

**DESCRIPTION**

The EV2930EQK-00A is an evaluation board for MP2930EQK, a 4-phase, synchronous buck switching regulator controller for regulating microprocessor core voltage.

The EV board can deliver 80A continuous load current. High efficiency power conversion is achieved through the use of Dr.MOS. The output is adjustable over a range of 0.5V to 1.6V by the 8-bit ID input. Output current is sensed to realize voltage droop function.

This EV board can be turned on or shut down via a remote ON/OFF input that is referenced to ground.

**ELECTRICAL SPECIFICATIONS**

Parameter	Symbol	Value	Units
Input Voltage	V <sub>IN</sub>	12	V
Supply Voltage	V <sub>CC</sub>	5	V
Output Voltage	V <sub>OUT</sub>	1.2	V
Output Current	I <sub>OUT</sub>	80	A

**FEATURES**

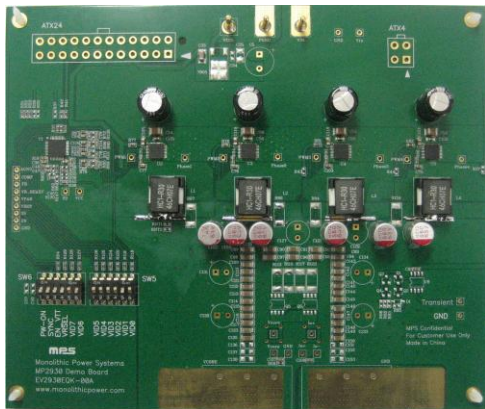
- 2-, 3- or 4-phase Operation
- Channel-Current Balancing
- Voltage Droop vs. Load Current
- Precision Resistor or DCR Current Sensing
- 8-Bit ID Input with Selectable Between VR11 and VR10 Code at 6.25mV Per Bit
- Adjustable Switching Frequency
- Over Current Protection
- Over Voltage Protection
- Available in a 40-pin QFN6x6 Package

**APPLICATIONS**

- Power Modules
- Desktop, Server, Core Voltage
- POLs (Memory)

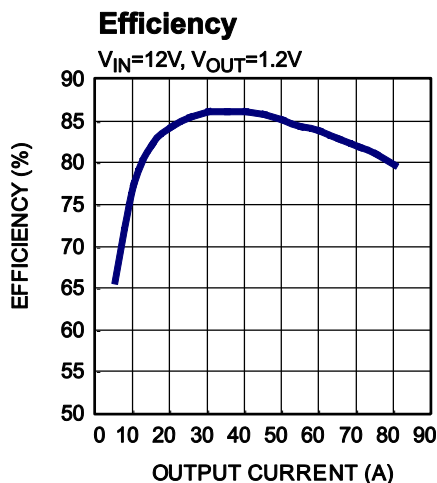
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**EV2930EQK-00A EVALUATION BOARD**

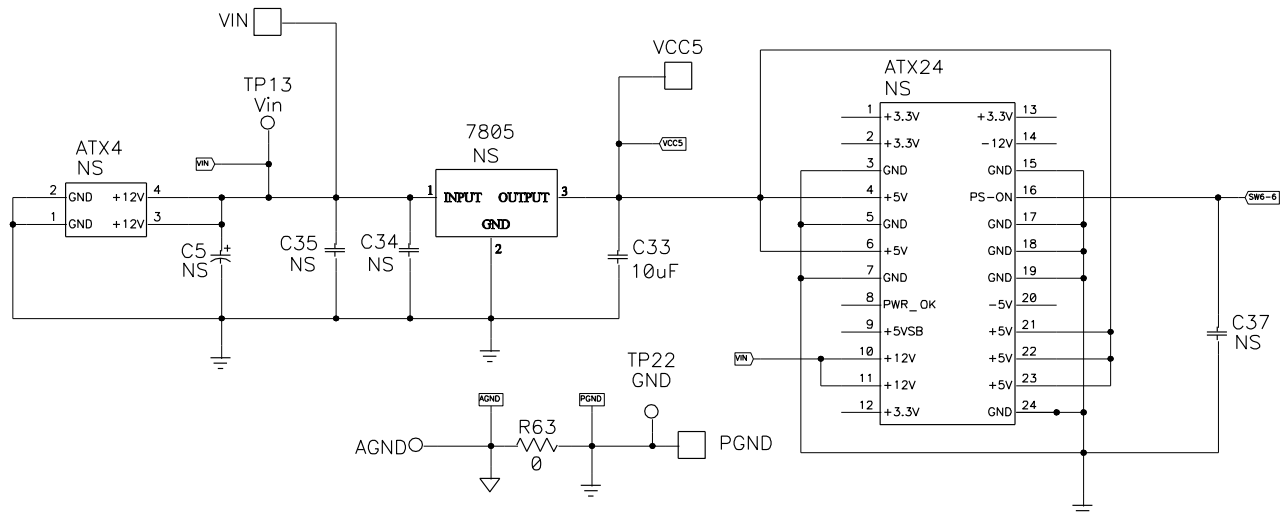


(L x W x H)  
 (17.27cm x 14.29cm x 1.3cm)

Board Number	MPS IC Number
EV2930EQK-00A	MP2930EQK







### EV2930EQK-00A BILL OF MATERIALS

Qty	Reference	Value	Description	Package	Manufacturer	Part Number
4	C1, C2, C3, C4	470µF	25V	DIP	Panasonic	
18	C5, C34, C35, C37, C39, C45, C127, C129, C131, C132, C133, C134, C136, C137, C138, C151, C152, C153	NS	Not Stuffed			
33	C33, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C109, C110, C111, C112, C113, C114, C115, C116, C117, C123, C135, C140, C141, C142, C143, C144, C145, C146, C147, C148, C149, C150	10µF	Ceramic Cap., 10V, X7R	1206	muRata	GRM31CR71A10 6KA01L
12	C36, C55, C56, C100, C101, C107, C108, C78, C79, C80, C83, C104	0.1µF	Ceramic Cap., 16V, X7R	0630	muRata	GRM188R71C10 4KA01D
5	C38, C75, C76, C77, C103	1µF	Ceramic Cap., 16V, X7R	0630	muRata	GRM188R71C10 5KA12D
1	C46	22pF	Ceramic Cap., 50V, C0G	0630	muRata	GRM1885C1H22 0JA01D
1	C47	3.3nF	Ceramic Cap., 50V, X7R	0630	muRata	C1608X7R1H332 K
4	C52, C53, C54, C99	22µF	Ceramic Cap., 16V, X5R	1210	muRata	GRM32ER71C22 6KE
4	C82, C84, C86, C106	330pF	Ceramic Cap., 50V, X7R	0630	TDK	C1608X7R1H33K

**EV2930EQK-00A BILL OF MATERIALS (continued)**

Qty	Reference	Value	Description	Package	Manufacturer	Part Number
4	C118, C119, C124, C125	1 $\mu$ F	Ceramic Cap., 16V, X7R	0805	muRata	GRM21BR71C105KA01L
6	C120, C121, C122, C126, C128, C130	560 $\mu$ F	Electrolytic Cap., 6.3V	DIP	Jianghai	CDHEN 6.3V
1	D1	NS	Not Stuffed			
4	L1, L2, L3, L4		0.3 $\mu$ H, 0.34m $\Omega$ DCR, 31.8A	SMD	Cooper	HC1-R30-R
6	Q1, Q2, Q3, Q4, Q5, Q6	NS	Not Stuffed			
1	R19	402 $\Omega$	Film Res., 5%	0603	Yageo	RC0603JR-07402RL
1	R20	2.2 $\Omega$	Film Res., 5%	0603	Yageo	RC0603JR-072R1L
37	R21, R35, R36, R37, R39, R40, R43, R44, R57, R62, R65, R71, R72, R80, R83, R84, R85, R86, R96, R97, R98, R101, R102, R104, R105, R108, R109, R113, R114, R115, R116, R117, R122, R134, R147, RNT1, RNT2	NS	Not Stuffed			
1	R33	215k $\Omega$	Film Res., 1%	0603	Yageo	RC0603FR-07215KL
1	R34	38.3k $\Omega$	Film Res., 1%	0603	Yageo	RC0603FR-0738K3L
15	R38, R63, R66, R70, R91, R94, R99, R100, R103, R106, R107, R110, R112, R121, R130	0 $\Omega$	Film Res., 5%	0603	Yageo	RC0603JR-070RL
1	R41	20k $\Omega$	Film Res., 5%	0603	Yageo	RC0603JR-0720KL
1	R42	5.1k $\Omega$	Film Res., 5%	0603	Yageo	RC0603JR-075K1L
13	R51, R52, R53, R54, R118, R119, R120, R124, R125, R126, R127, R128, R129	10k $\Omega$	Film Res., 5%	0603	Yageo	RC0603JR-0710KL
4	R59, R67, R79, R93	80.6 $\Omega$	Film Res., 1%	0603	Yageo	RC0603FR-0780R6L
1	R60	4.22k $\Omega$	Film Res., 1%	0603	Yageo	RC0603FR-074K22L
2	R61, R68	1k $\Omega$	Film Res., 1%	0603	Yageo	RC0603FR-071KL
4	R69, R95, R111, R135	8.87k $\Omega$	Film Res., 1%	0603	Yageo	RC0603FR-078K87L

**EV2930EQK-00A BILL OF MATERIALS (continued)**

Qty	Reference	Value	Description	Package	Manufacturer	Part Number
4	R77, R78, R81, R82	1.0Ω	Film Res., 5%	0603	Yageo	RC0603JR-071RL
2	RS+, RS_	3.0Ω	Film Res., 5%	0603	Yageo	RC0603JR-073RL
2	SW5, SW6		6-Switch Rocker			
1	U1		4 Phase Controller	QFN6 x 6	MPS	MP2930EQK
4	U2, U3, U4, U5		DrMOS	FCTQFN -18L 5X5mm	MPS	MP86961DU
4	U8, ATX4, ATX24, 7805	NS	Not Stuffed			

### PRINTED CIRCUIT BOARD LAYOUT

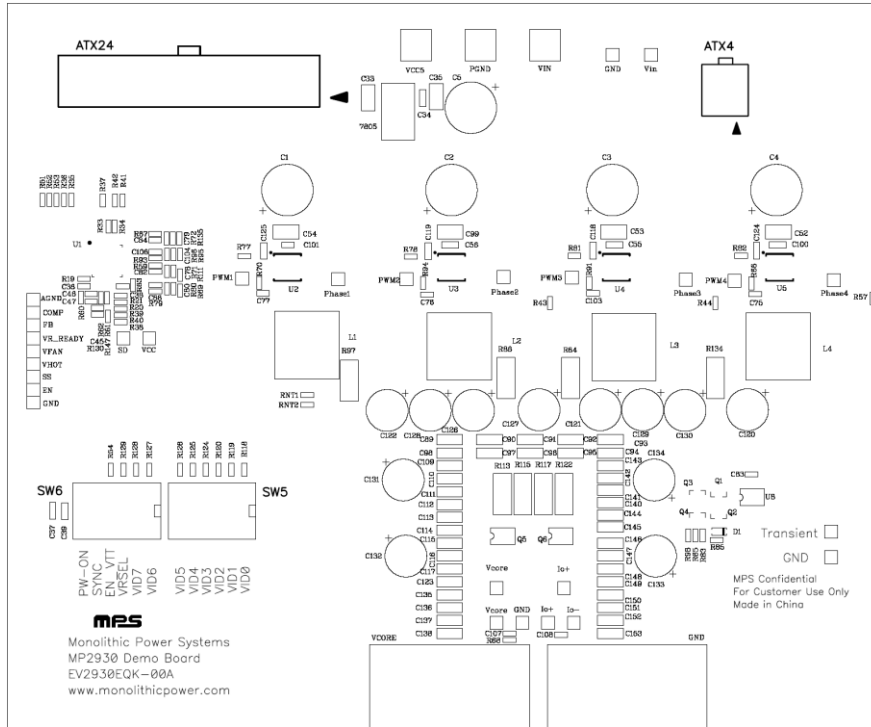


Figure 1—Top Silk Layer

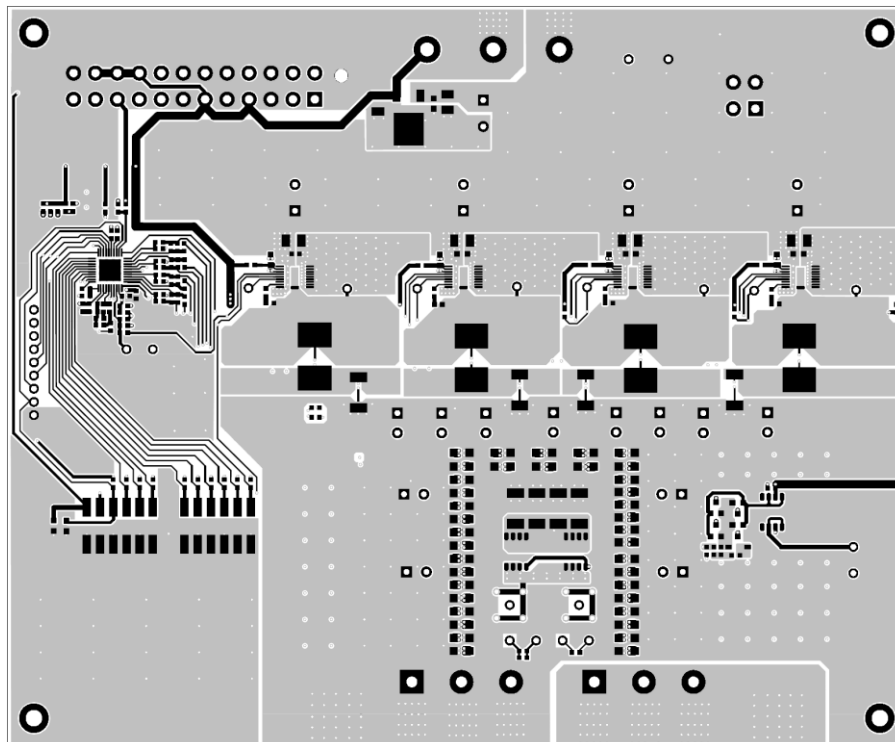


Figure 2—Top Layer

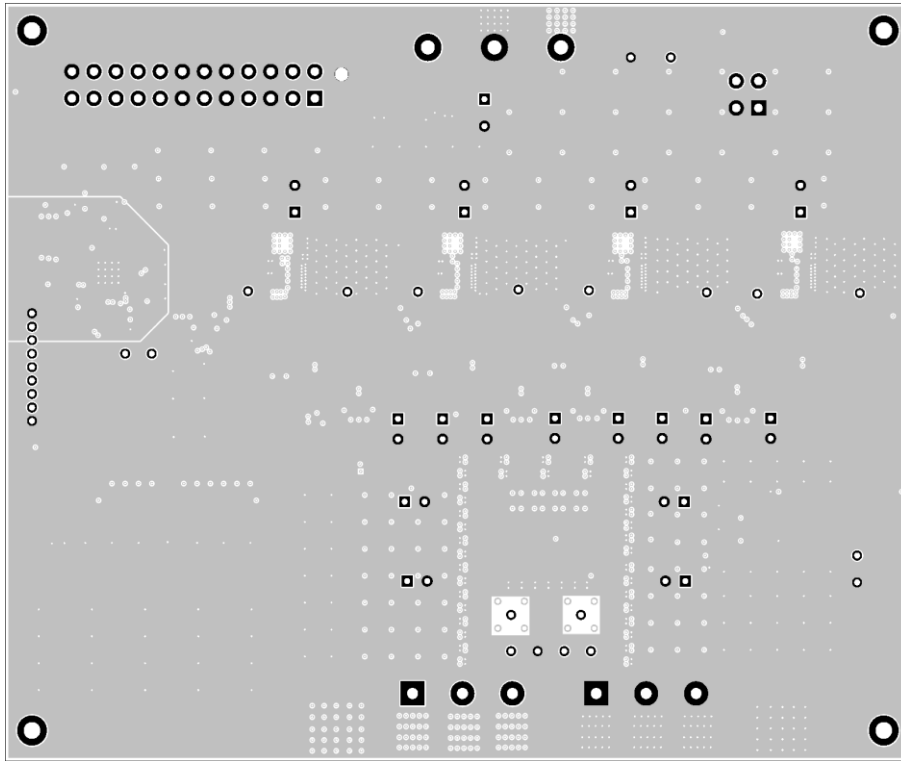


Figure 3—Inner Layer 1

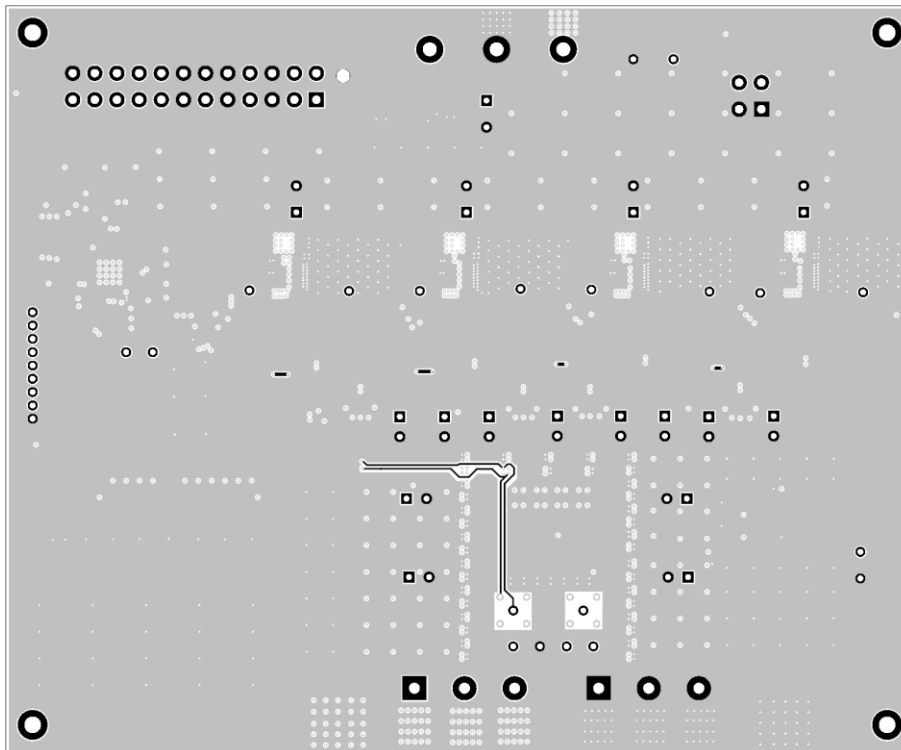
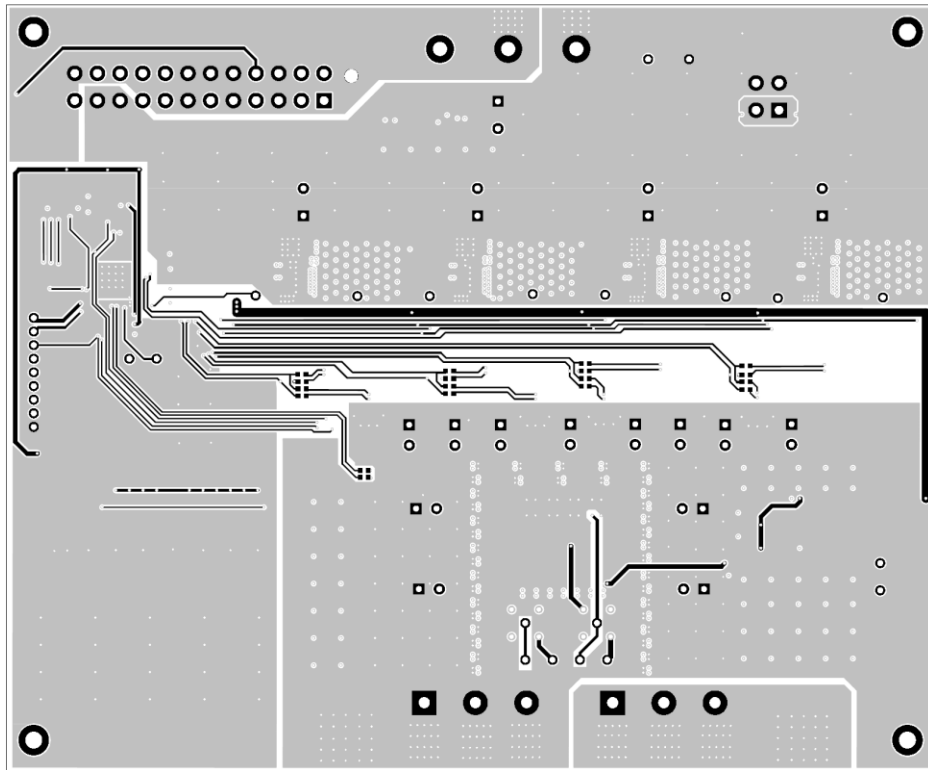


Figure 4—Inner Layer 2



**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 one power supply output to 5V, and preset another power supply output to 12V, then turn them off.
3. Connect the positive and negative terminals of the 5V power supply output to the VCC5 and PGND pins, respectively. Connect the positive and negative terminals of the 12V power supply output to the VIN and PGND pins, respectively.
4. Turn the power supply on (the MP2930 will automatically startup).
5. To use the Enable function, apply a digital input to the EN\_VTT pin. Drive EN\_VTT higher than 0.9V to turn on the regulator or less than 0.7V to turn it off.
6. Use the Dial Switch SW5, SW6 to set the output voltage to 1.2V in VID table.

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