

LTspice Model

DCDC converter

TEXAS INSTRUMENTS

LM3102MHX

Model Information

Model A macro model
Call Name MDC_LM3102MHX_LT
Pin Assign 1:NC 2:SW 3:SW 4:VIN 5:VIN 6:BST 7:AGND 8:SS 9:NC 10:NC 11:GND
 12:NC 13:FB 14:EN 15:RON 16:VCC 17:PGND 18:PGND 19:NC 20:NC 21:EP
File List Model Library MDC_LM3102MHX_LT01.lib
 Model Report MDC_LM3102MHX_LT.pdf(this file)

Verified Simulator Version LTspice

Note

References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version Revision H
- Product name LM3102MHX
- Company name TEXAS INSTRUMENTS

[Characteristics listed]

- Characteristics COT Control(OUTPUT=3.3V IOOUT=2.5A)
 COT Control(OUTPUT=3.3V IOOUT=0.1A)
 COT Control(OUTPUT=0.8V IOOUT=2.5A)
 COT Control(OUTPUT=0.8V IOOUT=0.1A)
 Continuous Mode Operation
 Discontinuous Mode Operation
 Valley Current Limit

Simulation Condition

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

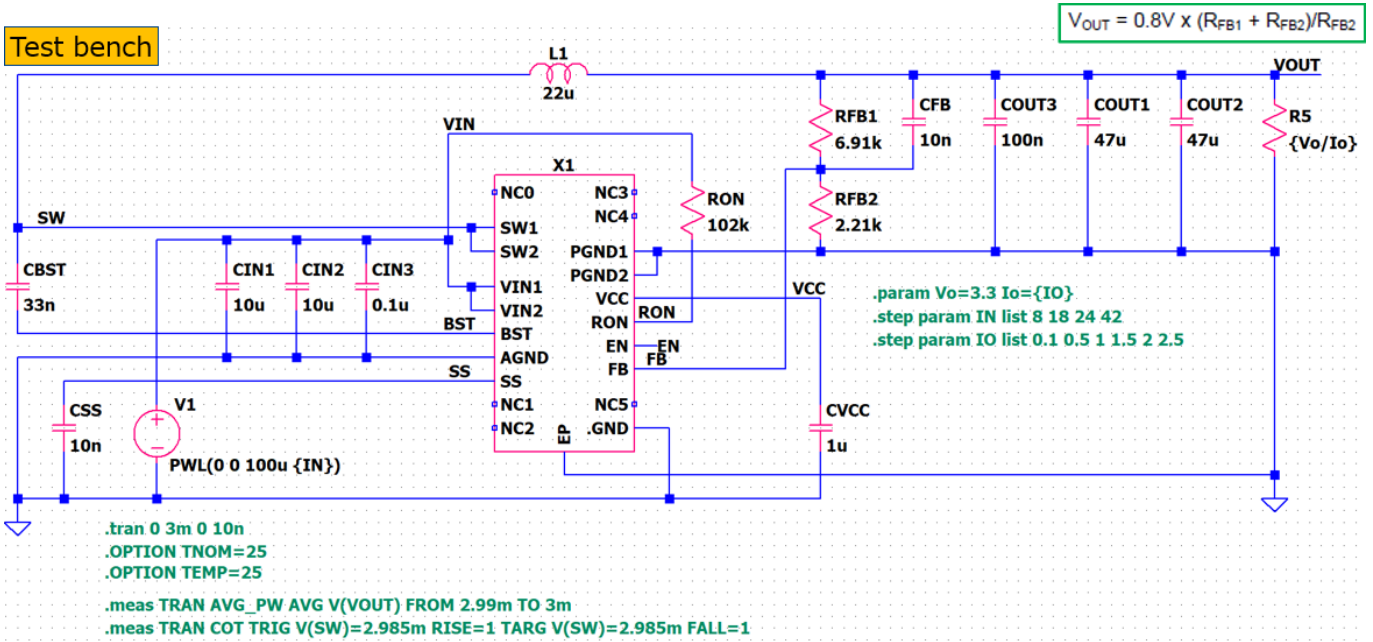
Item	Condition	Unit
Temperature	25	deg C

Model Functions Table

Functions	Implemented
COT Control	○
Soft-Start	○
Power Up	○
Enable Control	○
Under-Voltage Lockout(VCC)	○
Under-Voltage Lockout(Gate Drive)	○
CCM & DCM	○
Valley Current Limit	○
Overvoltage Protection	○

COT Control(Output=3.3V IOU=2.5A) Testbench

Test bench



Simulation results are following.
Explanatory notes — : simulated

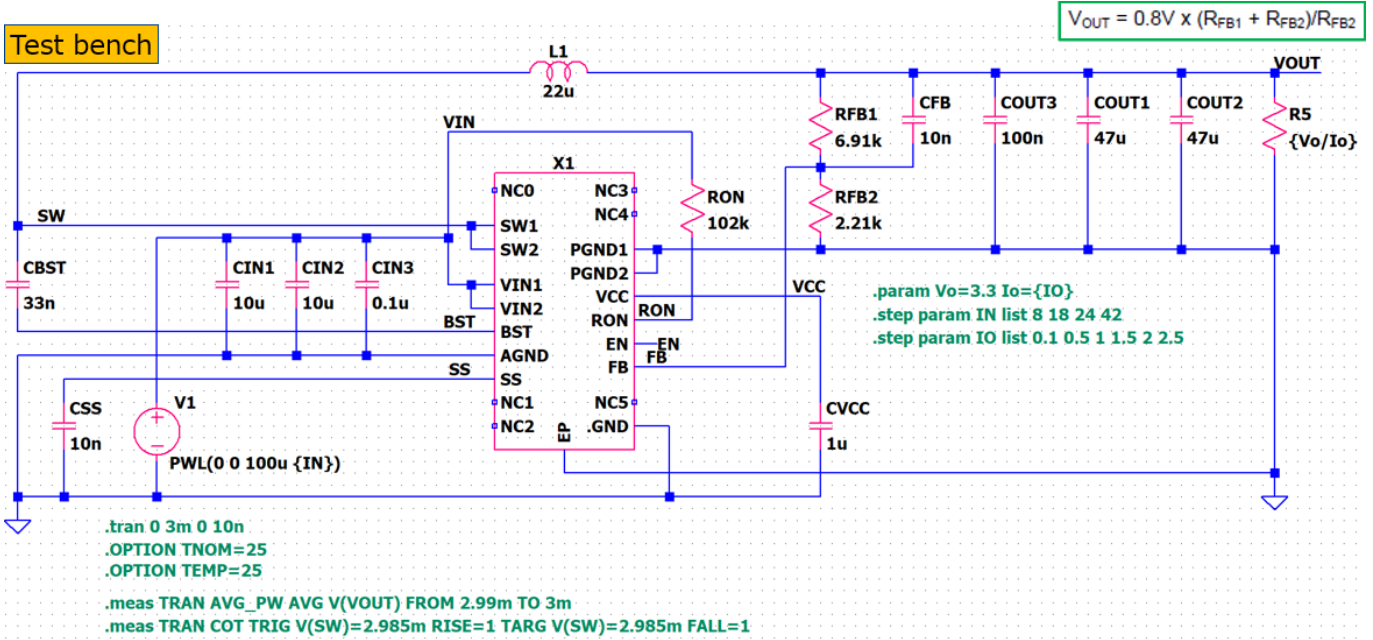
COT Control(OUTPUT=3.3V IOU=2.5A)

Sim result(VIN=18V)



COT Control(Output=3.3V IOU=0.1A) Testbench

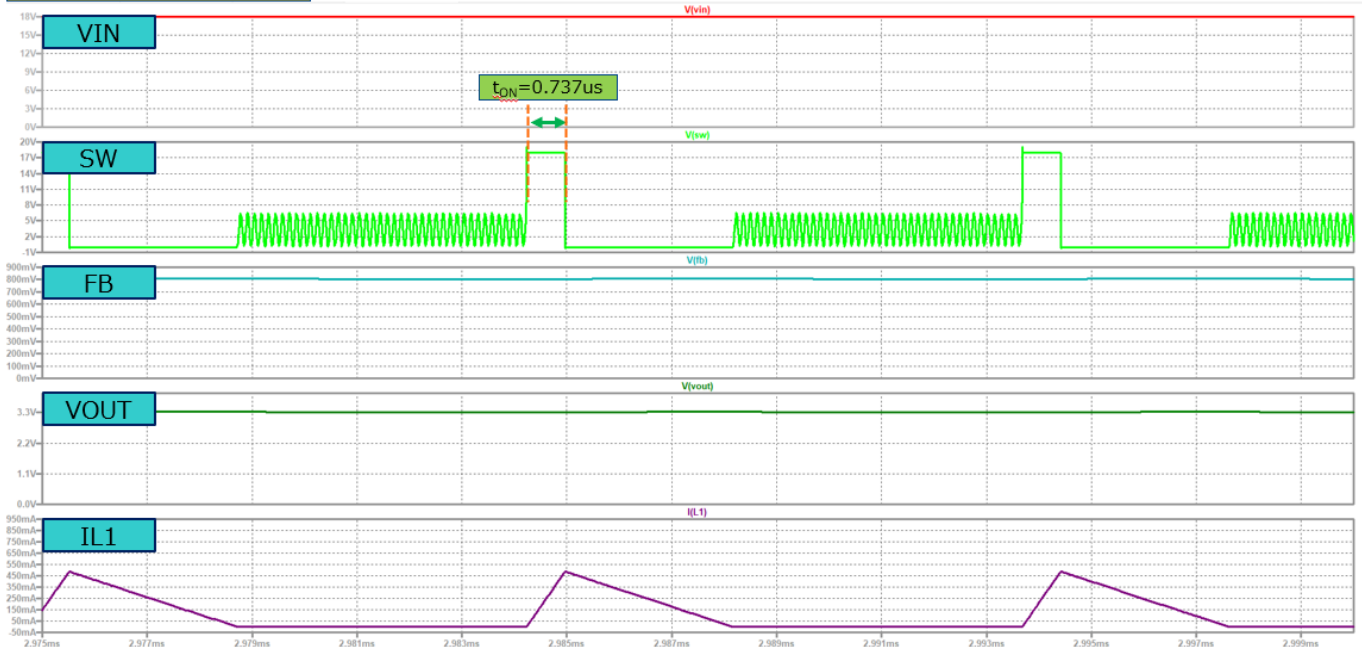
Test bench



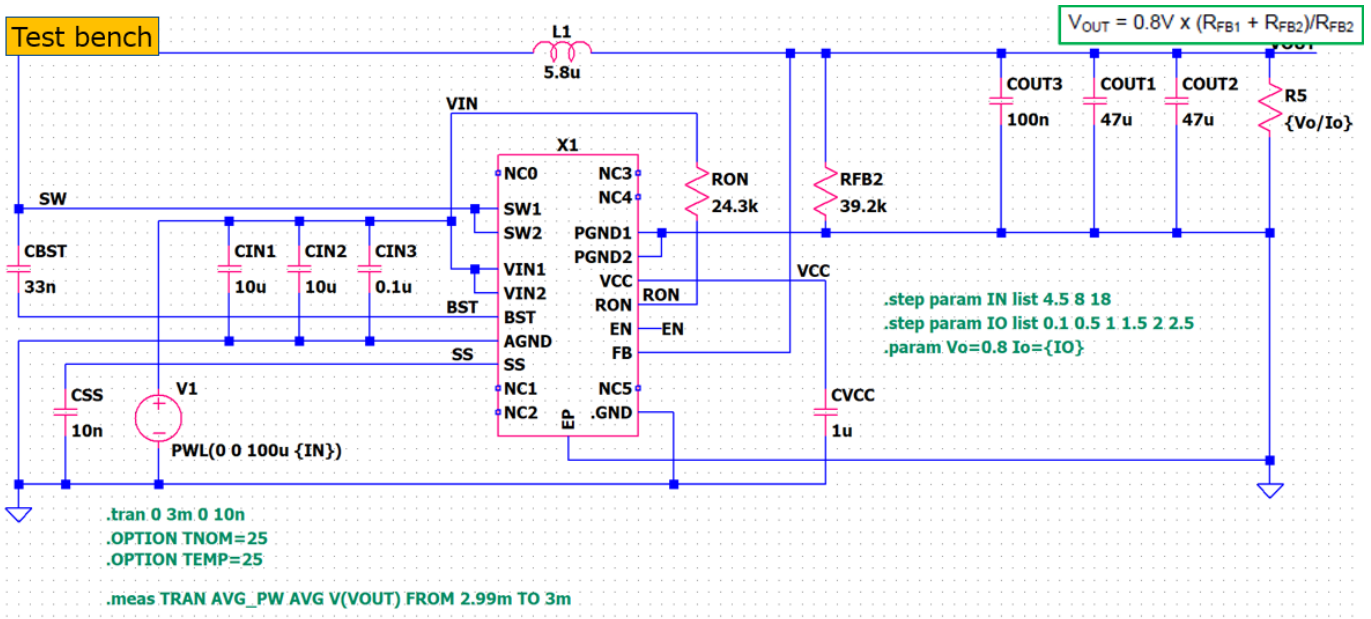
Simulation results are following.
 Explanatory notes — : simulated

COT Control(OUTPUT=3.3V IOU=0.1A)

Sim result(VIN=18V)



COT Control(Output=0.8V IOUT=2.5A) Testbench



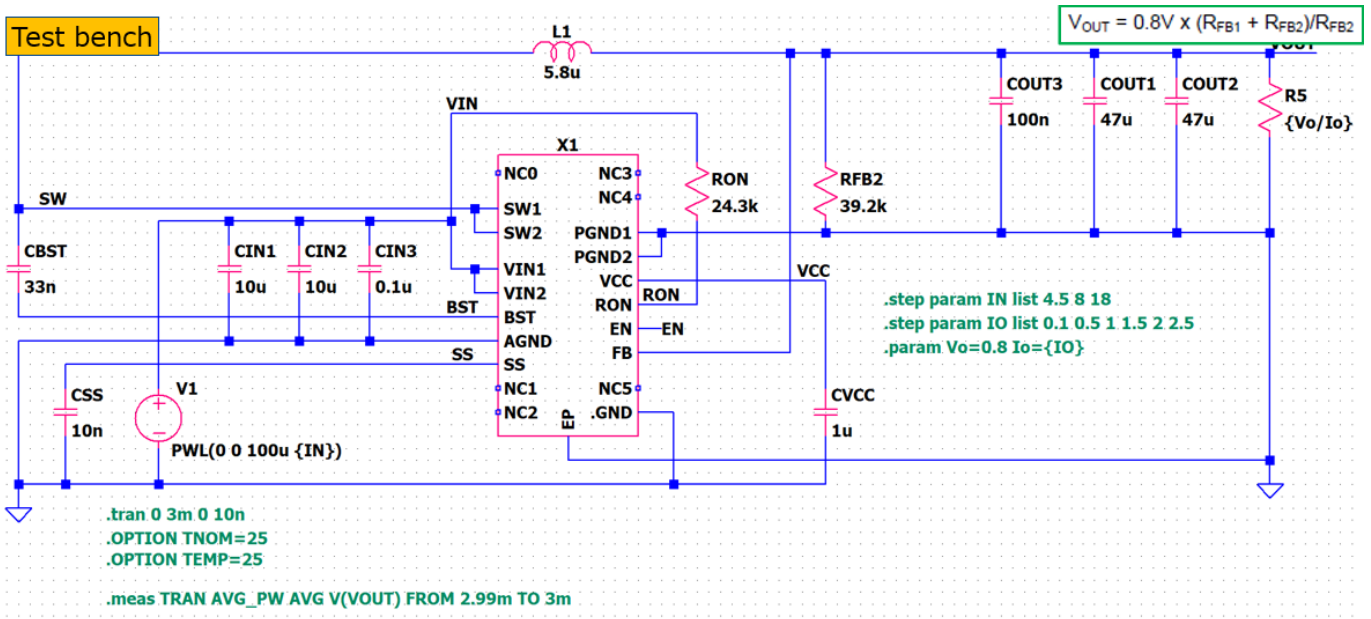
Simulation results are following.
 Explanatory notes — : simulated

COT Control(OUTPUT=0.8V IOUT=2.5A)

Sim result(VIN=18V)



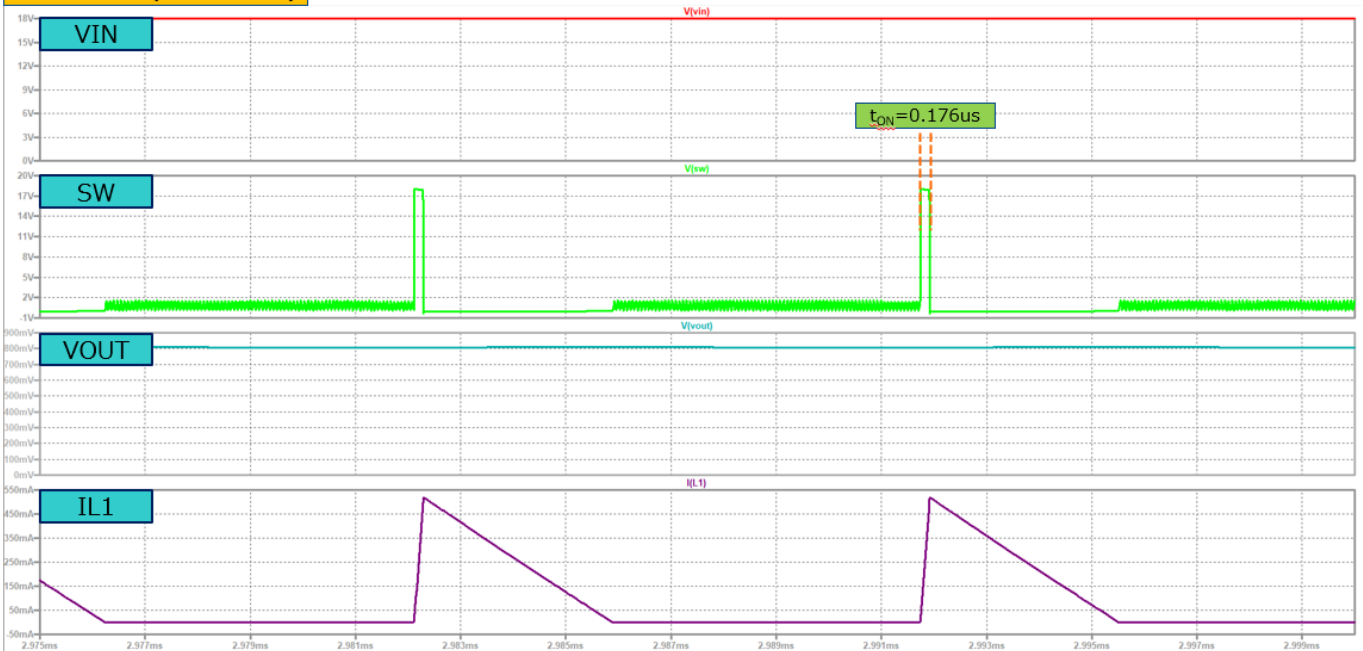
COT Control(Output=0.8V IOUT=0.1A) Testbench



Simulation results are following.
 Explanatory notes — : simulated

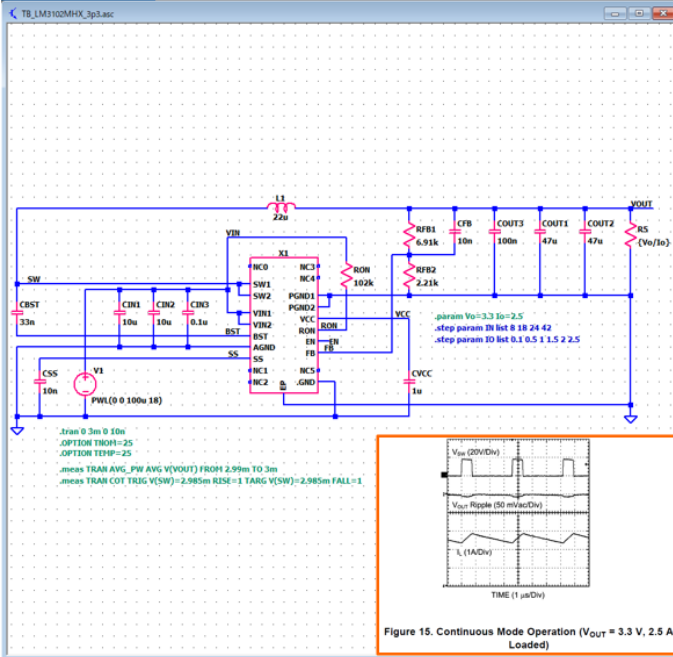
COT Control(OUTPUT=0.8V IOUT=0.1A)

Sim result(VIN=18V)

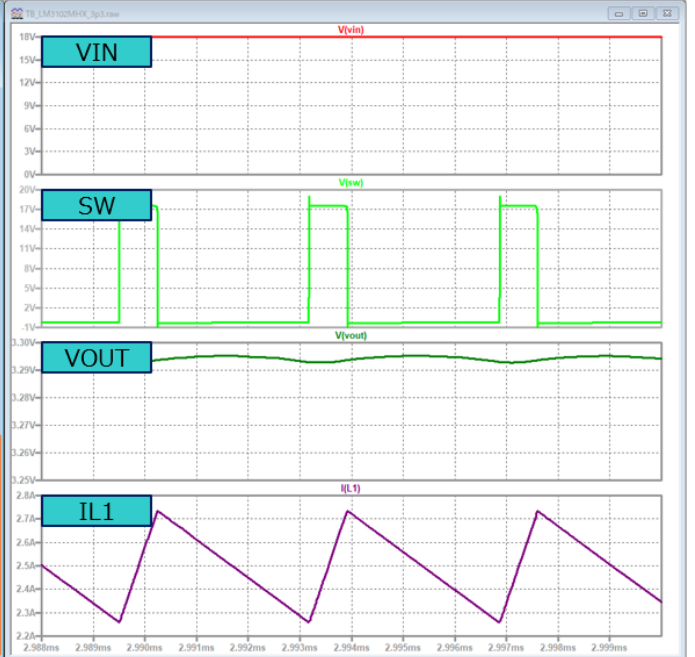


Continuous Mode Operation(Output=3.3V IOUT=2.5A)
 Simulation results are following.
 Explanatory notes — : simulated

Test bench

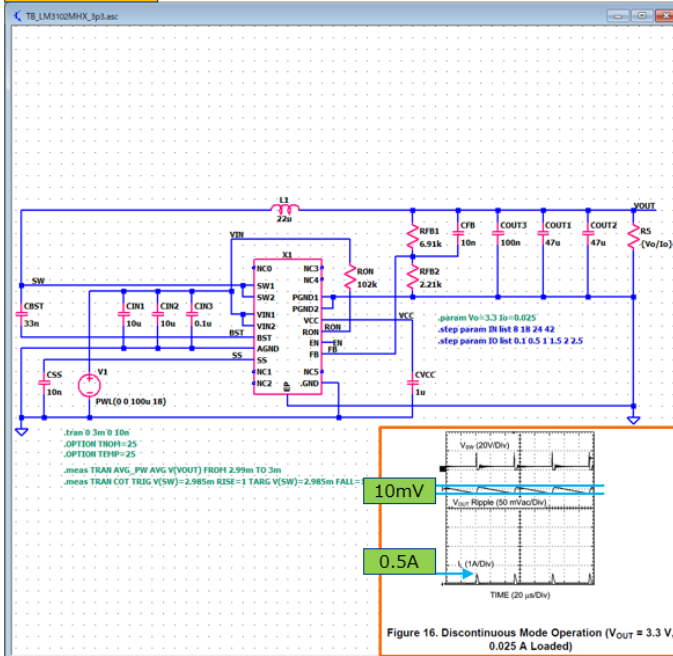


Sim result

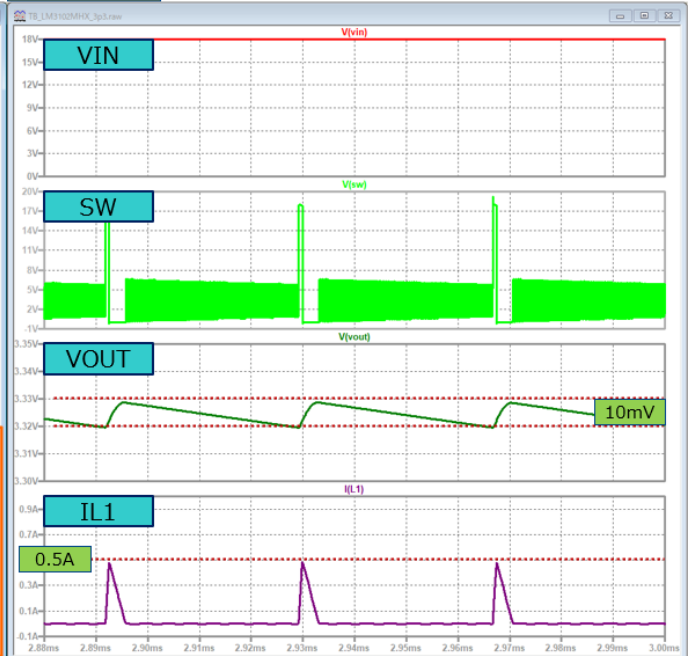


Discontinuous Mode Operation(Output=3.3V IOUT=0.025A)
 Simulation results are following.
 Explanatory notes — : simulated

Test bench



Sim result

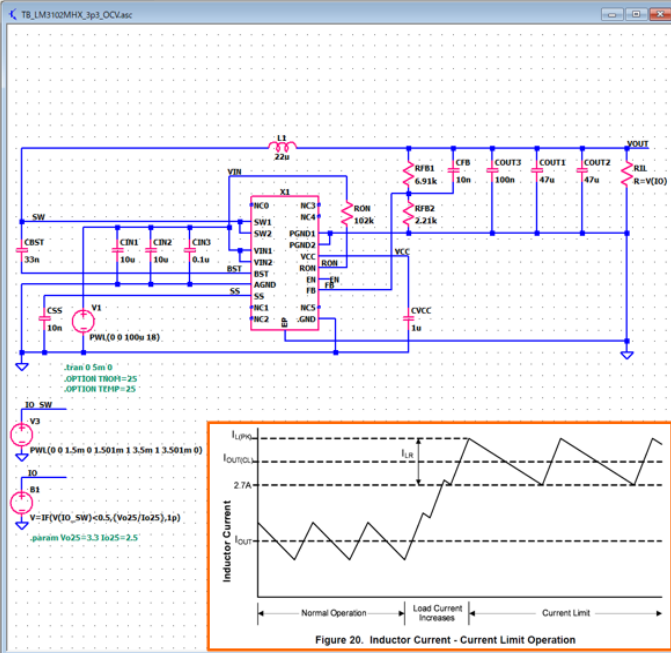


Valley Current Limit(Output=3.3V IO_{UT}=2.5A)

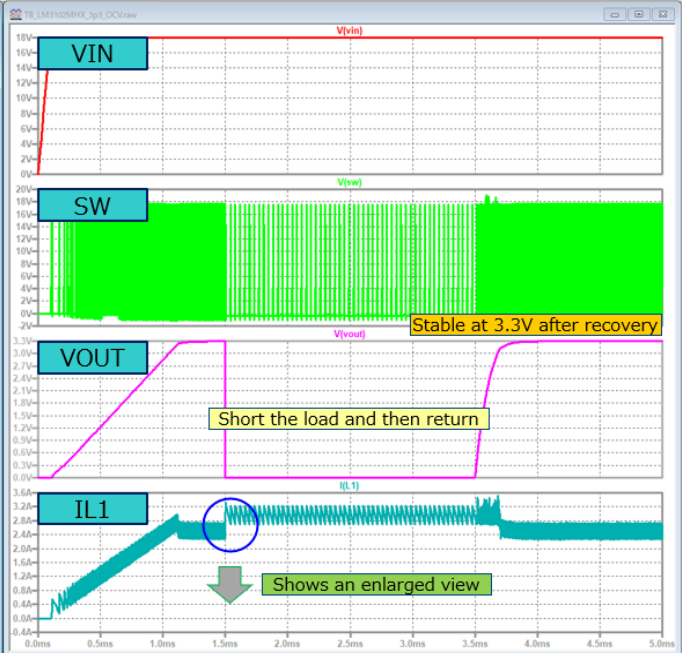
Simulation results are following.

Explanatory notes — : simulated

Test bench



Sim result

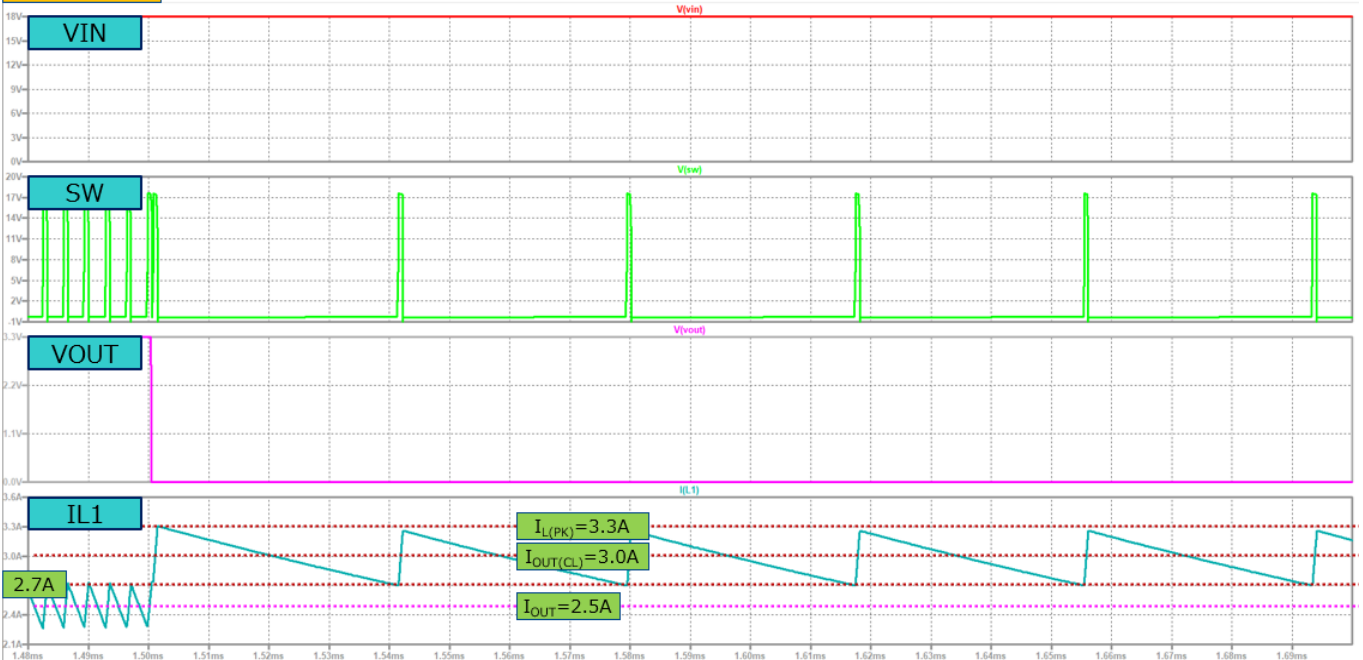


Valley Current Limit(Output=3.3V IO_{UT}=2.5A)

Simulation results are following.

Explanatory notes — : simulated

Sim result



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