

LTspice Model

Step-Down Converters

Texas Instruments Inc.

TPS62135

Model Information

Model A macro model
Call Name MDC_TPS62135_LT
Pin Assign 1:VIN 2:SW 3:AGND 4:FB2 5:FB 6:VOS 7:PG 8:EN 9:SS/TR 10:MODE 11:VSEL
File List Model Library MDC_TPS62135_LT01.lib
 Model Report MDC_TPS62135_LT.pdf(this file)

Verified Simulator Version LTspice version XVII

Note Recommend to set .options method=gear

References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version Unknown
- Product name TPS62135
- Company name Texas Instruments Inc.

[Characteristics listed]

- Characteristics Vuvlo, Vih, Vil, Vth_pg, Vol_pg, Iss/tf
Rds(on), Ilimh, Iliml, fsw, Vfb, tdelay, tramp

Simulation Condition

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

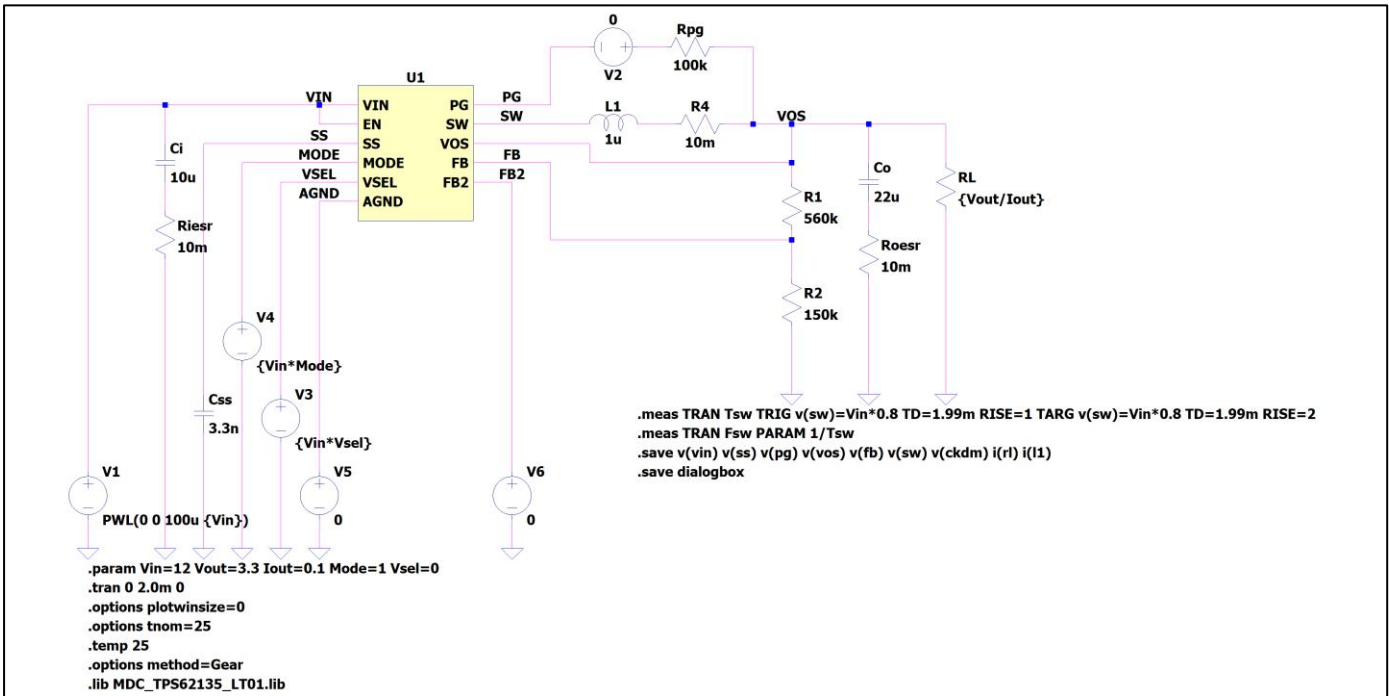
Item	Condition	Unit
Temperature	25	deg C

Model Functions Table

Functions	Implemented
Adjustable Soft-Start (not embedded tracking function)	○
Forced PWM or PWM/PFM operation	○
Typical switching frequency of 2.5MHz in forced PWM	○
Precise ENABLE input allows	○
Automatic Efficiency Enhancement AEE	○
Available with Active Output Discharge	○
Optional HICCUP Overcurrent Protection	-
Power Good Output	○
Pin-Selectable Output Voltage (VSEL and FB2)	○
Thermal shutdown	-
Undervoltage lockout	○

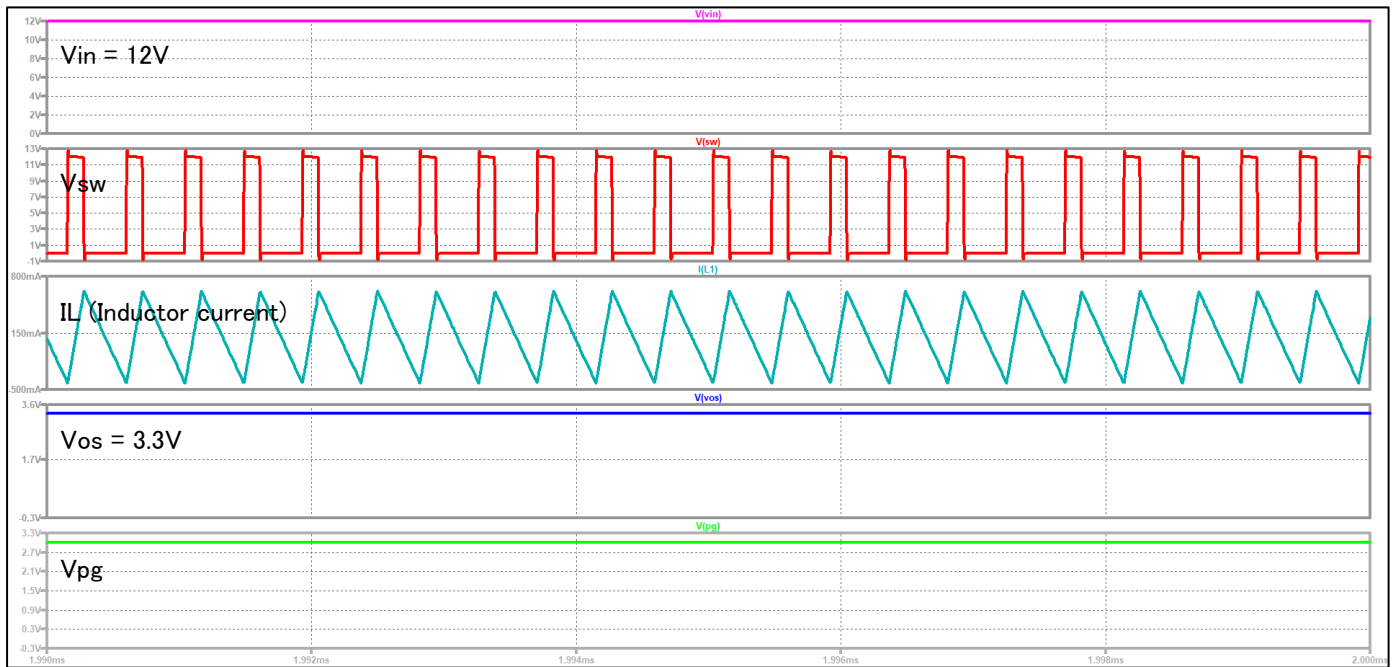
PWM operation ($V_{in} = 12V$, $V_{out} = 3.3V$, $I_{out} = 4.0A$, $MODE=Low$) Testbench

Referred to Data Sheet



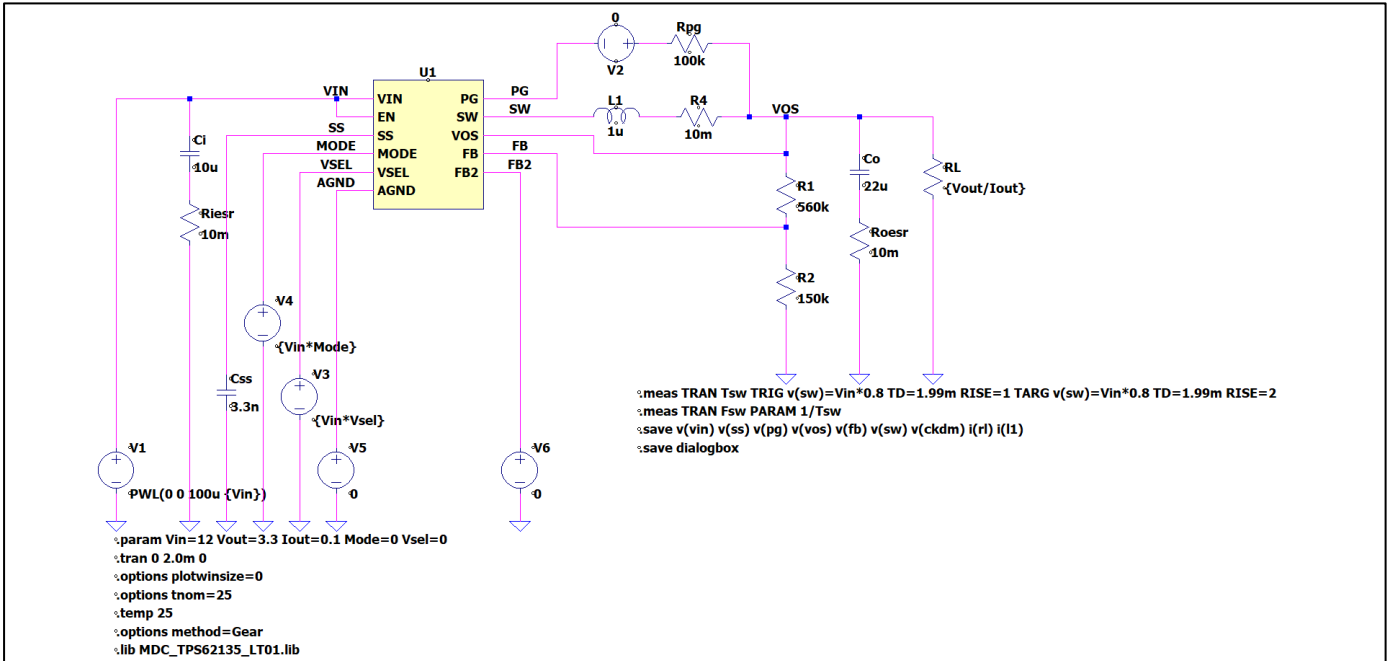
Simulation results are following.
Explanatory notes — : simulated

PWM operation (Vin = 12V, Vout = 3.3V, Iout = 4.0A, MODE=Low) Testbench



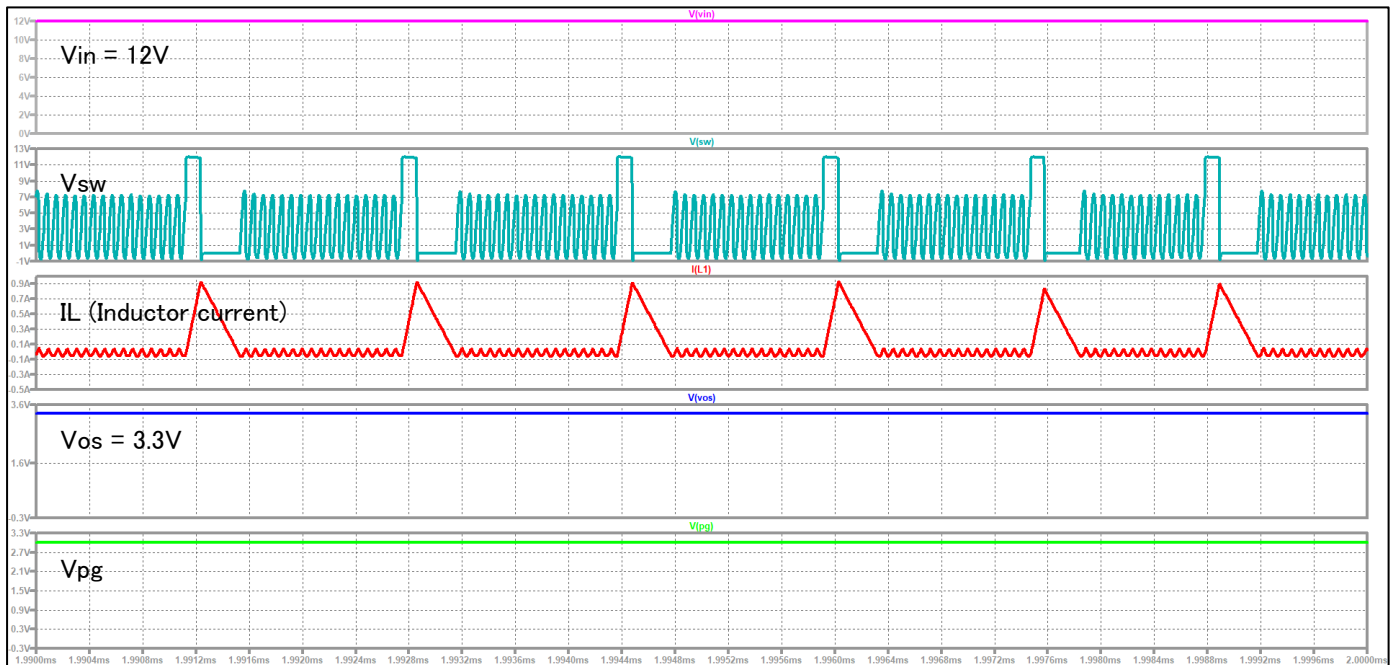
PFM operation ($V_{in} = 12V$, $V_{out} = 3.3V$, $I_{out} = 0.1A$, $MODE=Low$) Testbench

Referred to Data Sheet



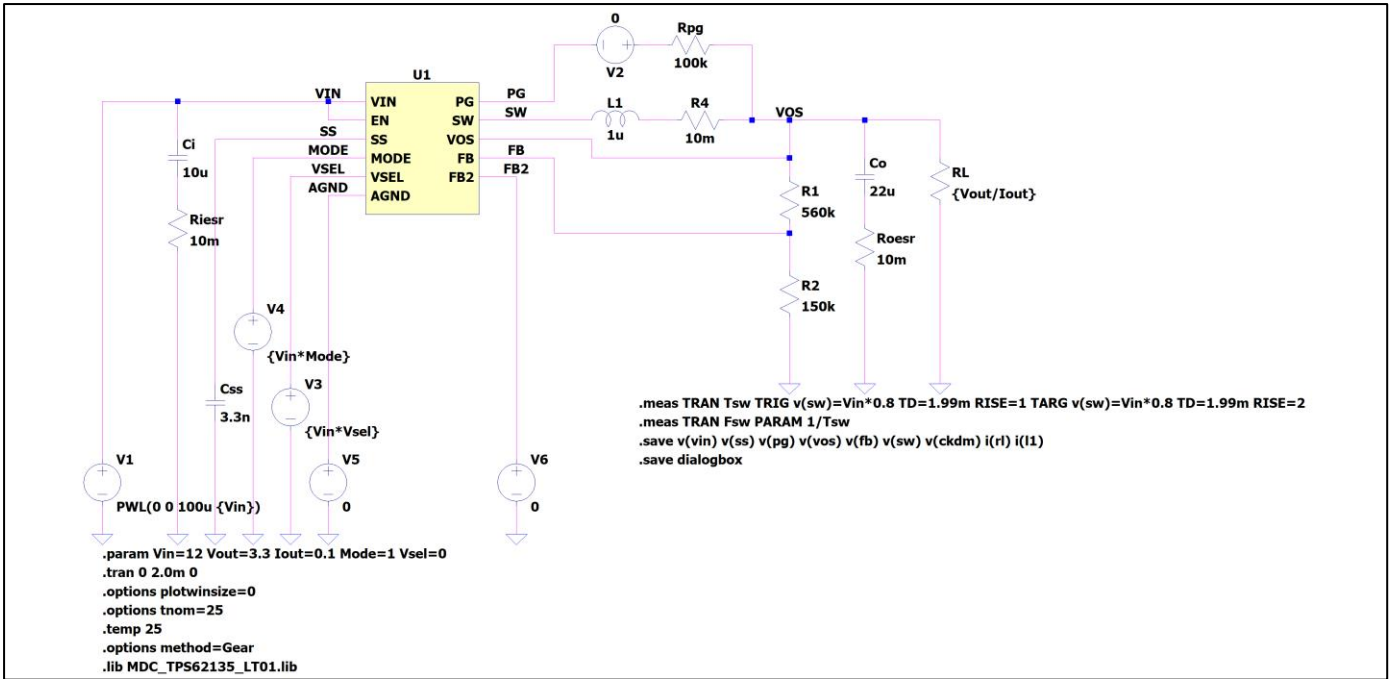
Simulation results are following.
 Explanatory notes — : simulated

PWM operation (Vin = 12V, Vout = 3.3V, Iout = 4.0A, MODE=Low) Testbench



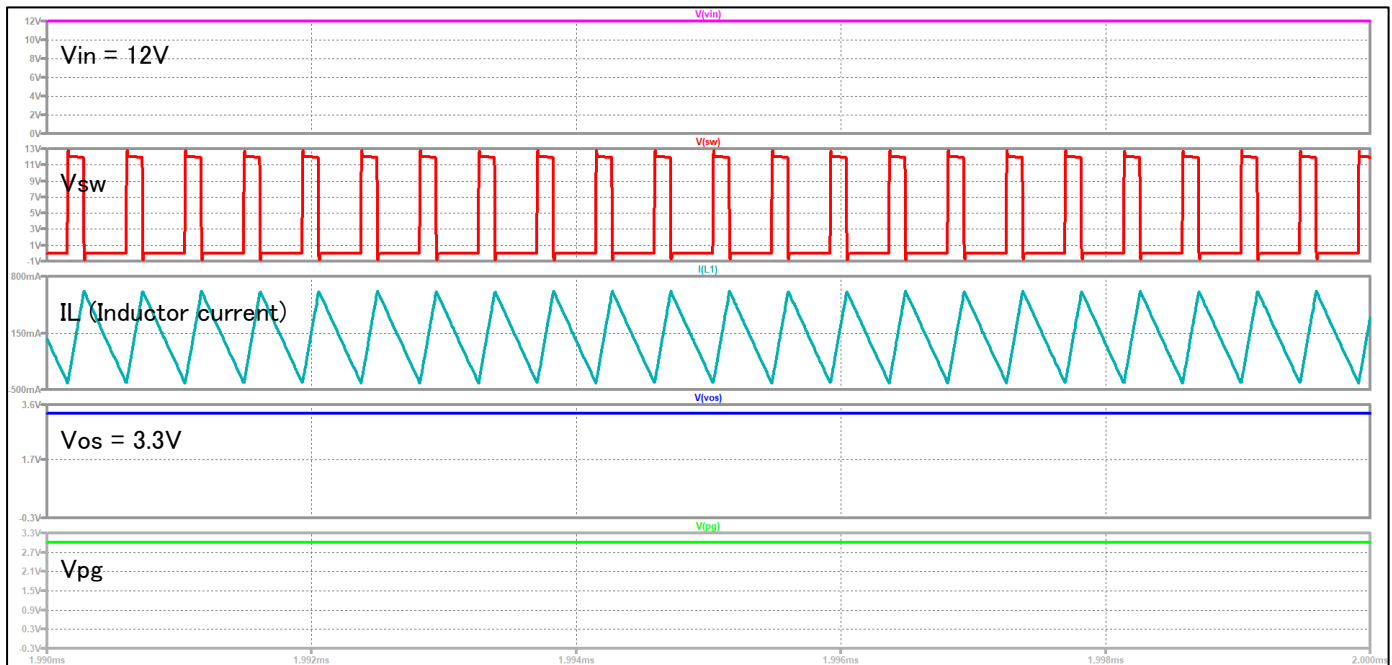
FPWM operation (Vin = 12V, Vout = 3.3V, Iout = 4.0A, MODE=High) Testbench

Referred to Data Sheet

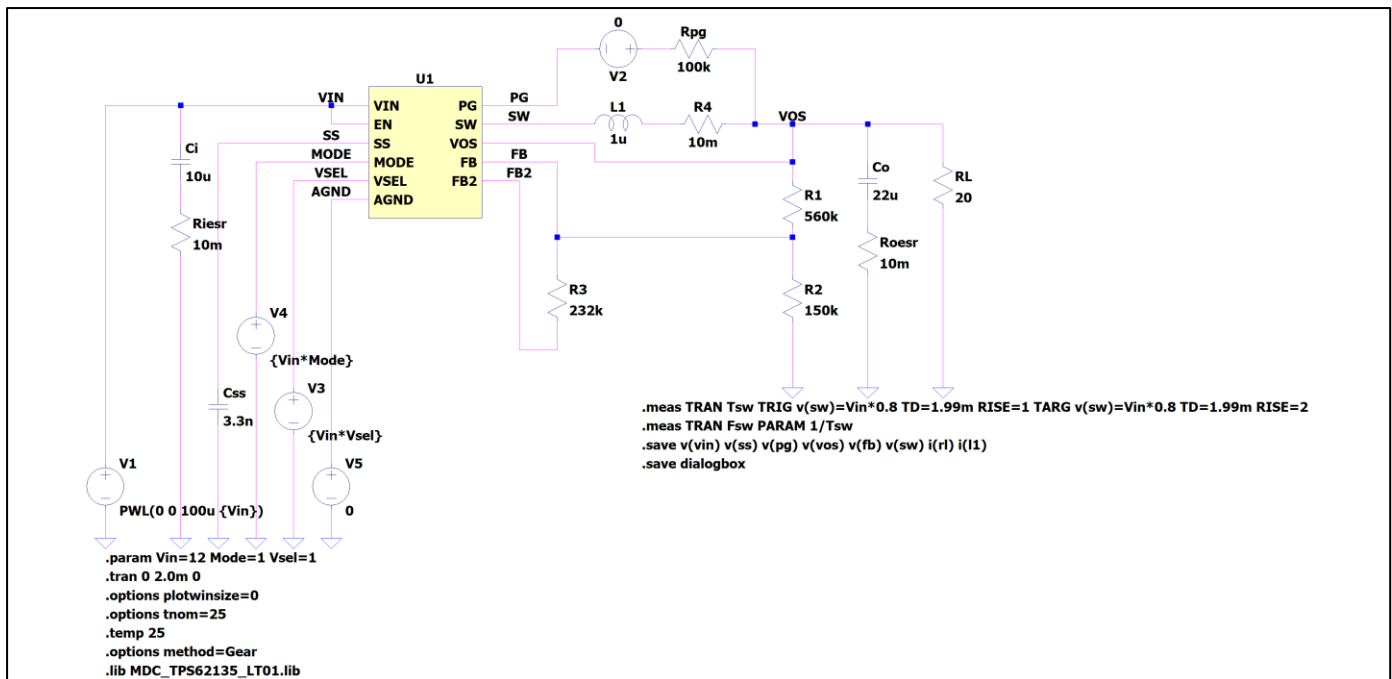


Simulation results are following.
 Explanatory notes — : simulated

PWM operation (Vin = 12V, Vout = 3.3V, Iout = 4.0A, MODE=Low) Testbench

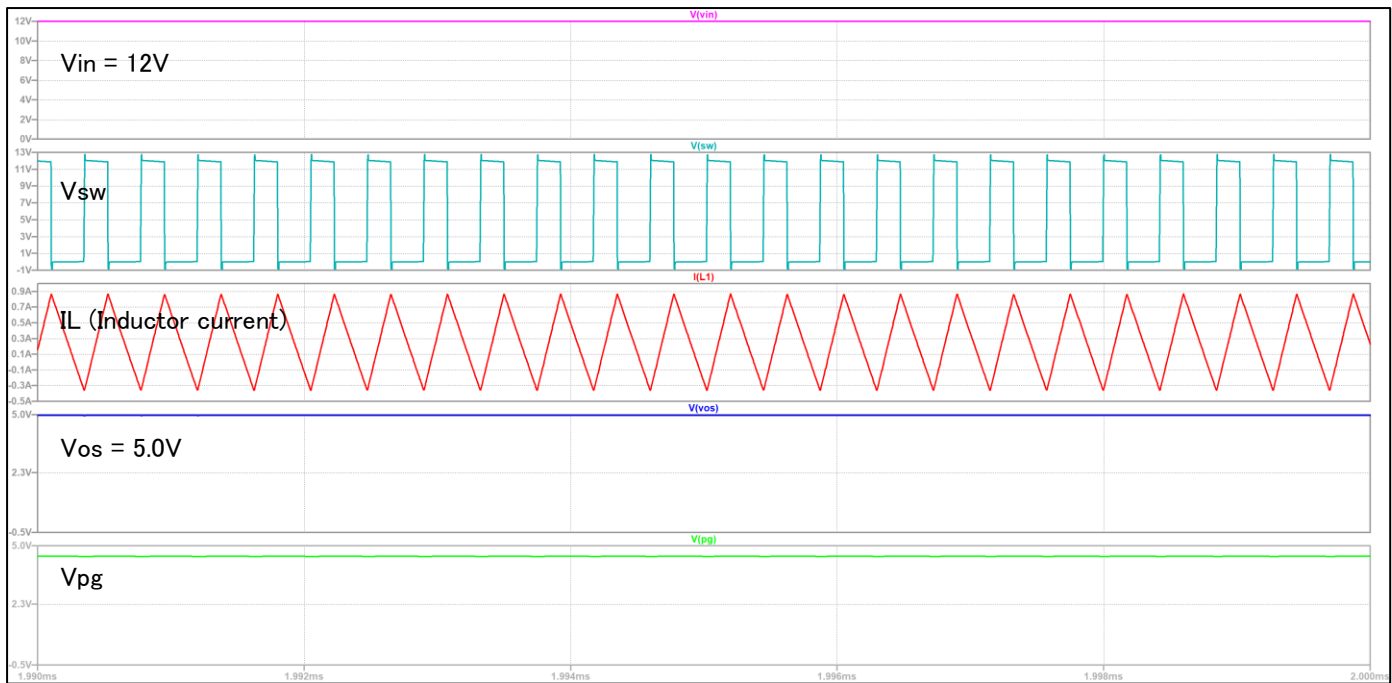


VSEL function (PWM operation) ($V_{in} = 12V$, $V_{out} = 5.0V$, $R_{out} = 20\Omega$, $MODE=High$) Testbench
 Referred to Data Sheet

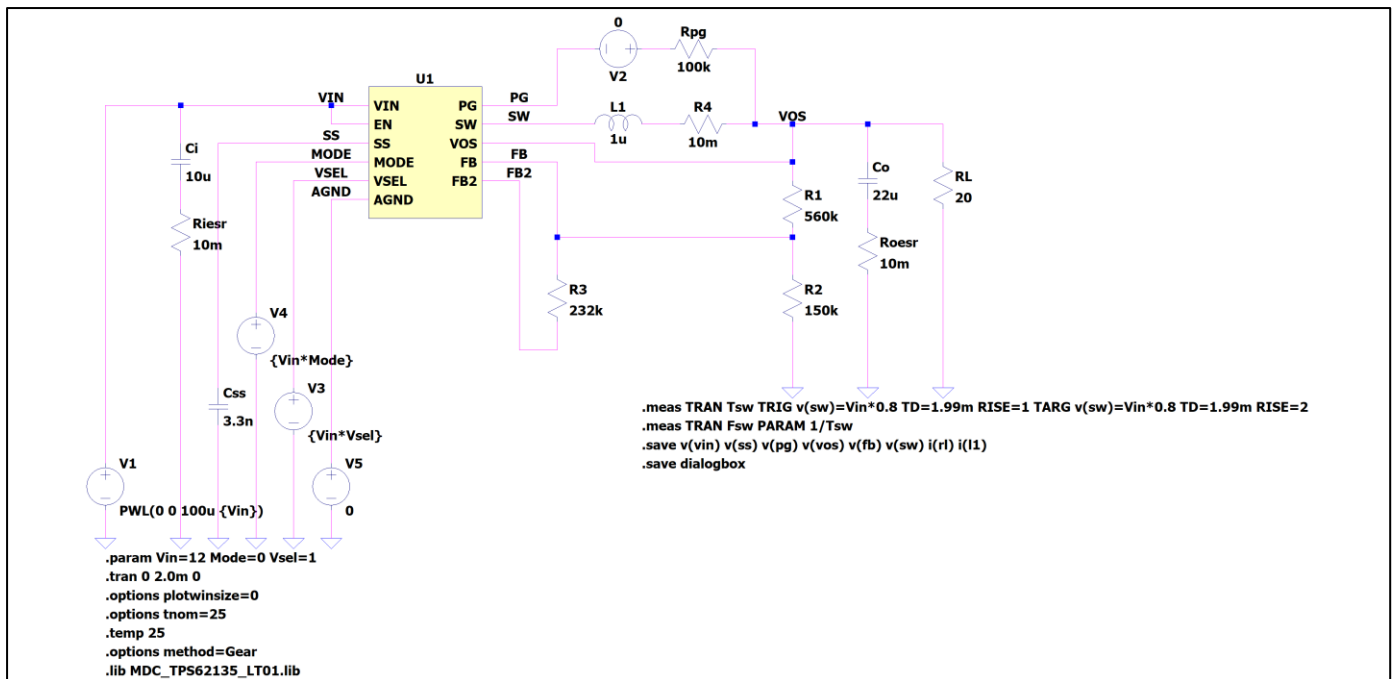


Simulation results are following.
Explanatory notes — : simulated

VSEL function (PWM operation) ($V_{in} = 12V$, $V_{out} = 5.0V$, $R_{out} = 20\Omega$, $MODE=High$) Testbench

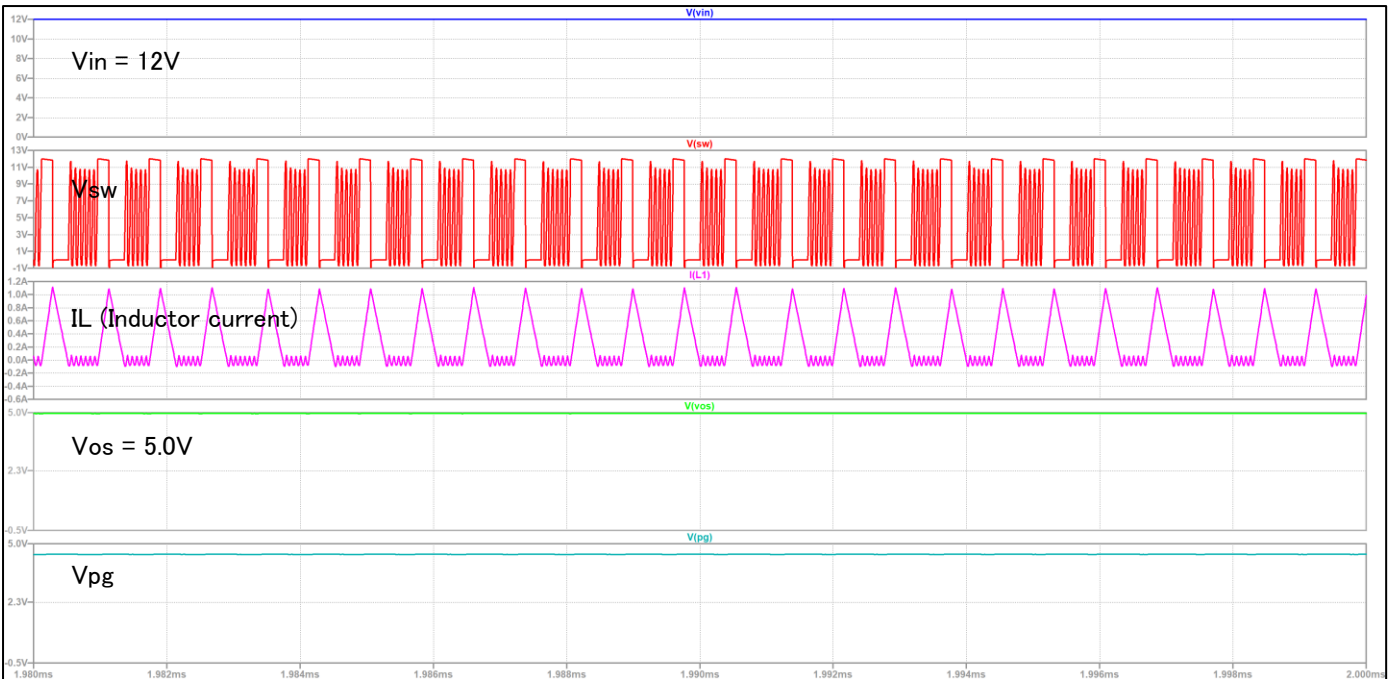


VSEL function (PFM operation) ($V_{in} = 12V$, $V_{out} = 5.0V$, $R_{out} = 20\Omega$, $MODE=Low$) Testbench
 Referred to Data Sheet



Simulation results are following.
 Explanatory notes — : simulated

VSEL function (PWM operation) ($V_{in} = 12V$, $V_{out} = 5.0V$, $R_{out} = 20\Omega$, $MODE=High$) Testbench



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