LTspice Model
DCDC converter
Monolithic Power Systems, Inc.
MP4410GQ-Z

Model Information

Model	A macro model
Call Name	MDC_MP4410GQ-Z_LT
Pin Assign	1:BST 2:SW 3:GND 4:BIAS 5:FB 6:ILIM 7:SS 8:ENHY 9:EN 10:IN
File List	Model Library MDC_MP4410GQ-Z_LT01.lib
	Model Report MDC_MP4410GQ-Z_LT.pdf(this file)

Verified Simulator Version LTspice

Note

References

The information which was used for modeling is as follow:

[Data Sheet]

- ●Date/Version Rev.1.0 2014-12-18
- ●Product name MP4410GQ-Z
- ●Company name Monolithic Power Systems, Inc.

[Characteristics listed]

- ●Characteristics PWM Control(OUTPUT=3.3V IOUT=100mA)
  PWM Control(OUTPUT=3.3V IOUT=50mA)
  PWM Control(OUTPUT=5.0V IOUT=100mA)
  Load Transient(IOUT=1mA⇒100mA⇒1mA)

Simulation Condition

This table shows the range of evaluated simulation range that was not occurs any convergence problems in this area.

Item	Condition	Unit
Temperature	25	deg C

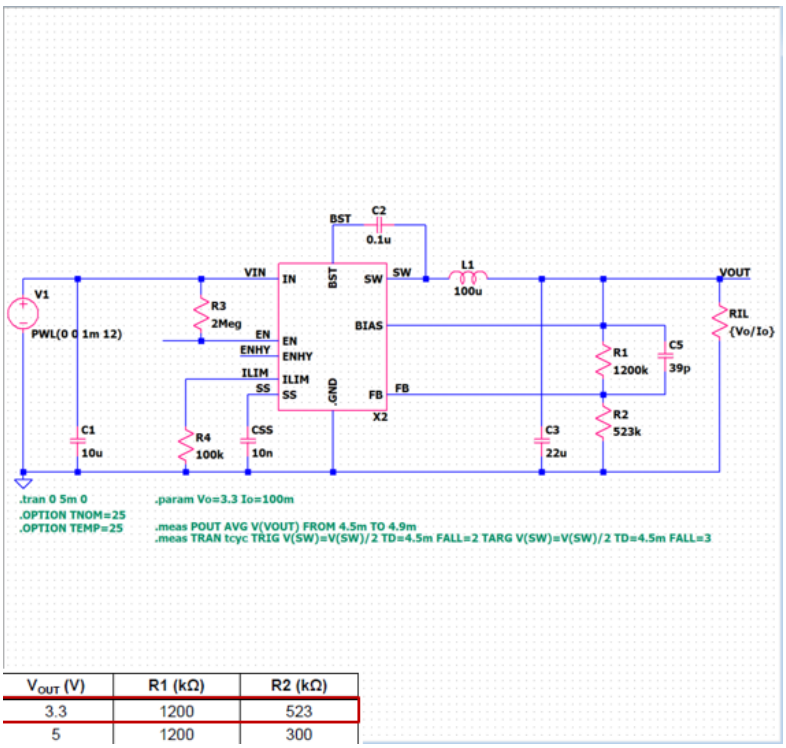
© 2020 MoDeCH inc.

Model Functions Table

Functions	Implemented
PWM Control	○
Enable Control	○
Under-Voltage Lockout	○
Soft-Start	○
Floating Driver and Bootstrap Charging	○
Startup and Shutdown	○
Setting Peak Current	○
Switching Frequency	○

© 2020 MoDeCH inc.

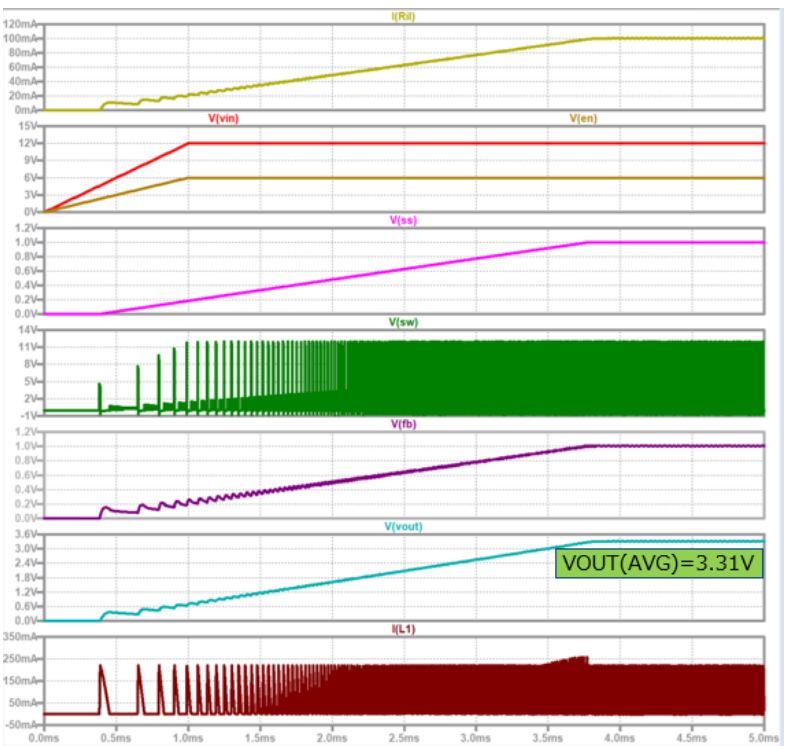
PWM Control(Output=3.3V IOUT=100mA) **Testbench**



V_{OUT} (V)	R1 (kΩ)	R2 (kΩ)
3.3	1200	523
5	1200	300

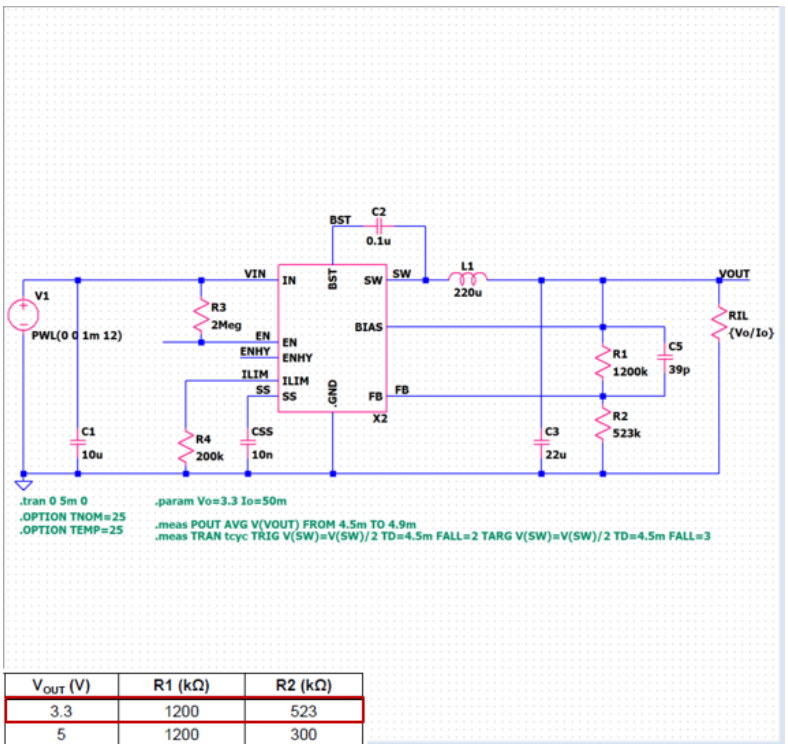
Simulation results are following.
Explanatory notes — : simulated

PWM Control(OUTPUT=3.3V IOUT=100mA)



© 2020 MoDeCH inc.

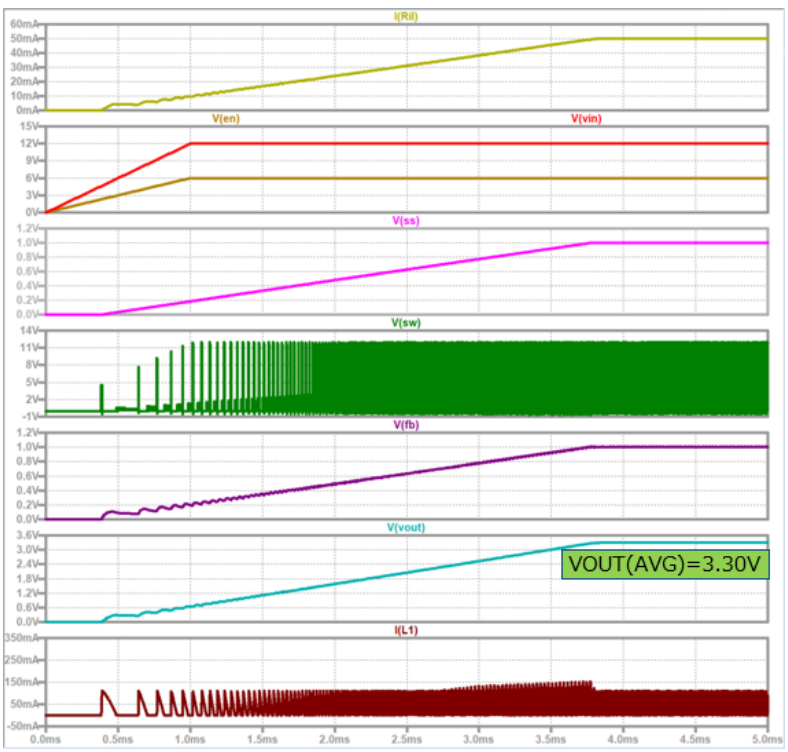
PWM Control(Output=3.3V IOUT=50mA) **Testbench**



V_{OUT} (V)	R1 (kΩ)	R2 (kΩ)
3.3	1200	523
5	1200	300

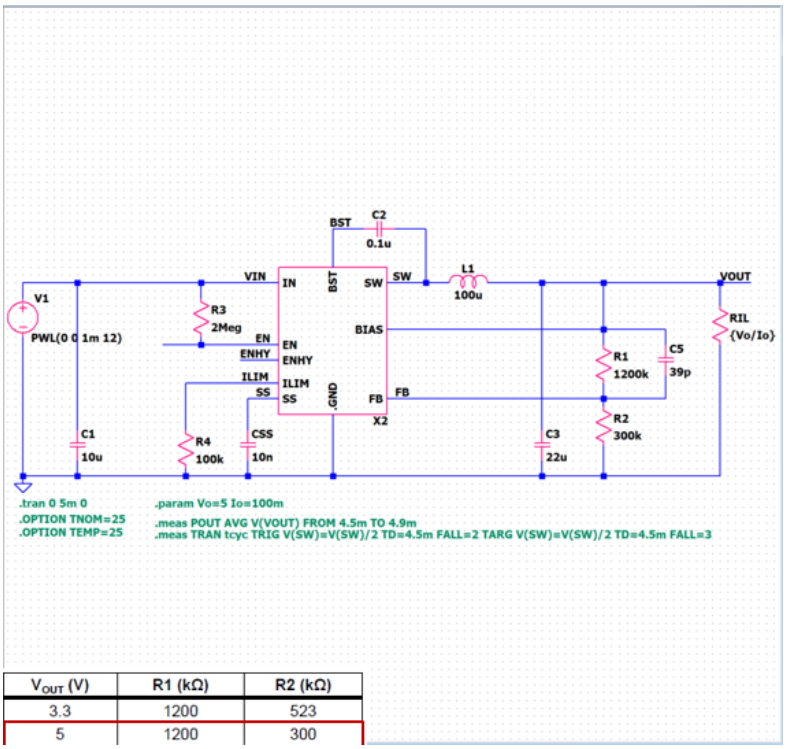
Simulation results are following.
Explanatory notes — : simulated

PWM Control(OUTPUT=3.3V IOUT=50mA)



© 2020 MoDeCH inc.

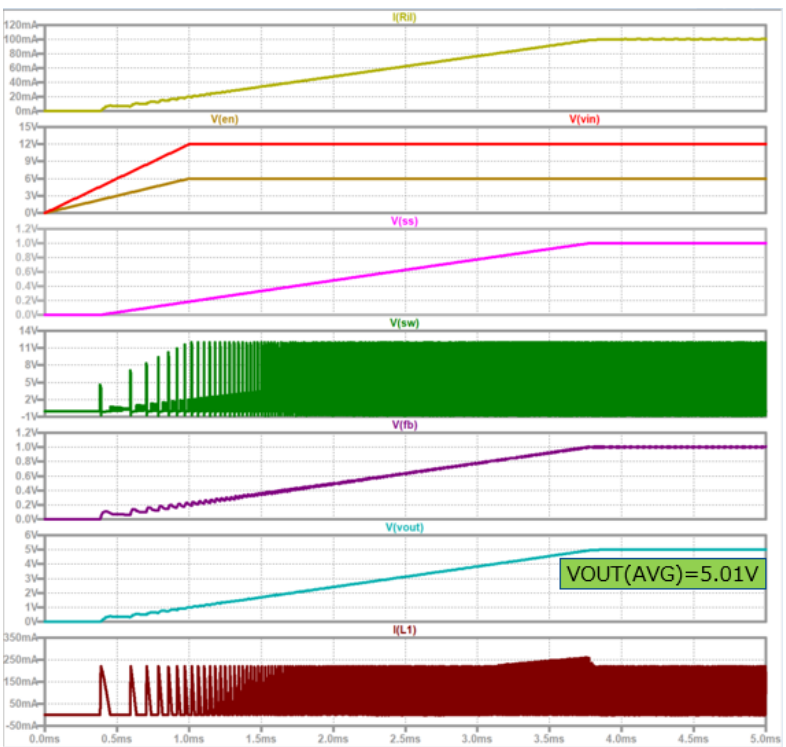
PWM Control(Output=5.0V IOUT=100mA) **Testbench**



V_{OUT} (V)	R1 (kΩ)	R2 (kΩ)
3.3	1200	523
5	1200	300

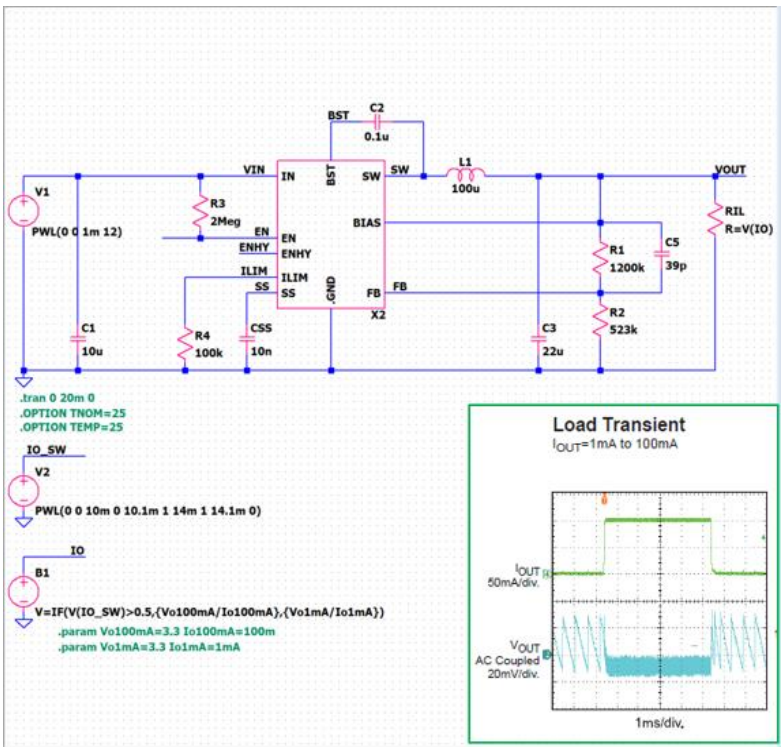
Simulation results are following.
Explanatory notes — : simulated

PWM Control(OUTPUT=5.0V IOUT=100mA)



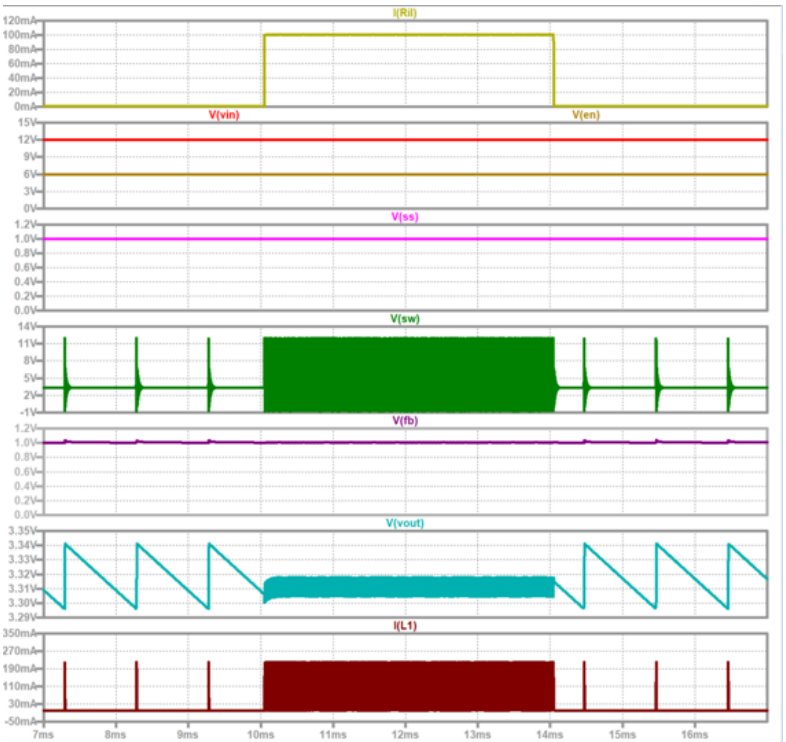
© 2020 MoDeCH inc.

Load Transient(IOUT=1mA⇒100mA⇒1mA) **Testbench**



Simulation results are following.
Explanatory notes — : simulated

Load Transient(IOUT=1mA⇒100mA⇒1mA)



© 2020 MoDeCH inc.

DISCLAIMER

1. This SPICE (Simulation Program with Integrated Circuit Emphasis) model and its content (the “Contents”) are copyright of MoDeCH Inc. All rights reserved. Any redistribution or reproduction of any or all part of the Contents in any form is prohibited without express written permission made by MoDeCH Inc.
2. MoDeCH Inc. as licensor (the” Licensor”) hereby grants to you, as licensee (the “Licensee”), a non-exclusive, non-transferable license to use the Contents as long as you abide by the terms and conditions of this DISCLAIMER.
3. The Licensee is not authorized to sell, loan, rent and redistribute or license the Contents in whole or in part, or in modified form, to anyone.
4. The Licensor shall in no way be liable to the Licensee or any third party for any loss or damage (including ,but not limited to, lost profits, or other incidental, consequential, or punitive damages), however caused (including through negligence) which may be directly or indirectly suffered from, arising out of, or in connection with, any use of the Contents .
5. Notwithstanding anything contained in this DISCLAIMER, in no event shall Licensor be liable for any claims, damages or loss which may arise from the modification, combination, operation or use of the Contents with the Licensee’s computer programs.
6. The Licensor does not warrant that the Contents will function in any environment.
7. The Contents may be changed or updated without notice. MoDeCH Inc. may also make improvements and/or changes in the products, pricing and/or the programs related to the Contents at any time without notice.

Modeling Design Technology

MoDeCH Inc.

Head Office
Location: 5-15 Yokoyama-cho, Hachioji-Shi, Tokyo 192-0081, Japan
Tel:+81-42-656-3360
E-Mail:model-on-support@modech.co.jp
URL:http://www.modech.com/en/

© 2020 MoDeCH inc.