

## DESCRIPTION

The EV2565-Q-01A is an evaluation board for the MP2565, a high frequency step-down regulator with an integrated power MOSFET.

The MP2565 integrates a 220mΩ MOSFET that provides 2.5A load current over a wide operating input voltage of 4.5V to 50V.

Current mode control provides fast transient response and reliable over current protection. An internal soft-start prevents inrush current at turn-on.

The EV2565-Q-01A is a fully assembled and tested PCB. It generates a +3.3V output voltage at load current up to 2.5A from an 8V to 50V input range. Switching frequency is set at 500KHz.

## ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	$V_{IN}$	8 – 50	V
Output Voltage	$V_{OUT}$	3.3	V
Output Current	$I_{OUT}$	2.5	A

## FEATURES

- 2.5A Output Current
- Programmable Switching Frequency up to 4MHz
- Wide 8V to 50V Operating Input Range
- Adjustable Output from 0.8V

## APPLICATIONS

- High Voltage Power Conversion
- Game Machines
- Automotive Systems
- Industrial Power Systems
- Distributed Power Systems
- Printer Systems
- Battery Powered Systems

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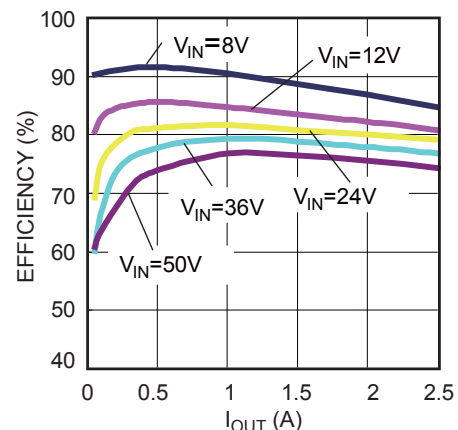
## EV2565-Q-01A EVALUATION BOARD



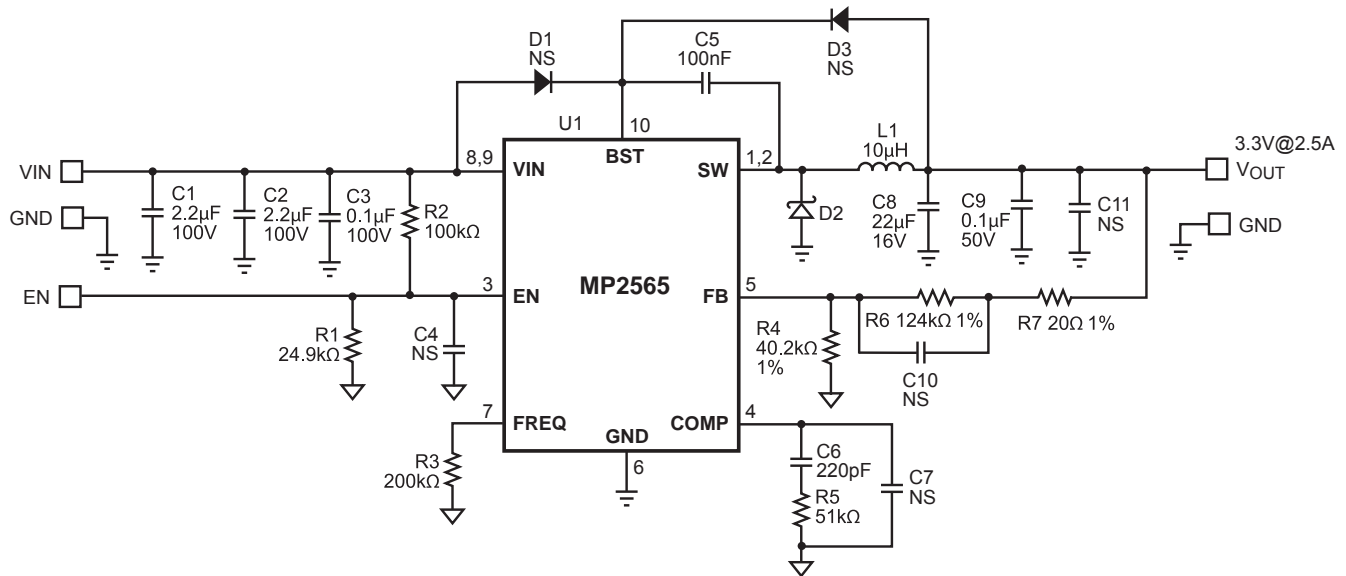
(L x W x H) 2.5" x 2.5" x 0.4"  
(6.35cm x 6.35cm x 1.0cm)

Board Number	MPS IC Number
EV2565-Q-01A	MP2565DQ

Efficiency @ $V_{OUT}=3.3V$   
fs=500kHz



## EVALUATION BOARD SCHEMATIC



## EV2565-Q-01A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
2	C1, C2	2.2µF	Ceramic Cap., 100V, X7R	1210	Murata	GRM32ER72A225KA35L
1	C3	0.1µF	Ceramic Cap., 100V, X7R	0805	TDK	C2012X7R2A104K
4	C4, C7, C10, C11		Not Stuffed			
1	C5	100nF	Ceramic Cap., 50V, X7R	0603	TDK	C1608X7R1H104K
1	C6	220pF	Ceramic Cap., 50V, X7R	0603	TDK	C1005X7R1H221K
1	C8	22µF	Ceramic Cap., 16V, X7R	1210	Murata	GRM32ER71C226ME18L
1	C9	0.1µF	Ceramic Cap., 50V, X7R	0805	TDK	C2012X7R1H104K
1	R1	24.9kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0724K9L
1	R2	100kΩ	Film Res., 1%	0603	Yageo	RC0603FR-07100KL
1	R3	200kΩ	Film Res., 1%	0603	Yageo	RC0603FR-07200KL
1	R4	40.2kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0740K2L
1	R5	51kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0751KL
1	R6	124kΩ	Film Res., 1%	0603	Yageo	RC0603FR-07124KL
1	R7	20Ω	Film Res., 1%	0603	Yageo	RC0603FR-0720RL
2	D1, D3		Not Stuffed			
1	D2		Diode Schottky, 80V, 3A	SMC	Diodes Inc	B380
1	L1	10µH	Inductor, 4A	SMD	Würth	744066100
1	U1		Step-Down Regulator	QFN10	MPS	MP2565DQ

## PRINTED CIRCUIT BOARD LAYOUT

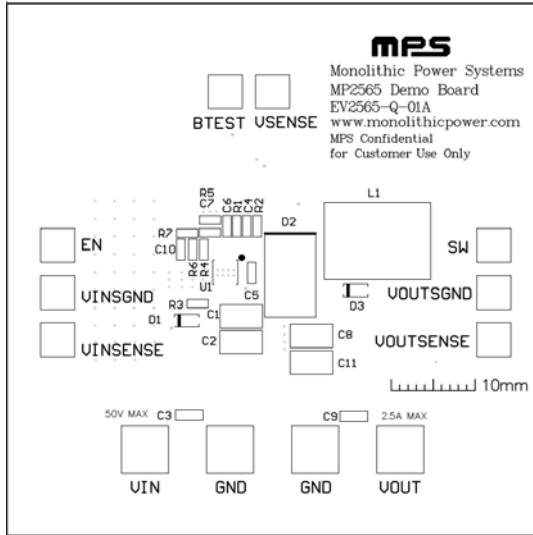


Figure 1—Top Silk Layer

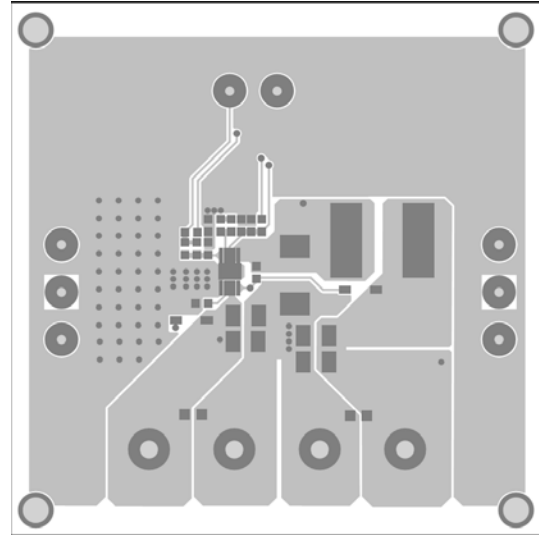


Figure 2—Top Layer

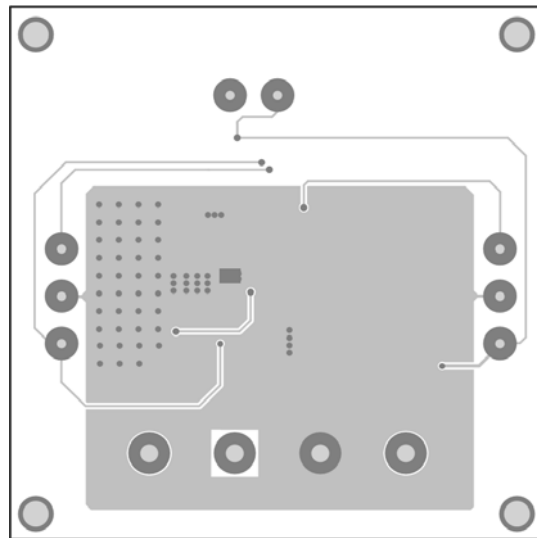


Figure 3—Bottom Layer

## 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 to between 8 and 50V, and then turn it off.
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 MP2565DQ will automatically startup.
5. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 1.6V to turn on the regulator, drive EN less than 1.2V to turn it off.
6. An input under voltage lockout (UVLO) function is implemented by the addition of a resistor divider R1 and R2. The EN threshold is 1.2V (falling edge), so  $V_{IN}$  UVLO threshold is  $1.2V \times \left(1 + \frac{R2}{R1}\right)$ . It is preset to 6V on this board.
7. Use R4 and R6 to set the output voltage with  $V_{FB} = 0.8V$ . For  $R4 = 40.2k\Omega$ , R6 can be determined by:  $R6 = 50.25 \times (V_{OUT} - 0.8)(k\Omega)$ . Follow the Application Information section in the device datasheet to recalculate the compensation, inductor and output capacitor values when output voltage is changed.

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