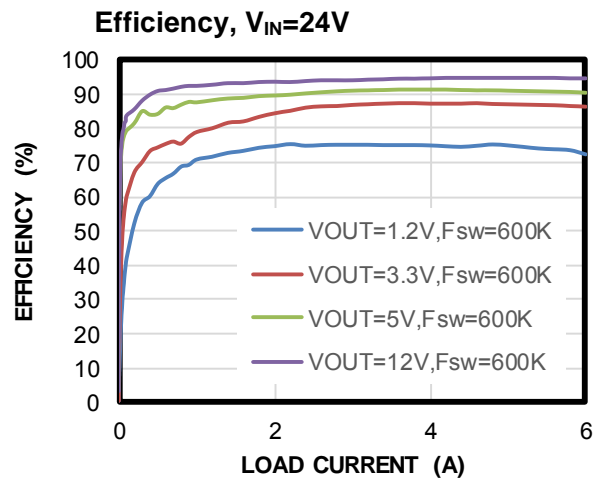
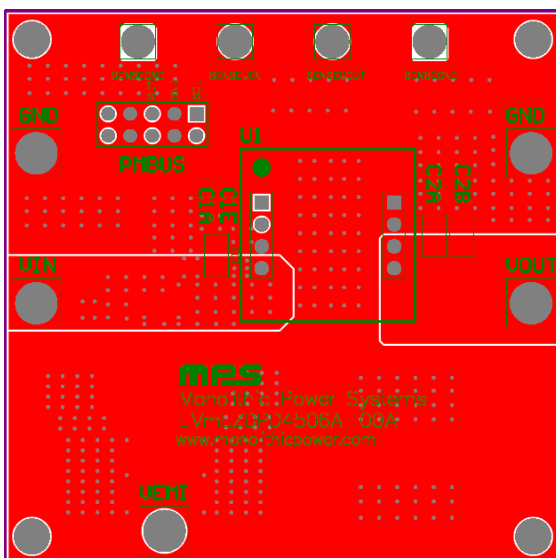
The mEZDPD4506A comes in a 18.8mmx18.8mm solution size. To explore the digital functions of the board completely, the EVmEZDPD4506A-00A board and the Virtual Bench Pro 2.2 GUI are both required. Please contact MPS for more information.

### PKT-mEZDPD4506A Kit Contents (Items below can be ordered separately)

#	Part Number	Item	Qty
1	EVmEZDPD4506A-00A	mEZDPD4506A evaluation board	1
2	mEZDPD4506A-0000	mEZDPD4506A modules with default configuration	1
3	EVKT-USBI2C-02	USB to I2C communication interface device kit, includes one USB to I2C communication interface device, USB cable, and ribbon cable	1
4	Tdrive-mEZDPD4506A	USB thumb drive that stores the GUI installation file and supplemental documents	1

Order directly from [Monolithicpower.com](http://Monolithicpower.com) or our distributors.

## EVMEZDPD4506A-00A

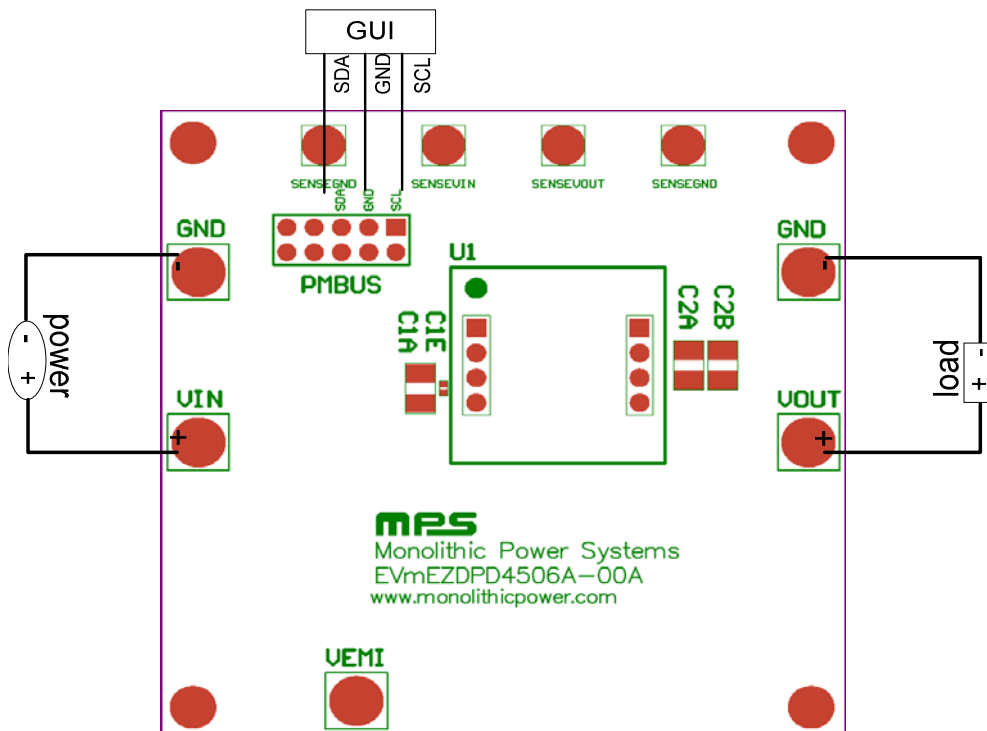


## PERFORMANCE SUMMARY

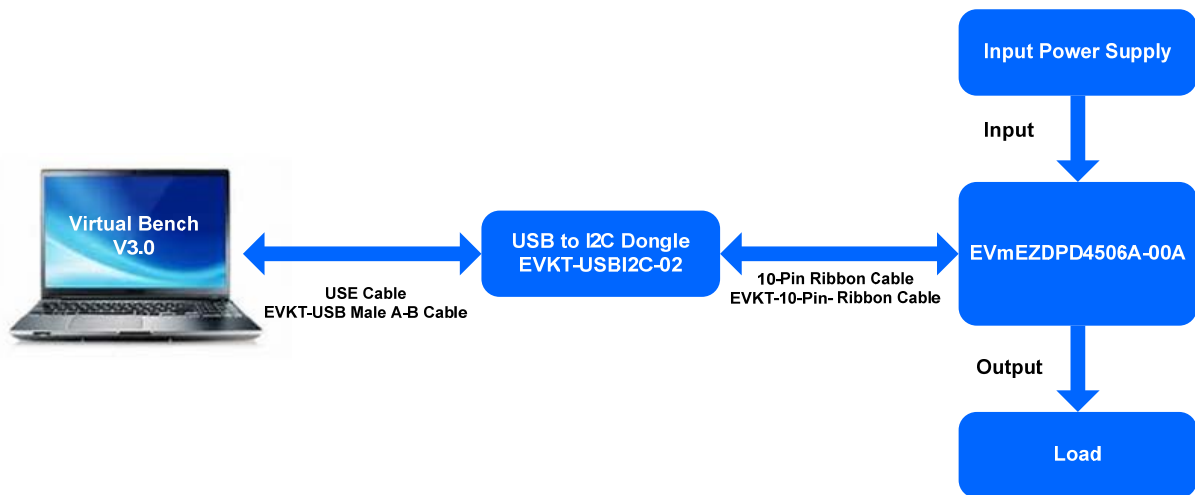
Parameter	Conditions	Value
Input Voltage		4V to 45V
Output Voltage	V <sub>in</sub> =4V to 45V, single output, I <sub>out</sub> =0A to 6A	0.6V to 22V
Output Current	V <sub>in</sub> =4V to 45V, single output, V <sub>out</sub> =0.6V to 22V	0A to 6A
Typical Efficiency	V <sub>in</sub> =12V, V <sub>out</sub> =5V, I <sub>out</sub> =6A	92.4%
Peak Efficiency	V <sub>IN</sub> =24V, V <sub>OUT</sub> =12V, full load, F <sub>sw</sub> =600kHz	94.4%
Default Switching Frequency	Typical switching frequency	600kHz

## QUICK START

1. Connect the mEZDPD4506A module to the socket on the EVmEZDPD4506A-00A board.
2. Connect the positive and negative terminals of the load to the VOUT and GND pins.
3. Preset the power supply output between 4V and 45V.
4. Turn off the power supply.
5. Connect the positive and negative terminals of the power supply to the VIN and GND pins.
6. Turn on the power supply. The board will start up automatically.



## USE VIRTUAL BENCH PRO 2.2 TO EVALUATE DEMO



1. Connect the I2C wires to the EVB.
2. Open 'Virtual Bench Pro.exe'. The GUI will auto-scan the device.

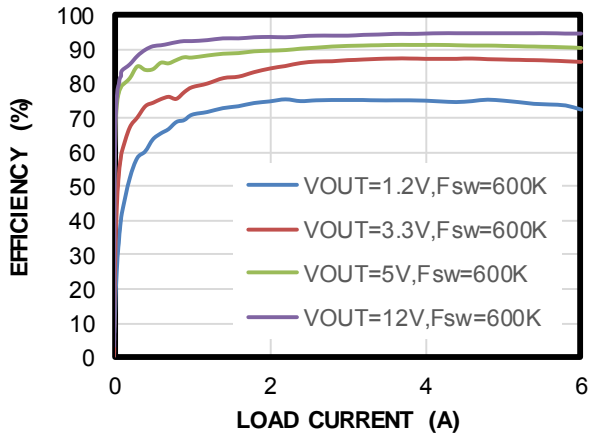
When the part is found, the part number will be shown. The GUI allows user modify the internal parameters. For more detail, refer to the register details in IC datasheet.

## TYPICAL PERFORMANCE CHARACTERISTICS

$V_{IN} = 24V$ ,  $V_{OUT} = 3.3V$ ,  $T_A = 25^\circ C$ , unless otherwise noted.

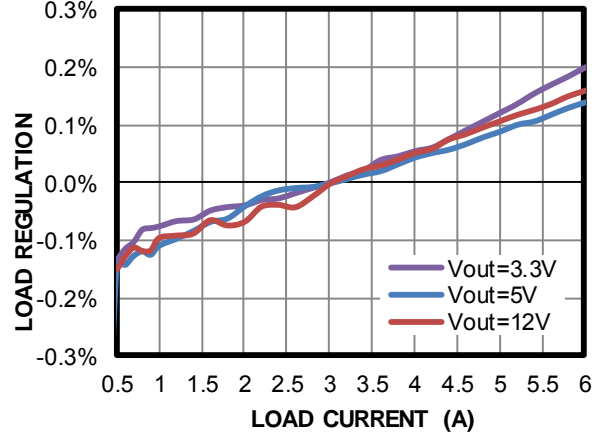
**Efficiency**

$V_{IN} = 24V$



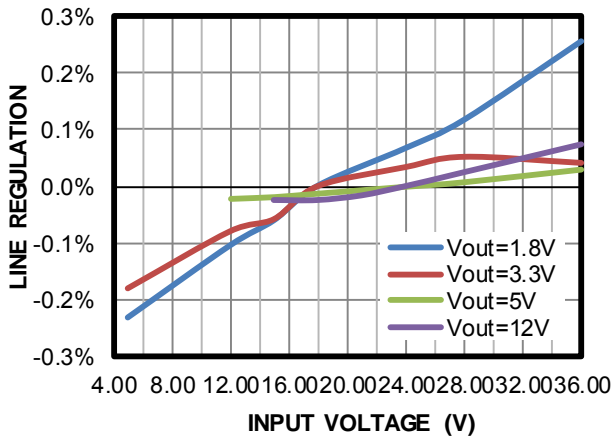
**Load Regulation**

$V_{IN} = 24V$



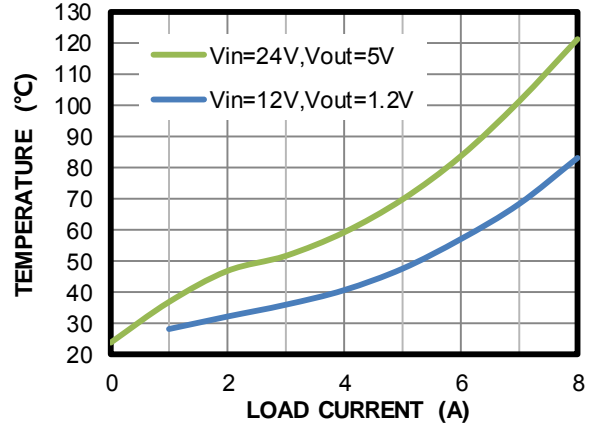
**Line Regulation**

Full Load

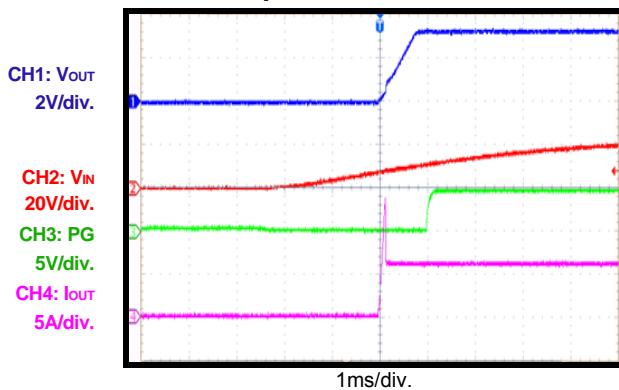


**Case Temperature Rise**

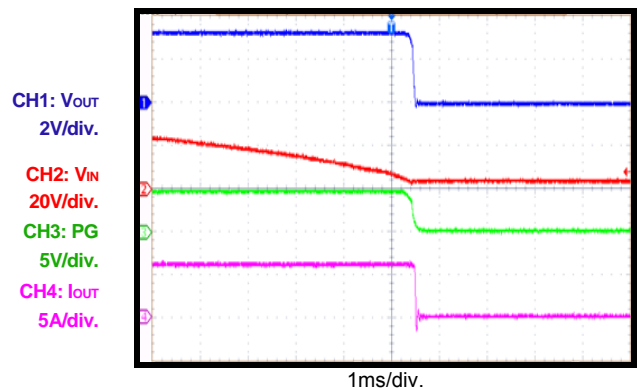
$V_{IN} = 24V$



**$V_{IN}$  Start-Up**



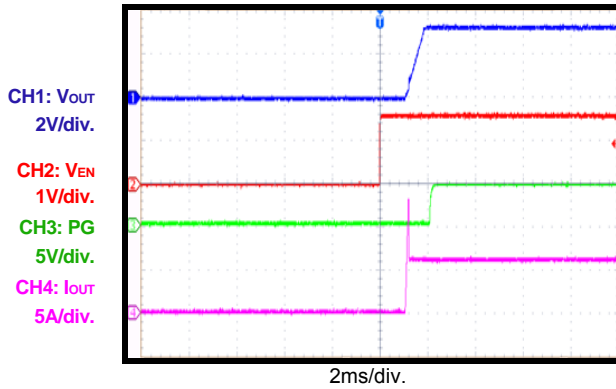
**$V_{IN}$  Shutdown**



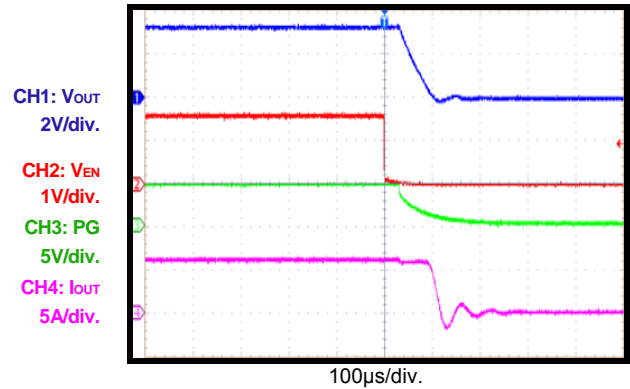
## TYPICAL PERFORMANCE CHARACTERISTICS *(continued)*

$V_{IN} = 24V$ ,  $V_{OUT} = 3.3V$ ,  $T_A = 25^{\circ}C$ , unless otherwise noted.

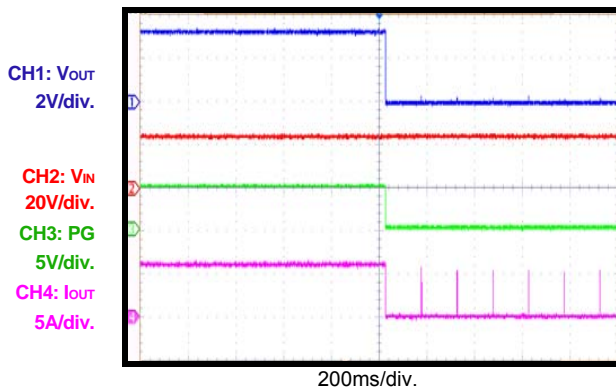
### EN Start-Up



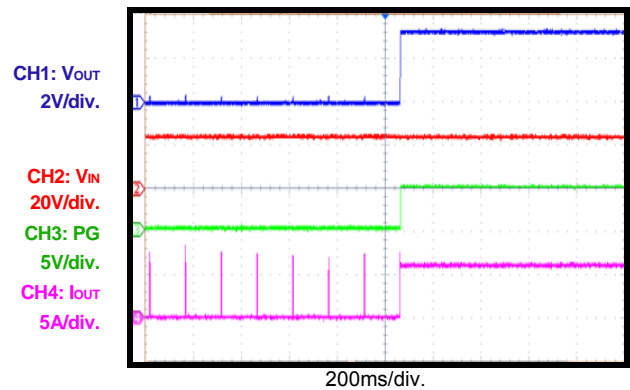
### EN Shutdown



### SCP Entry

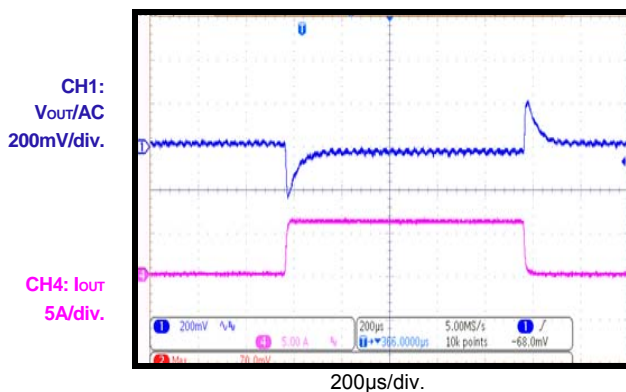


### SCP Recovery



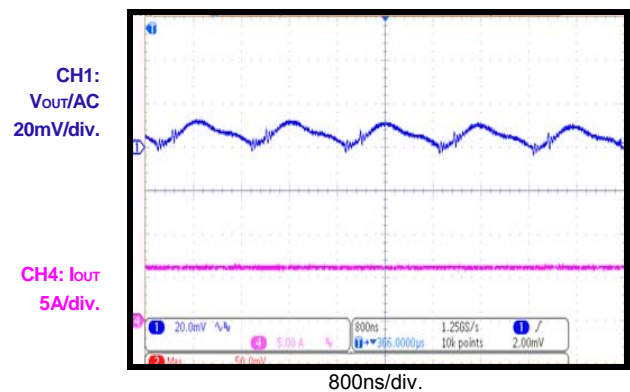
### Load Transient

0 - 6A, without external  $C_{out}$

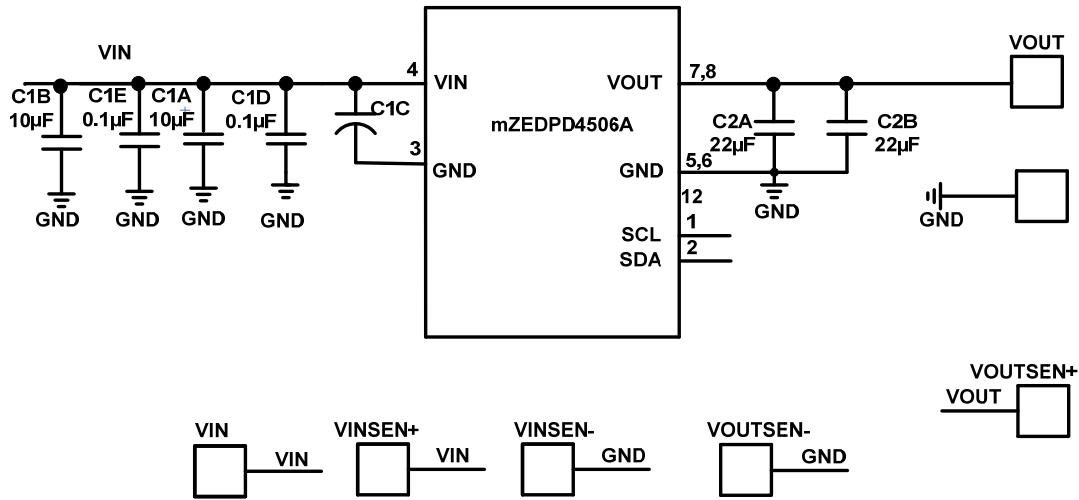


### $V_{out}$ Ripple

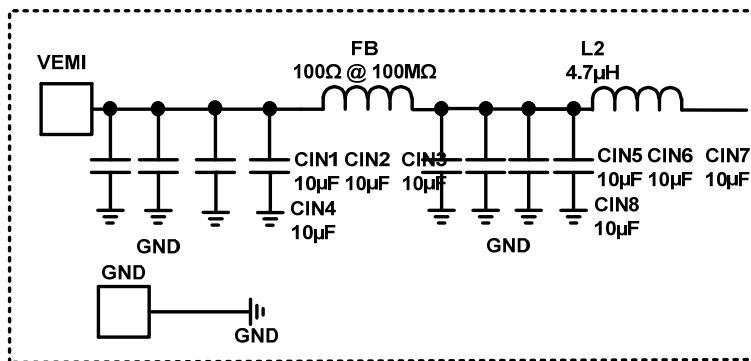
Full Load, without external  $C_{out}$



### EVMEZDPD4506A-00A SCHEMATIC



Optional



**EVMEZDPD4506A-00A BOM**

Qty	RefDes	Value	Description	Pkg	Manufacturer	Manufacturer_P/N
2	C1A,C1B	10 $\mu$ F	Ceramic Cap.,50V,X5R	1210	Murata	GRM32ER61H106KA12L
2	C2A, C2B	22 $\mu$ F	Ceramic Cap.,16V,X5R	1210	Murata	GRM32ER61C226KE20L
2	C1D, C1E	100nF	Ceramic Cap.,50V,X7R	0402	Murata	GRM155R71H104ME14D
1	C1C	100 $\mu$ F	100 $\mu$ F,50V	SMD	PANASONIC	EEEF1H101AP

**Optional (EMI)**

Qty	RefDes	Value	Description	Pkg	Manufacturer	Manufacturer_P/N
8	CIN1, CIN2, CIN3, CIN4 CIN5, CIN6, CIN7, CIN8	10 $\mu$ F	Ceramic Cap, 50V, X5R	1210	Murata	GRM32ER61H106KA12L
1	FB	100 $\Omega$ @ 100MHz 1210	Film Res, 1%, 1210, 100R	1210	YAGEO	RC1210FR-07100RL
1	L2	4.7 $\mu$ H	Inductor, RDC=0.0195 $\Omega$ , Isat=7A	7040	WE	744311470

**NOTES:**

When  $V_{OUT} < 3.3V$ , C2A = 22 $\mu$ F, C2B = NS, C1C = NS

When  $V_{OUT} = 5V$ , C2A = 22 $\mu$ F, C2B = 22 $\mu$ F, C1C = NS

When  $V_{OUT} = 12V$ , C2A = 22 $\mu$ F, C2B = 22 $\mu$ F, C1C = 100 $\mu$ F E-cap

## PRINTED CIRCUIT BOARD LAYOUT

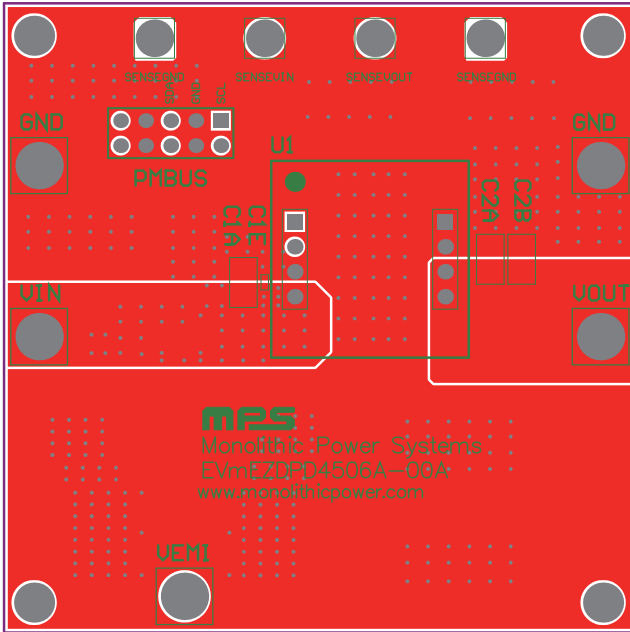


Figure 1: Top Layer

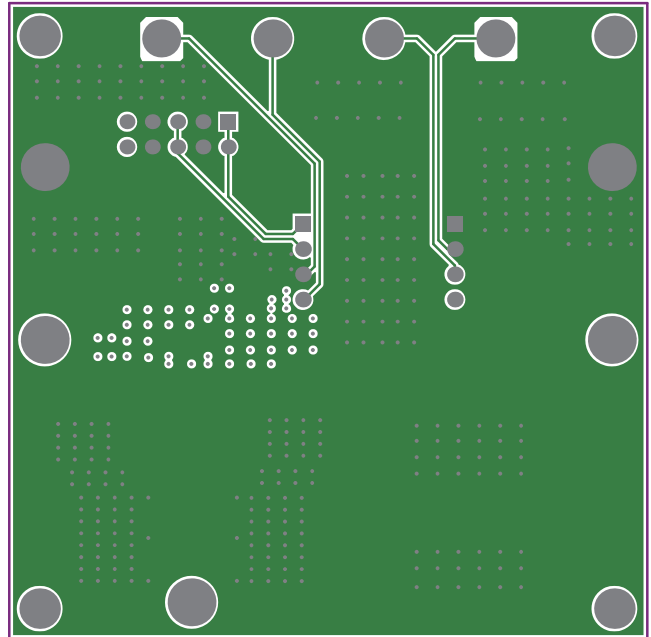


Figure 2: Mid Layer 1

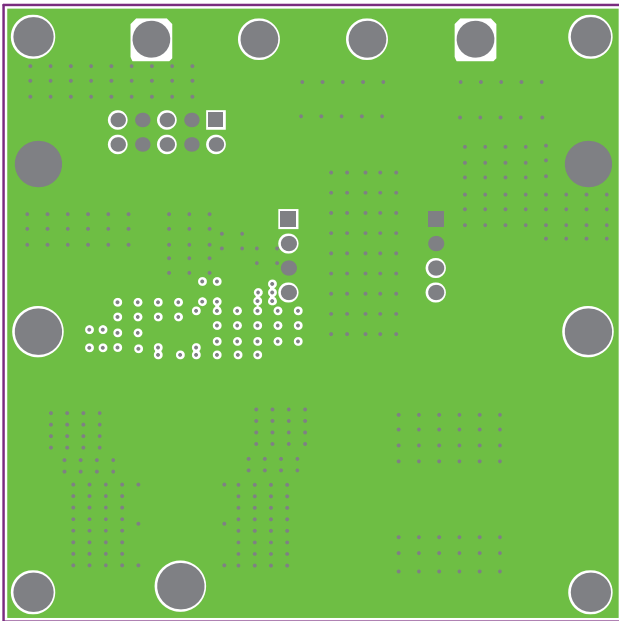


Figure 3: Mid Layer 2

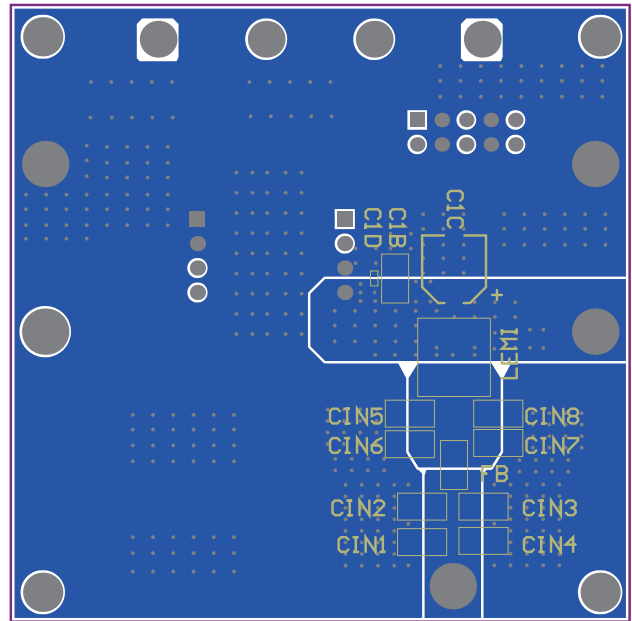


Figure 4: Bottom Layer

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