



EVL28162-C-00A

High-Efficiency, Low-I_Q, Single-Inductor Buck-Boost DC/DC Converter Evaluation Board

DESCRIPTION

The EVL28162-C-00A is an evaluation board designed to demonstrate the capabilities of the MP28162, a high-efficiency, low-quiescent current (I_Q), buck-boost DC/DC converter with a 1.5A switcher.

The MP28162 provides a compact solution for single-cell Li-ion or multi-cell alkaline battery applications.

It is recommended to read the MP28162 datasheet prior to making any changes to the EVL28162-C-00A.

PERFORMANCE SUMMARY

Specifications are at T_A = 25°C, unless otherwise noted.

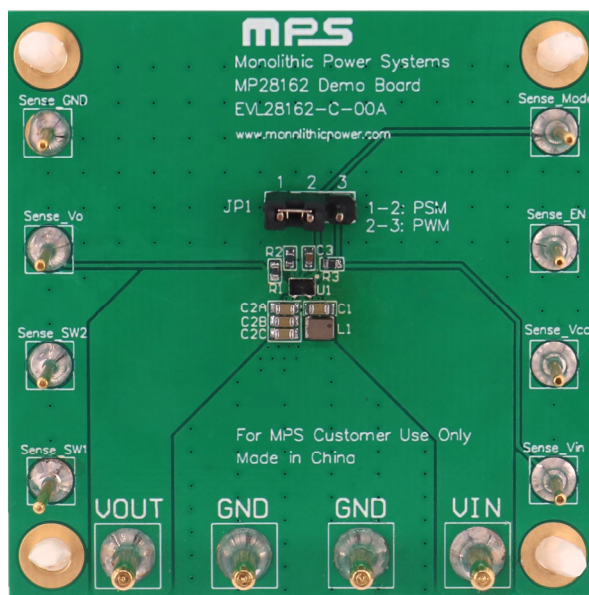
Parameters	Conditions	Value
Start-up input voltage (V _{IN}) range		1.8V to 5.5V
Operating V _{IN} range	V _{OUT} = 3.3V	1.2V to 5.5V ⁽¹⁾
Typical efficiency	V _{IN} = 3.3V, V _{OUT} = 3.3V, I _{OUT} = 0.5A	93.2%
Switching frequency (f _{sw})		2MHz

Notes:

1) After start-up, the MP28162 can operate across a 1.2V and 5.5V V_{IN} range.

 Optimized Performance with MPS Inductor MPL-AT2010 Series

EVALUATION BOARD



LxWxH (51mmx51mmx2.6mm)

Board Number	MPS IC Number
EVL28162-C-00A	MP28162GC

QUICK START GUIDE

1. Preset the power supply between 1.8V and 5.5V, then turn off the power supply.
2. Connect power supply terminals to:
 - a. Positive (+): VIN
 - b. Negative (-): GND
3. Connect load terminals to:
 - a. Positive (+): VOUT
 - b. Negative (-): GND
4. Preset the load value (e.g. 0.4A).
5. After making the connections, turn on the power supply. The board should start up automatically.

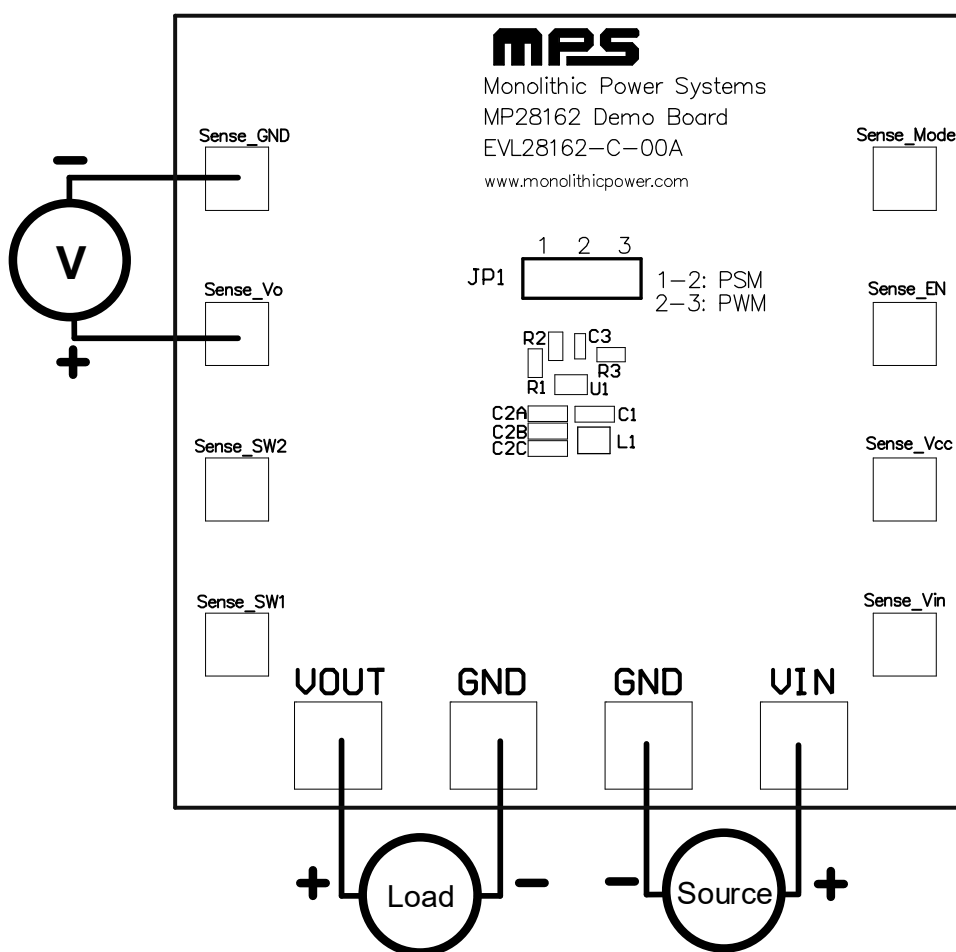


Figure 1: Measurement Equipment Set-Up

EVALUATION BOARD SCHEMATIC

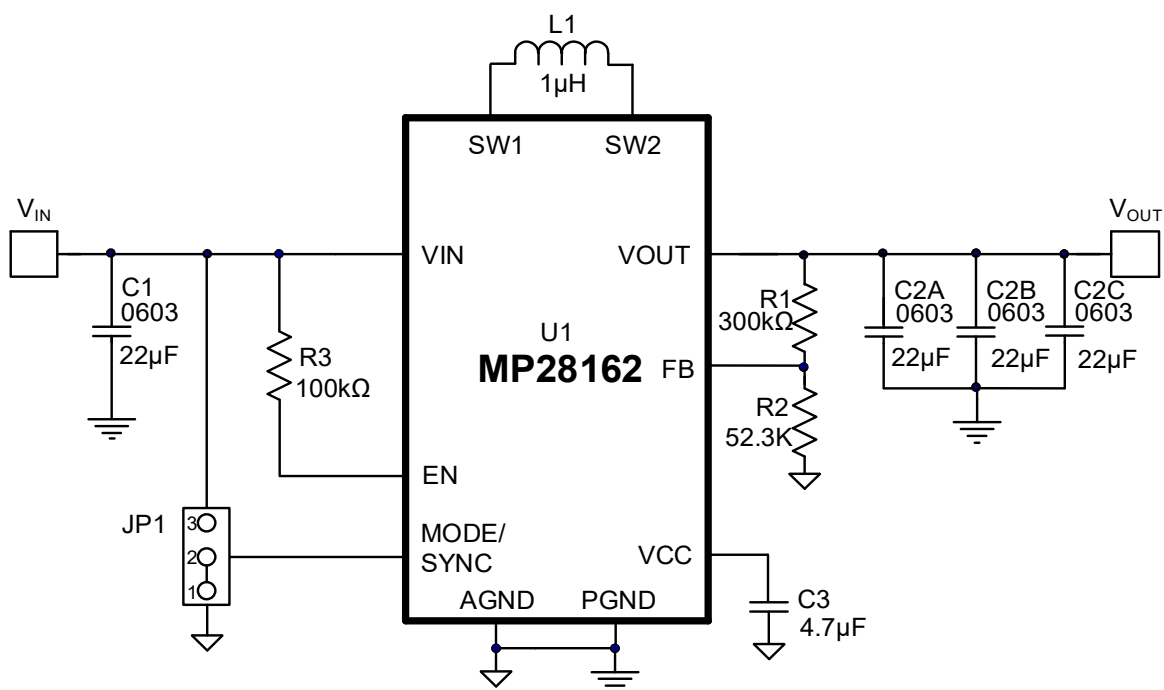


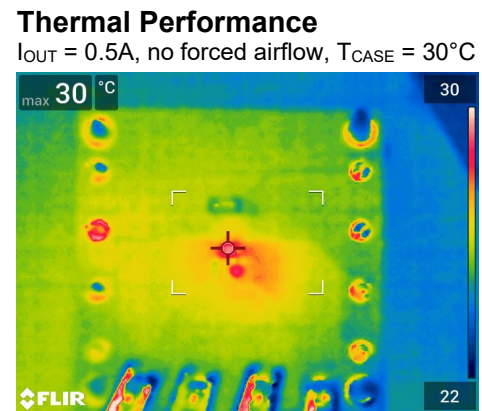
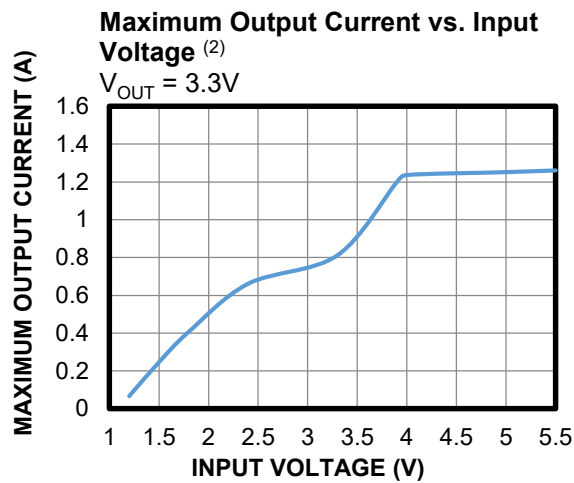
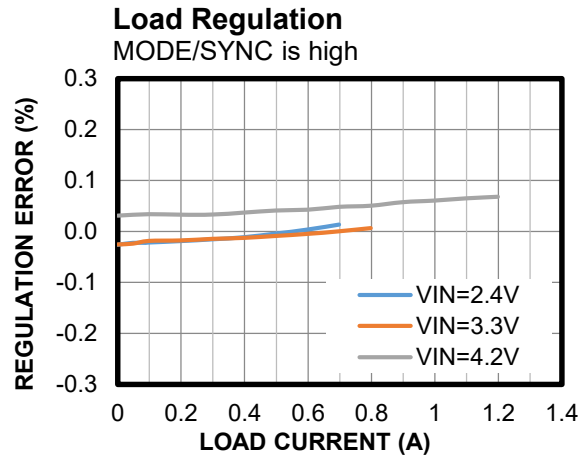
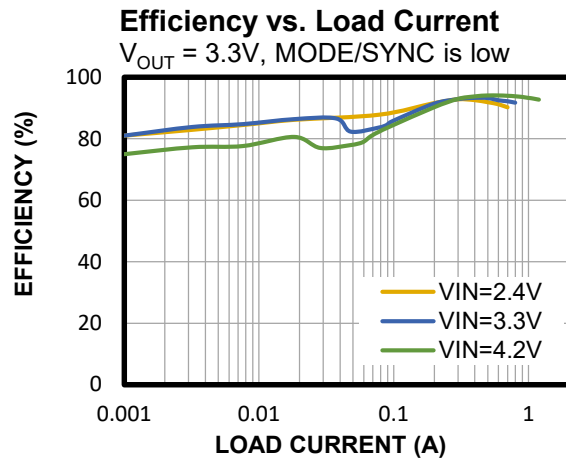
Figure 2: Evaluation Board Schematic

EVL28162-C-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer PN
4	C1, C2A, C2B, C2C	22 μ F	Ceramic capacitor, 10V, X5R	0603	Murata	GRM188R61A22 6ME15D
1	C3	4.7 μ F	Ceramic capacitor, 10V, X5R	0402	Murata	GRM155R61A47 5MEAAD
1	R1	300k Ω	Film resistor, 1%	0402	Yageo	RC0402FR- 07300KL
1	R2	52.3k Ω	Film resistor, 1%	0402	Yageo	RC0402FR- 0752K3L
1	R3	100k Ω	Film resistor, 1%	0402	Yageo	RC0402FR- 07100KL
1	JP1	2.54mm	3 pins, 1 row, straight	DIP	Any	
4	VIN, GND, VOUT, GND	ϕ 2.0	ϕ 2.0 copper pin	DIP	Any	
8	SENSE_GND, SENSE_VO, SENSE_SW1, SENSE_SW2, SENSE_MODE, SENSE_EN, SENSE_VCC, SENSE_VIN	ϕ 1.0	ϕ 1.0 copper pin	DIP	Any	
1	U1	MP28162	Buck-boost converter, 2MHz, 1.5A, 1.8V to 5.5V	WLCSP-15 (1.3mmx 2.1mm)	MPS	MP28162GC
1	L1	1 μ H	Inductor, R _{DC} = 50m Ω , I _{SAT} = 4.2A	SMD	MPS	MPL-AT2010-1R0

EVB TEST RESULTS

Performance curves and waveforms are tested on the evaluation board. $V_{IN} = 3.3V$, $V_{OUT} = 3.3V$, $T_A = 25^\circ C$, unless otherwise noted.



Notes:

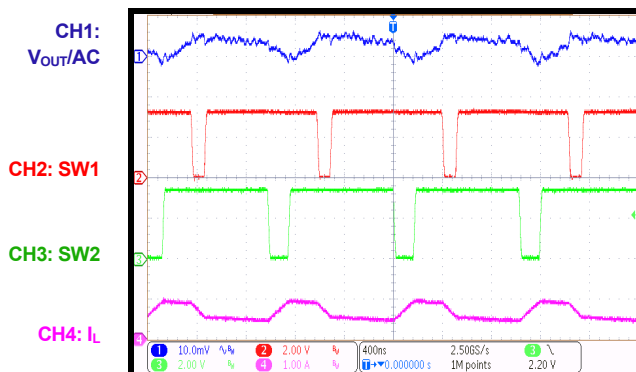
- 2) Tested with the IC (MP28162), which has a 1.3A current limit at 3.3V input voltage (V_{IN}).

EVB TEST RESULTS (continued)

Performance curves and waveforms are tested on the evaluation board. $V_{IN} = 3.3V$, $V_{OUT} = 3.3V$, $T_A = 25^{\circ}C$, unless otherwise noted.

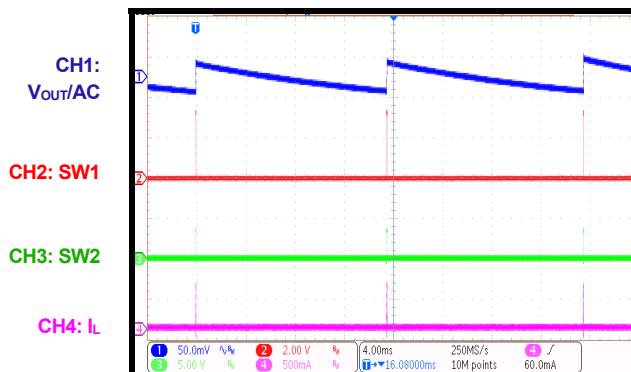
Steady State

$V_{IN} = 3.3V$, $I_{OUT} = 0.5A$, MODE/SYNC is low



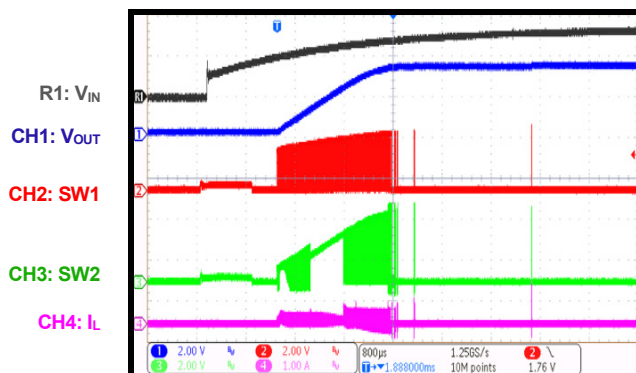
Steady State

$V_{IN} = 3.3V$, $I_{OUT} = 0A$, MODE/SYNC is low



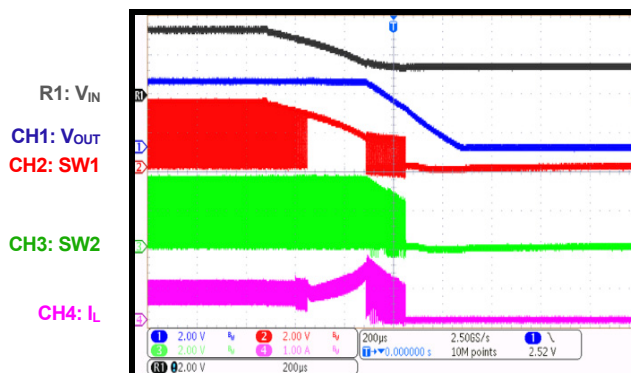
Start-Up

$I_{OUT} = 0A$, MODE/SYNC is low



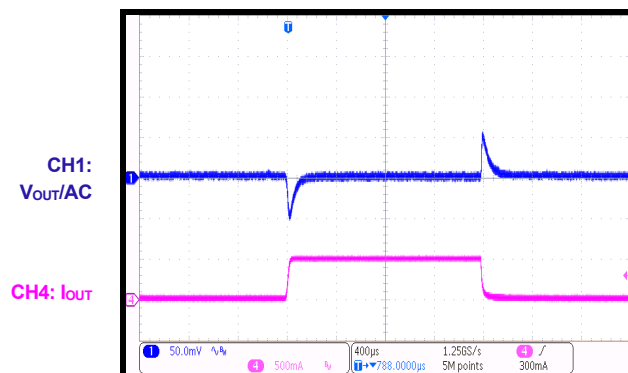
Shutdown

$I_{OUT} = 0.5A$, MODE/SYNC is low

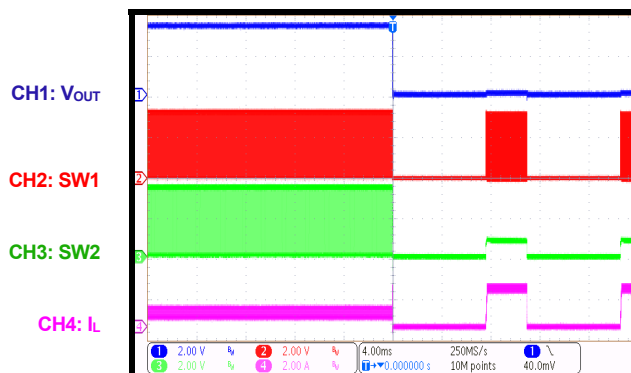


Transient Response

$V_{IN} = 3.3V$, $I_{OUT} = 0A$ to $0.5A$, MODE/SYNC is high



SCP Entry



PCB LAYOUT

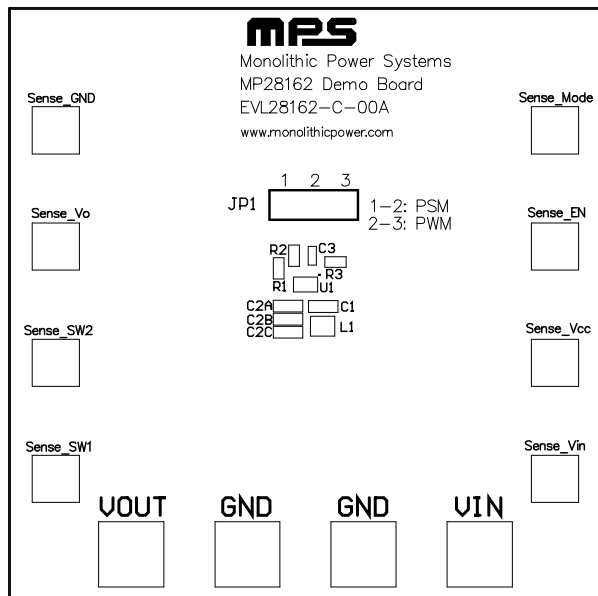


Figure 3: Top Silk

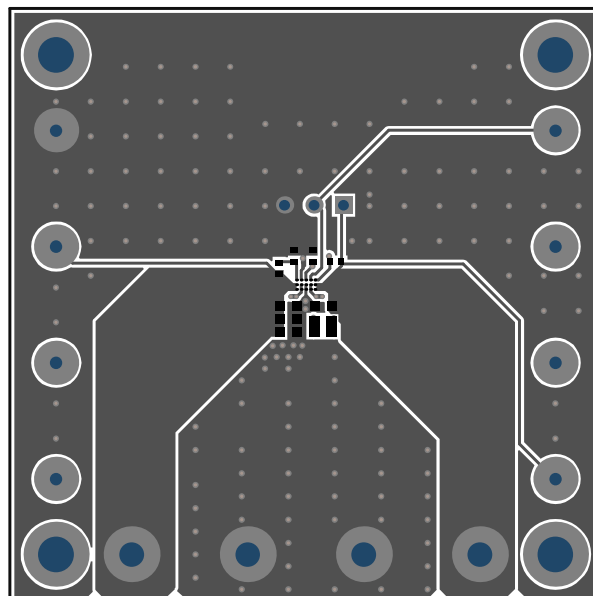


Figure 4: Top Layer

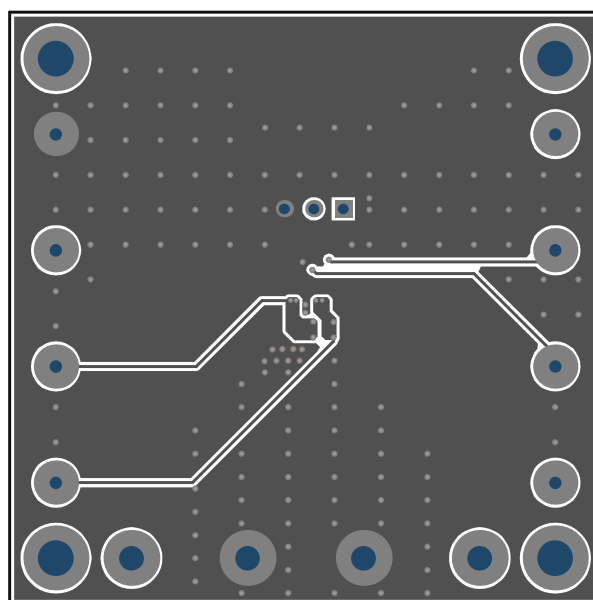


Figure 5: Bottom Layer



REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	3/8/2022	Initial Release	-

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