

LTspice Model

Inductor Built-in Step-Down DC/DC Converters

Torex Semiconductor Ltd.

XCL214B103

Model Information

Model A macro model
Call Name MDC_XCL214B103_LT
Pin Assign 1:Vin 2:NC 3:Lx 4:Vout 5:AGND 6:CE 7:PGND 8:L1 9:L2
File List Model Library MDC_XCL214B103DR_LT02.lib
 Model Report MDC_XCL214B103DR_LT.pdf (this file)

Verified Simulator Version LTspice XVII
Note

References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version ETR2801-015
- Product name XCL214B103DR
- Company name TOREX

[Characteristics listed]

- Characteristics PWM / PFM automatic switching control
- Current Limit
- Short Protection(Latched)
- UVLO Protection
- Soft Start
- CL Highspeed Discharge
- CE Function

Simulation Condition

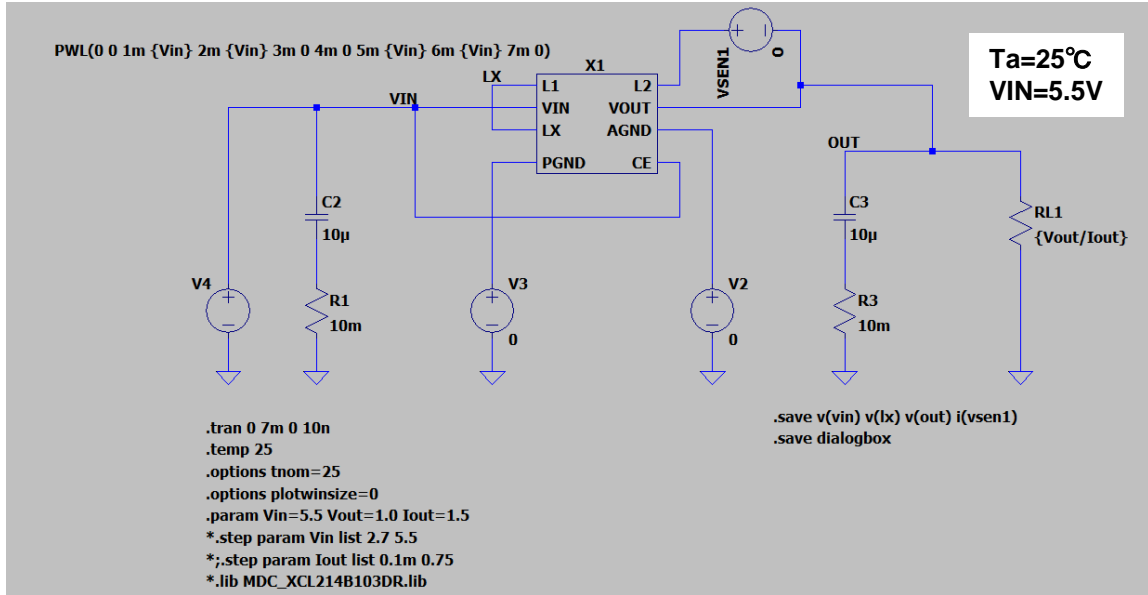
This table shows the range of evaluated simulation range that was not occurs any convergence problems in this area.

Item	Condition	Unit
Temperature	25	deg C

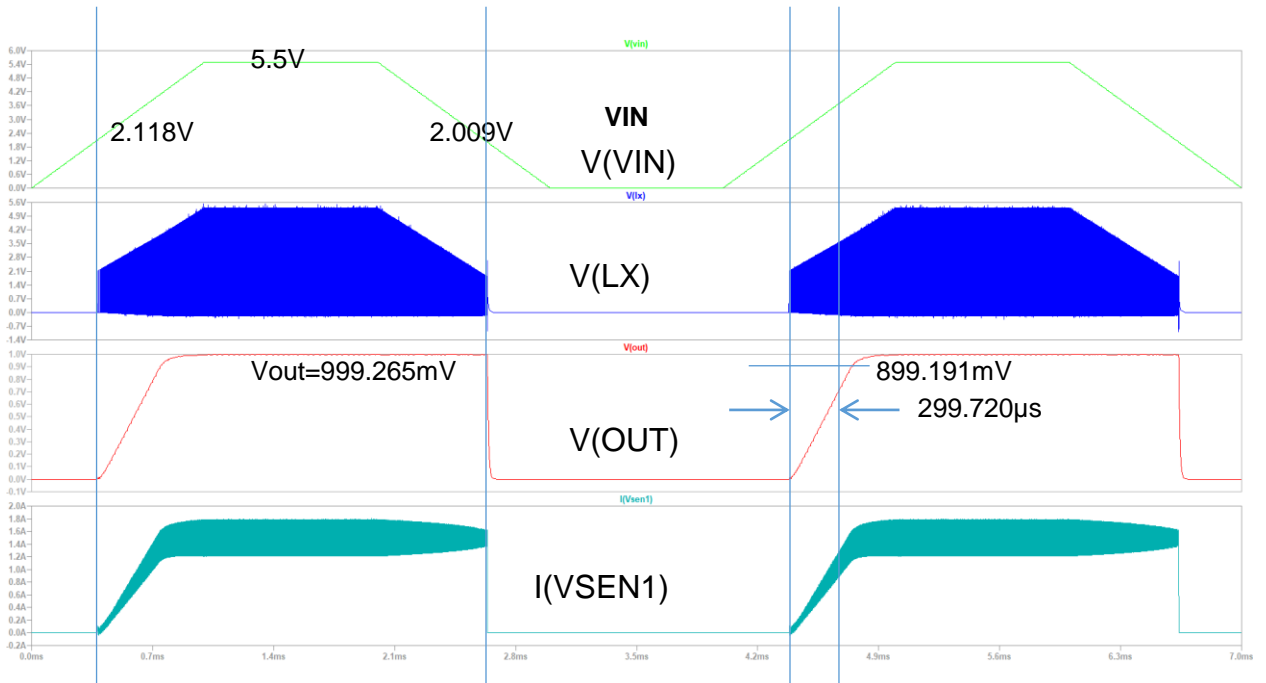
Model Functions Table

Functions	Implemented
UVLO Protection	○
CE	○
PWM / PFM automatic switching control	○
Soft Start	○
Short Protection(Latched)	○
CL Highspeed Discharge	○
Current Limit	○

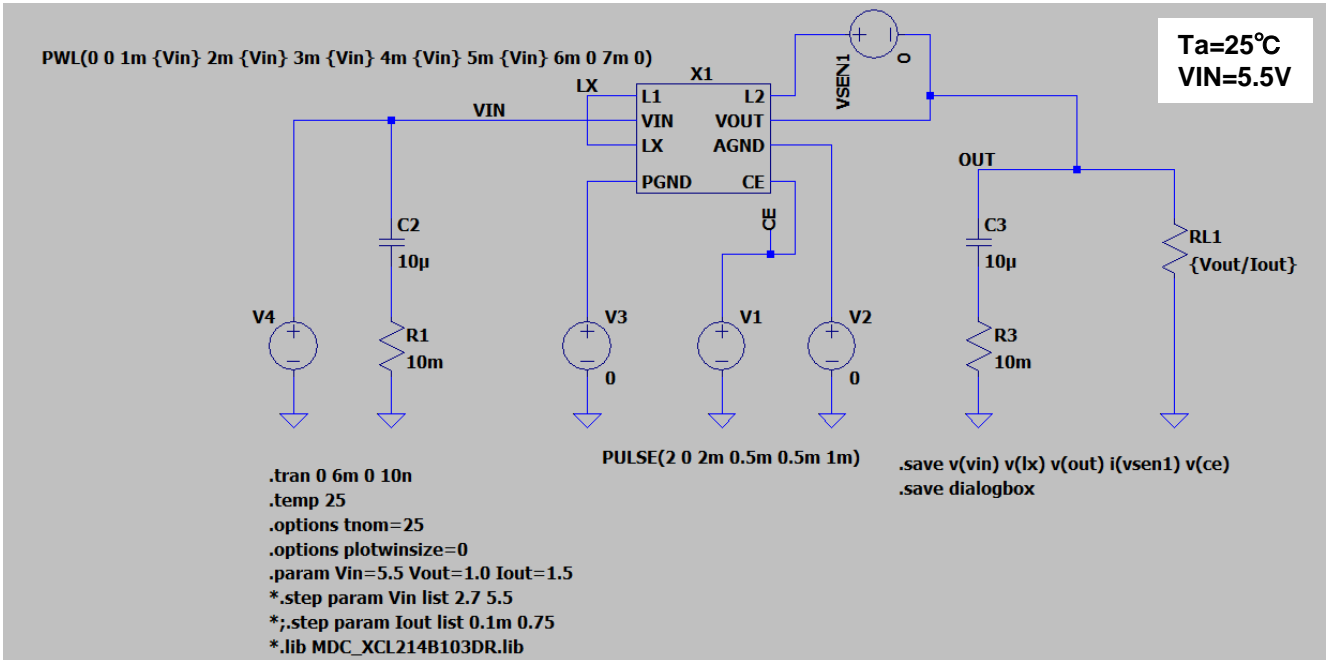
UVLO Protection Soft start



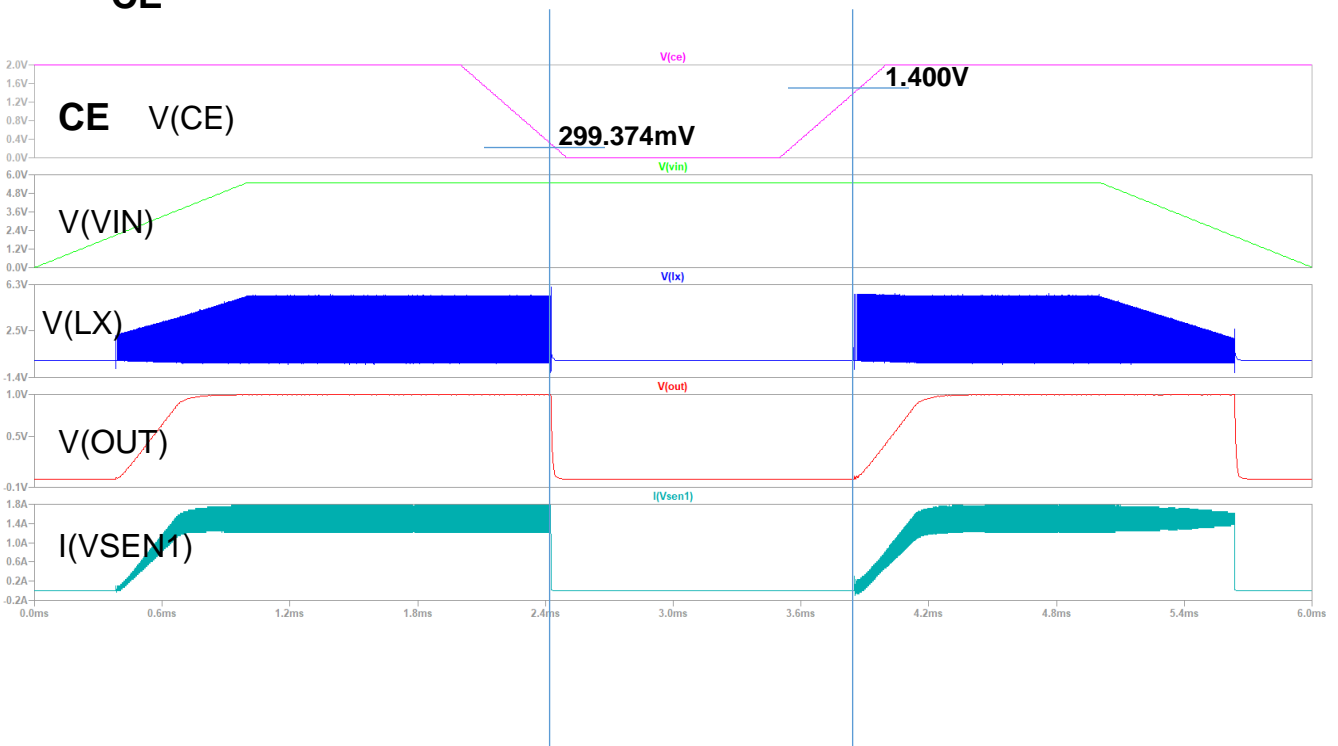
UVLO Protection Soft start



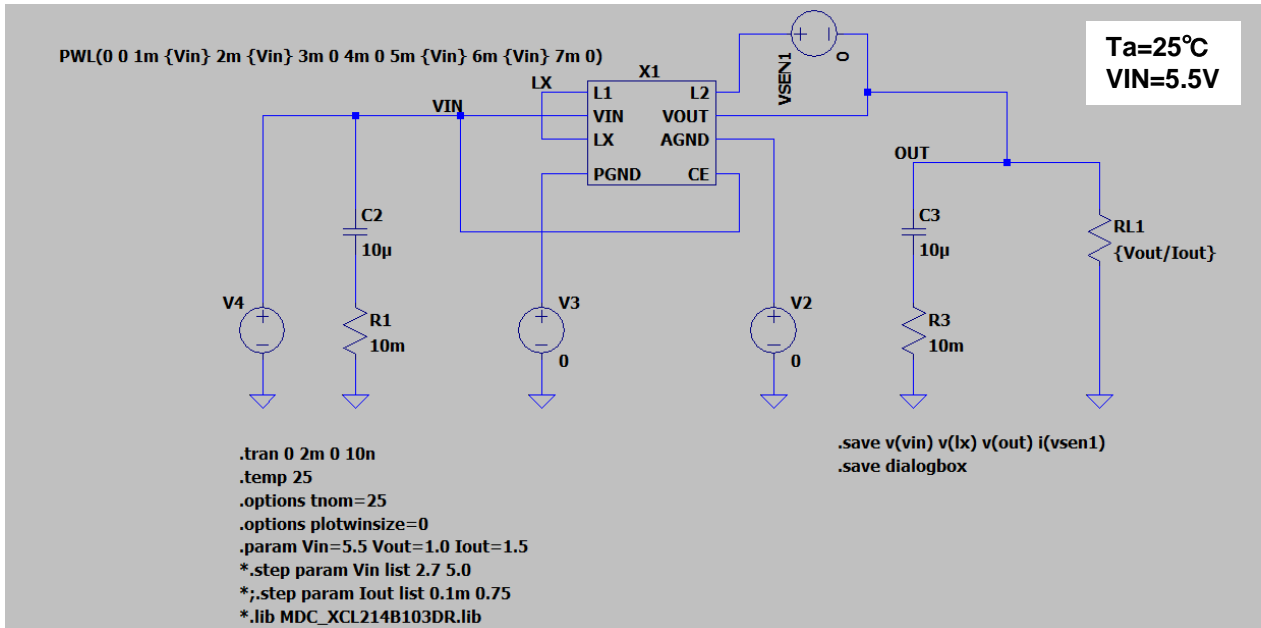
CE



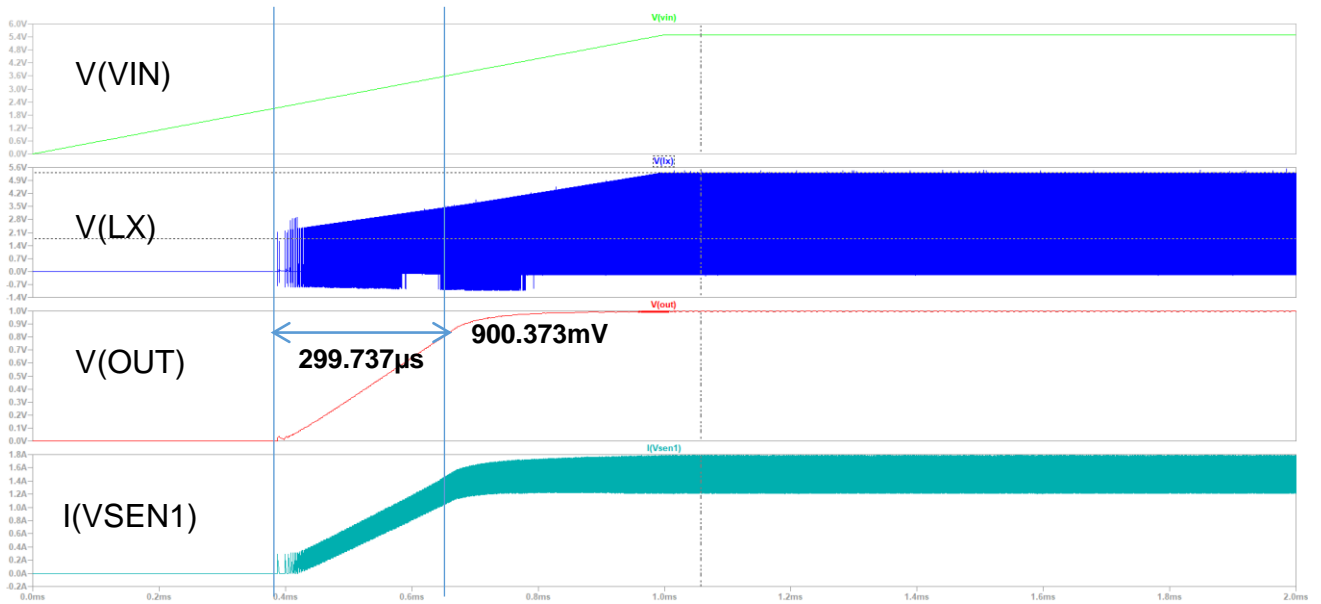
CE



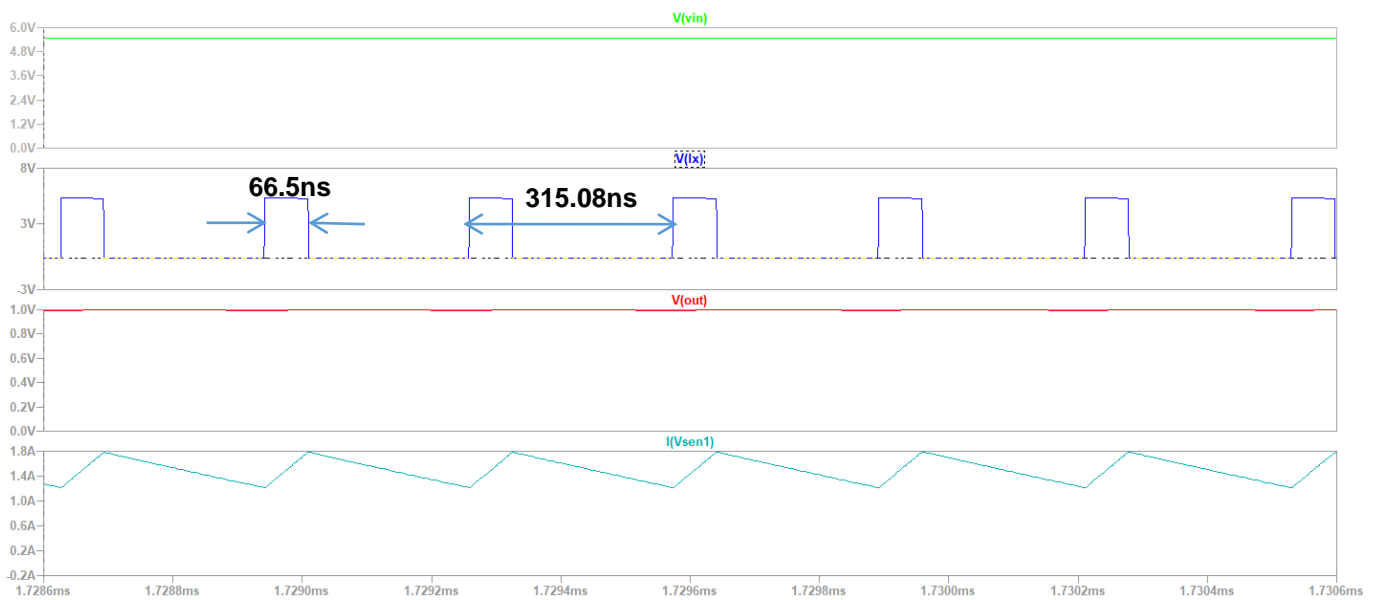
PWM



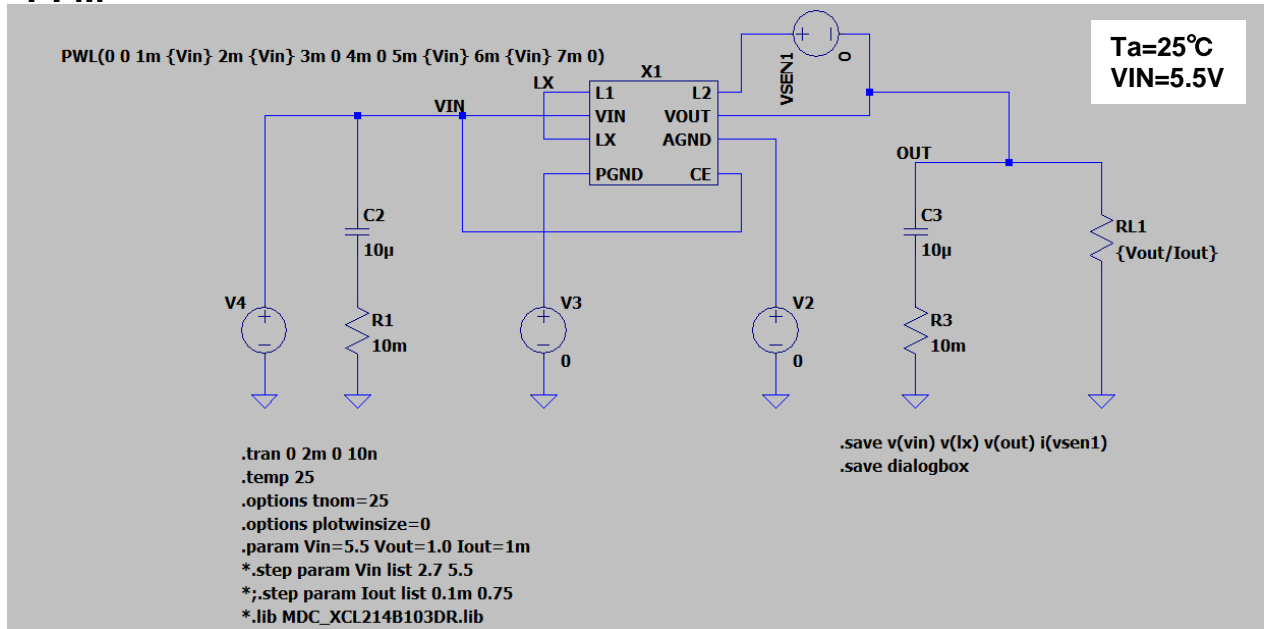
Soft Start & PWM Switching (I_{out} = 1.5A)



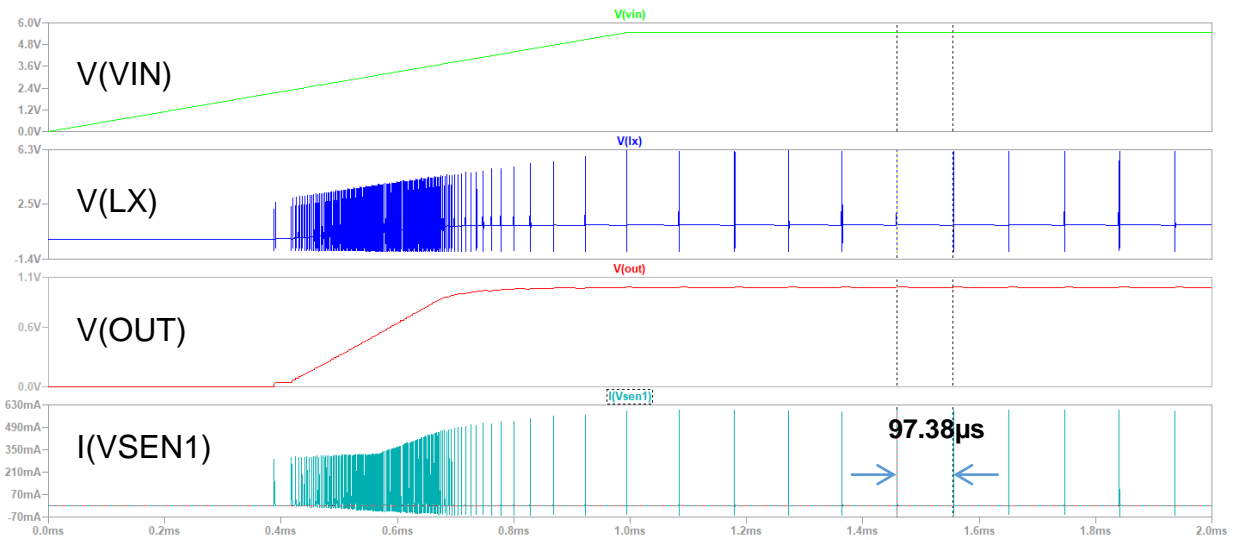
PWM Switching (I_{out} = 1.5A)



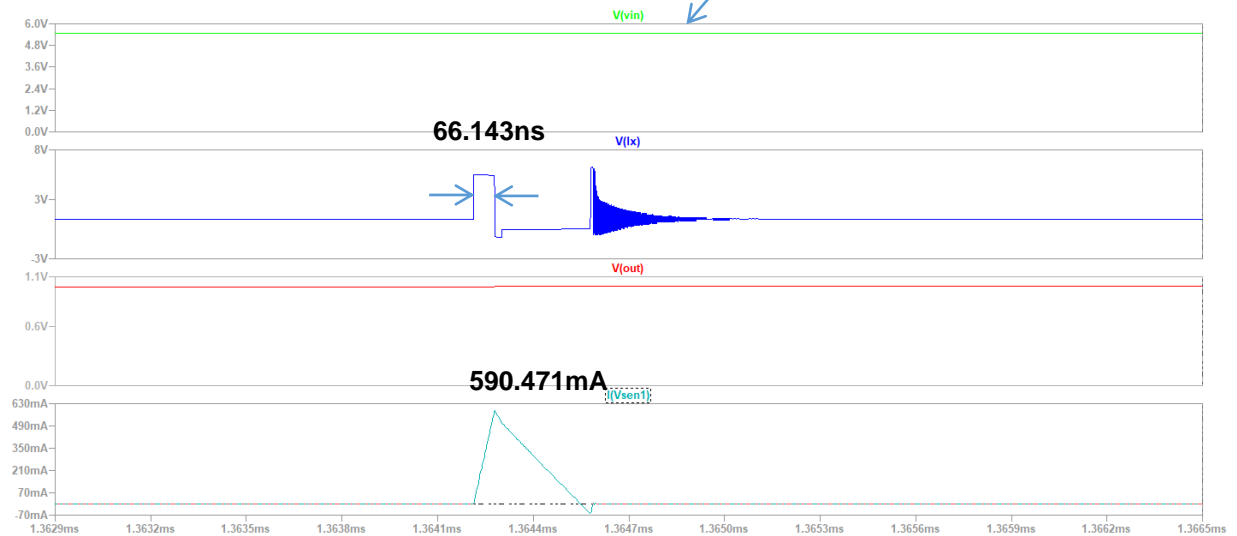
PFM



Soft Start & PFM Switching (I_{out} = 1mA)

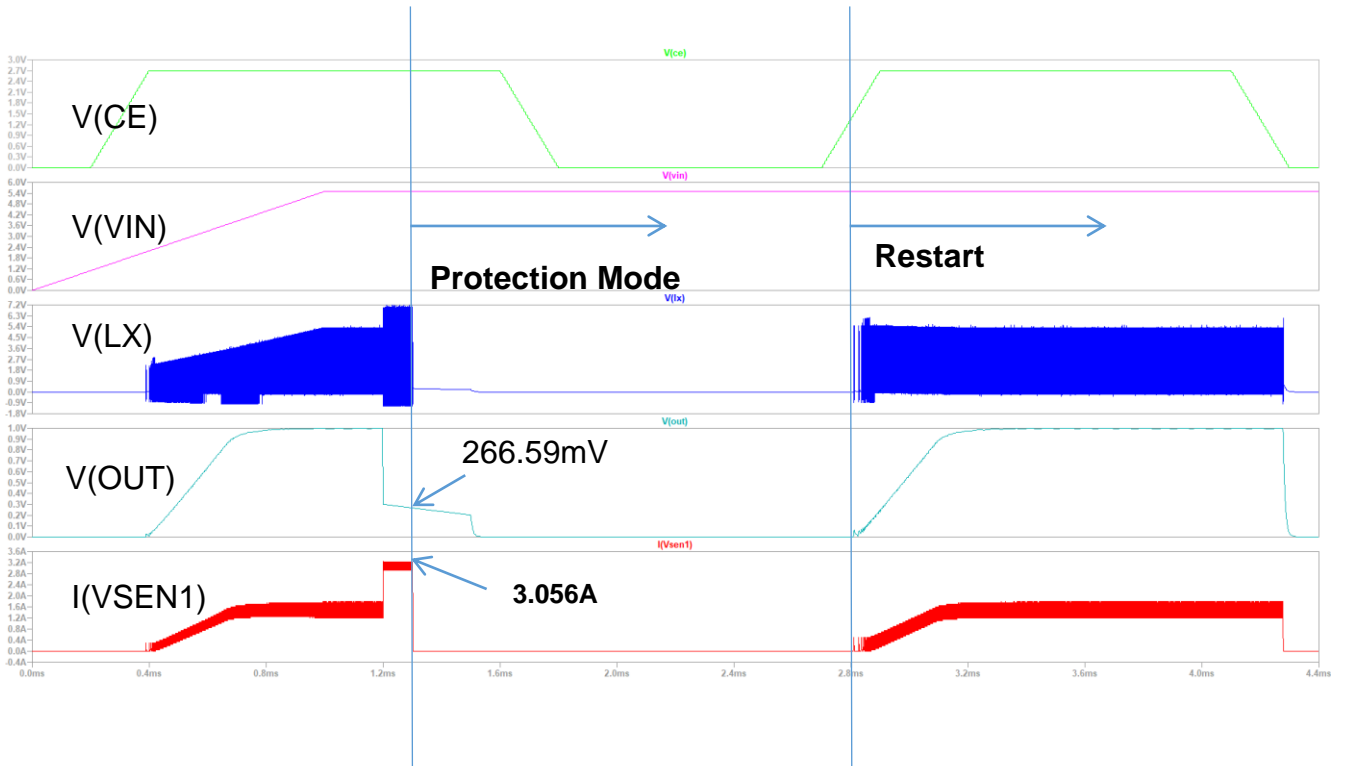
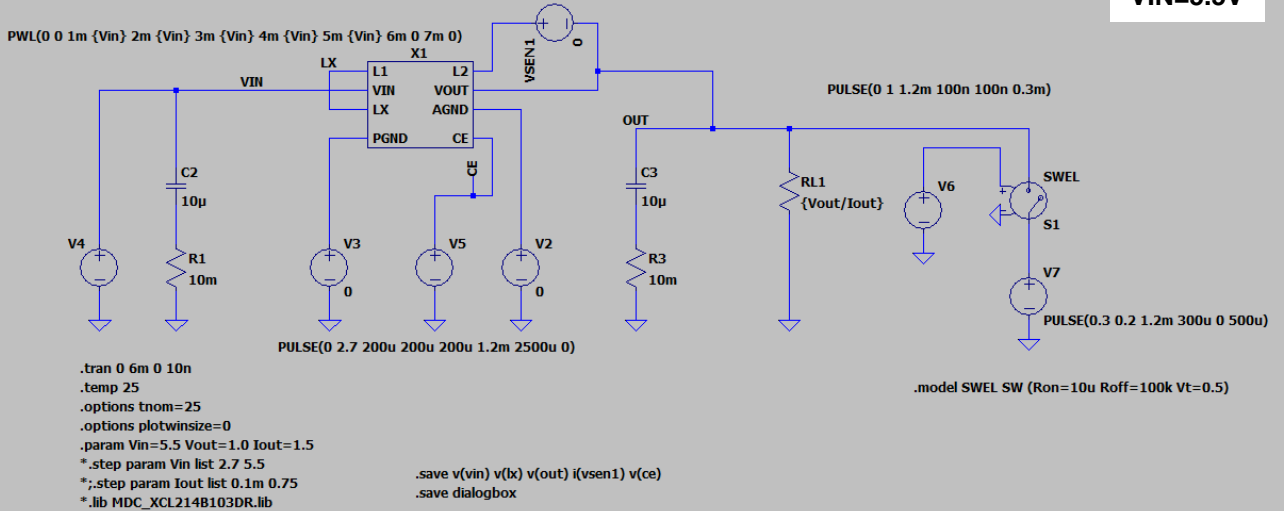


PFM Switching (I_{out} = 1mA)

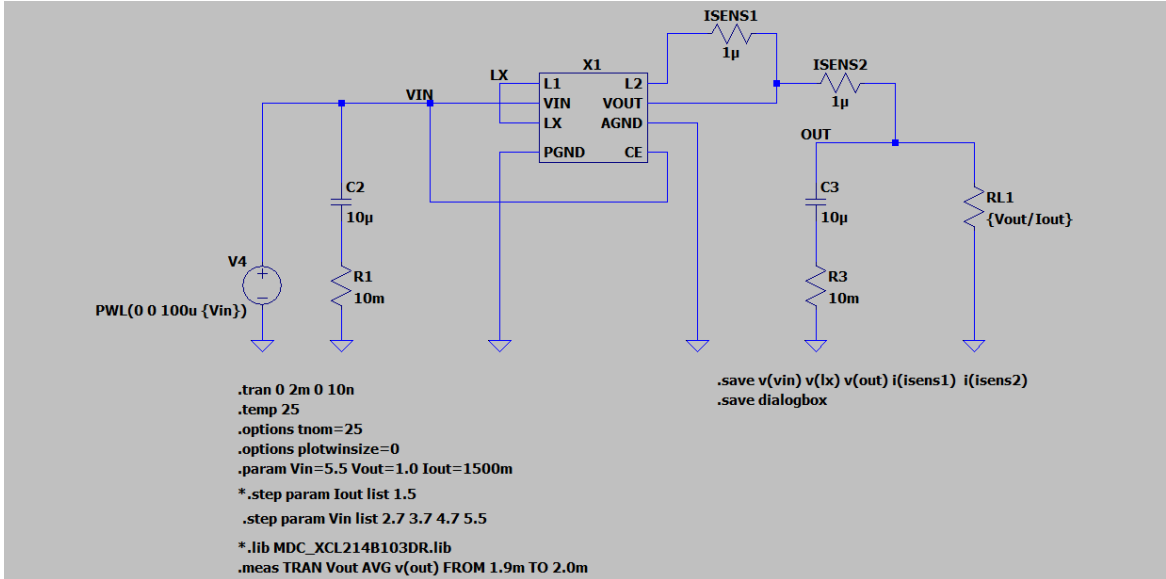


Short Protection(Latched)

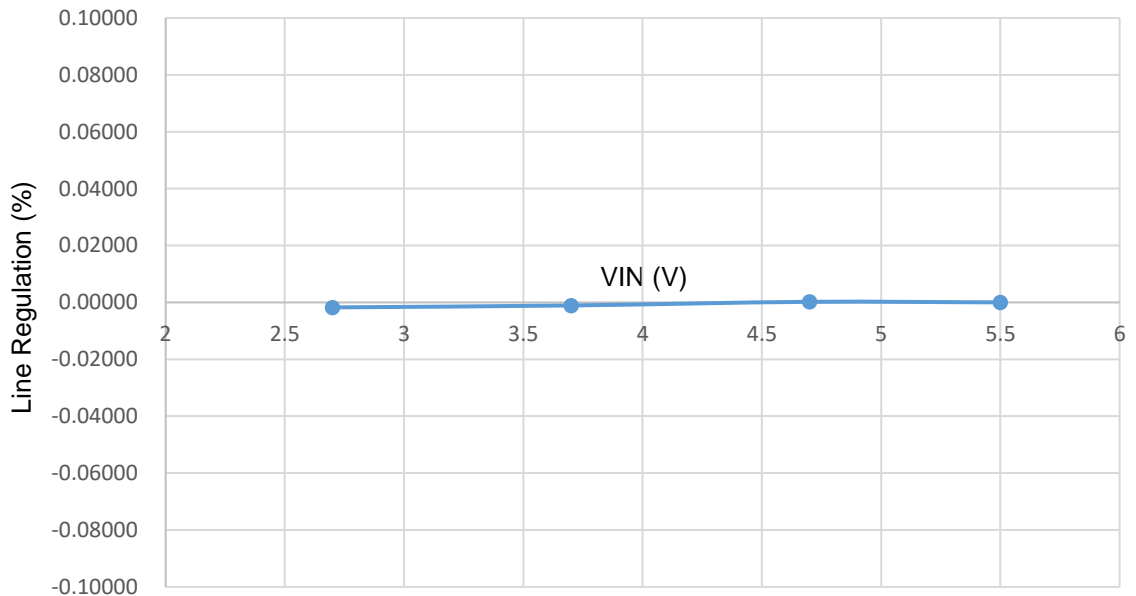
Ta=25°C
VIN=5.5V



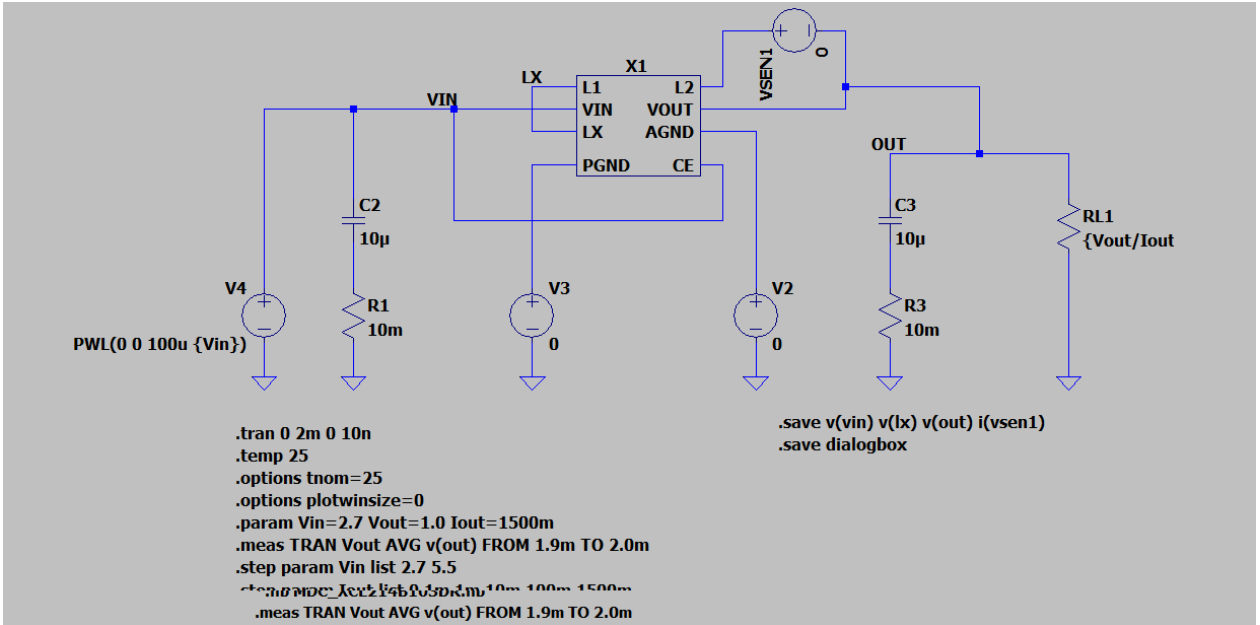
Line Regulation



Line Regulation (IRL1=1.5A) Ta=25°C

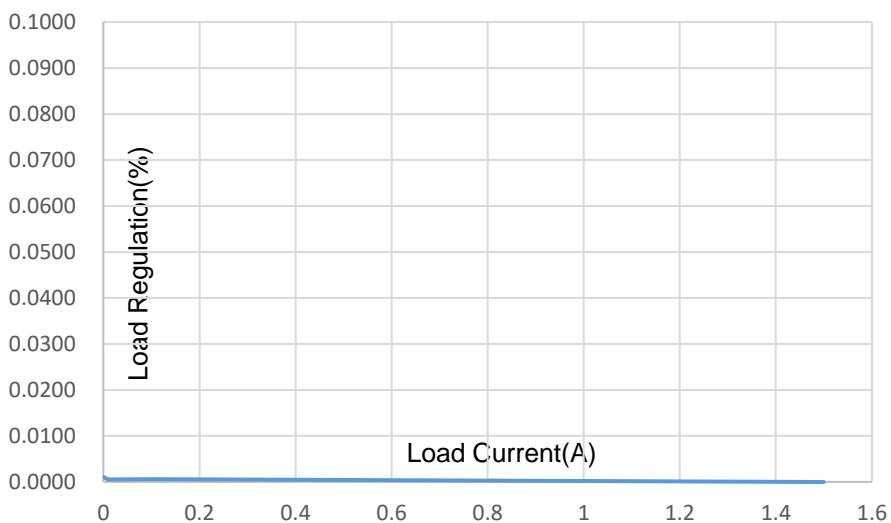


Load Regulation

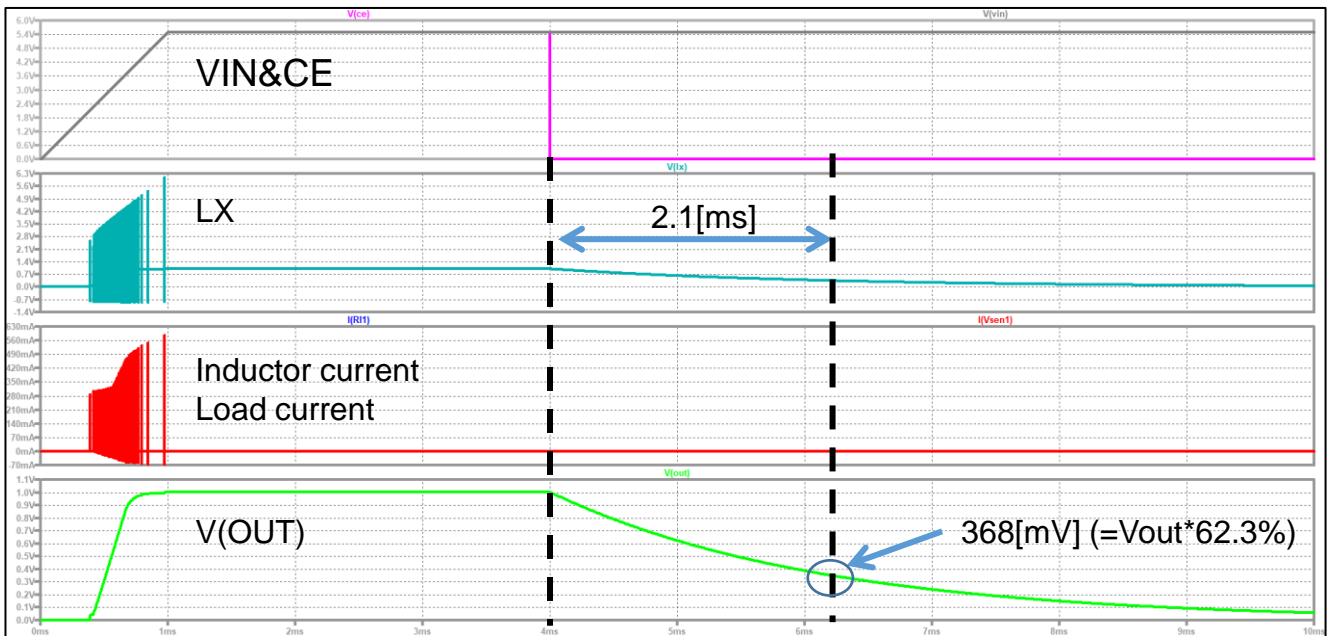
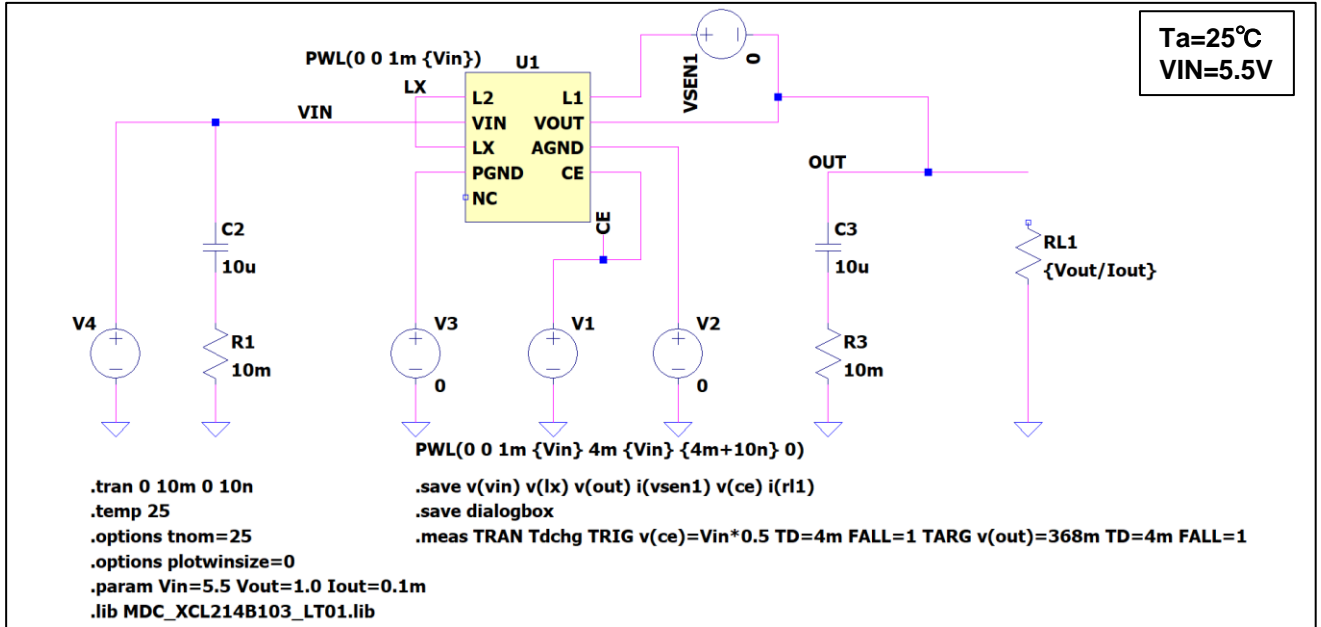


Load Regulation

Load Regulation (Vin=5.5V) Ta=25°C

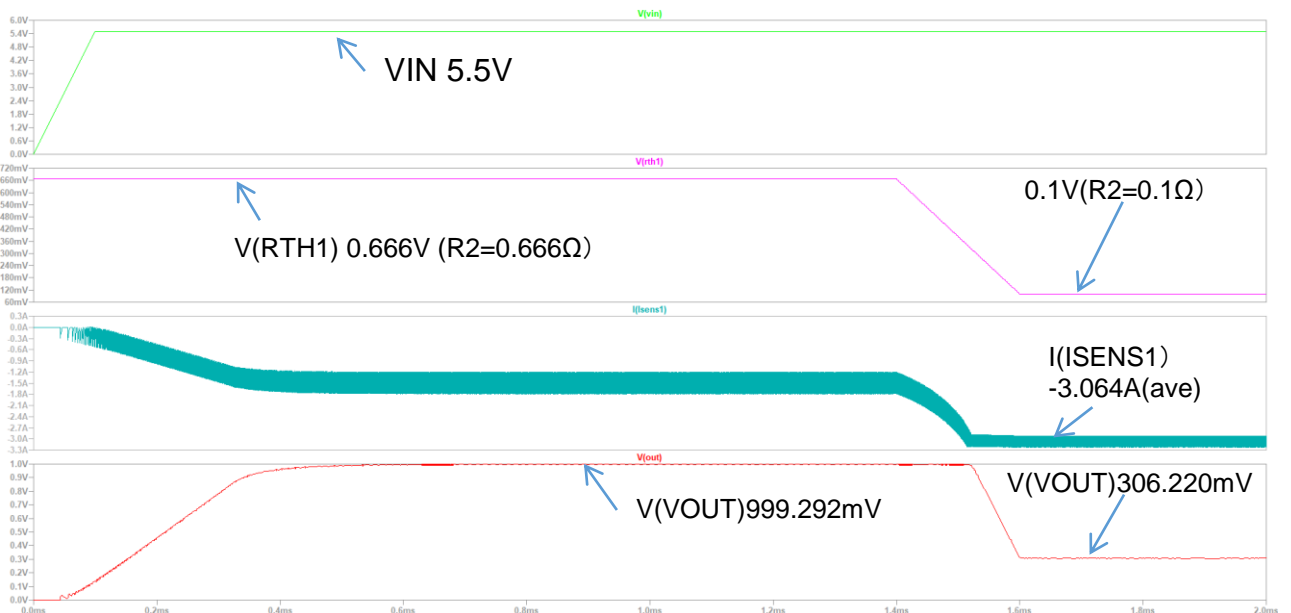
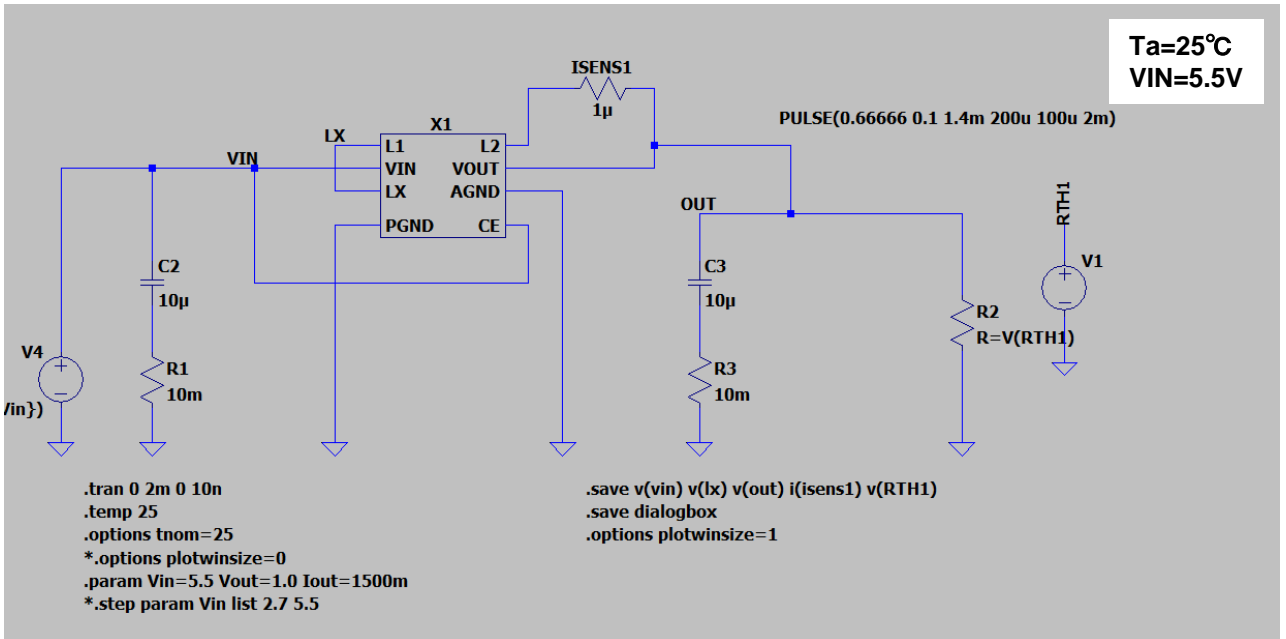


CL Highspeed Discharge



Discharge time	Unit	Value
Calculated	[ms]	2.1
Measured	[ms]	2.1

Current Limit



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.



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/>