LTspice Model
IPM
Mitsubishi
PSS20S92F6-C

Model Information

Model	A macro model
Call Name	MDC_PSS20S92F6-C_LT
Pin Assign	1-A:NC 1-B:NC 2:VUFB 3:VVFB 4:VWFB 5:UP 6:VP 7:WP 8:VP1 9:VNC 10:UN 11:VN 12:WN 13:VN1 14:FO 15:CIN 16:VNC 17:VOT 18:NW 19:NV 20:NU 21:W 22:V 23:U 24:P 25:NC
File List	Model Library MDC_PSS20S92F6-C_LT01.lib Model Report MDC_PSS20S92F6-C_LT.pdf(this file)

Verified Simulator Version LTspice(x64) 24.0.12

Note

References

The information which was used for modeling is as follow:

[Data Sheet]

- ●Date/Version 2021.1
- ●Product name PSS20S92F6-C
- ●Company name Mitsubishi Electric Corporation

[Characteristics listed]

- ●Characteristics
  - Collector-emitter saturation voltage
  - FWD forward voltage drop
  - Switching time(P-side)
  - Switching time(N-side)
  - Undervoltage (UV) protection circuit (for P-side IGBT)
  - Undervoltage (UV) protection circuit (for N-side IGBT)
  - Input ON/OFF threshold voltage(P-side)
  - Input ON/OFF threshold voltage(N-side)
  - Three-phase AC output operation

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

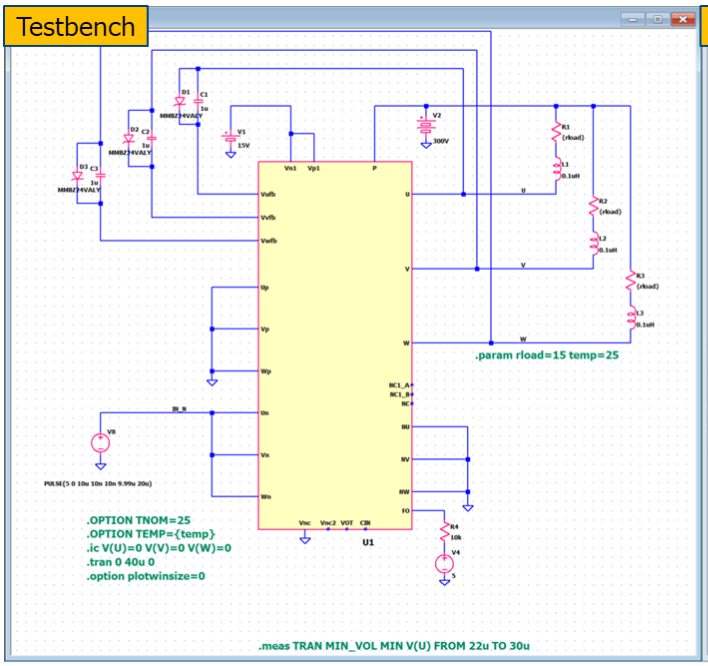
○ : Implemented
× : Not Implemented
— : Not applicable

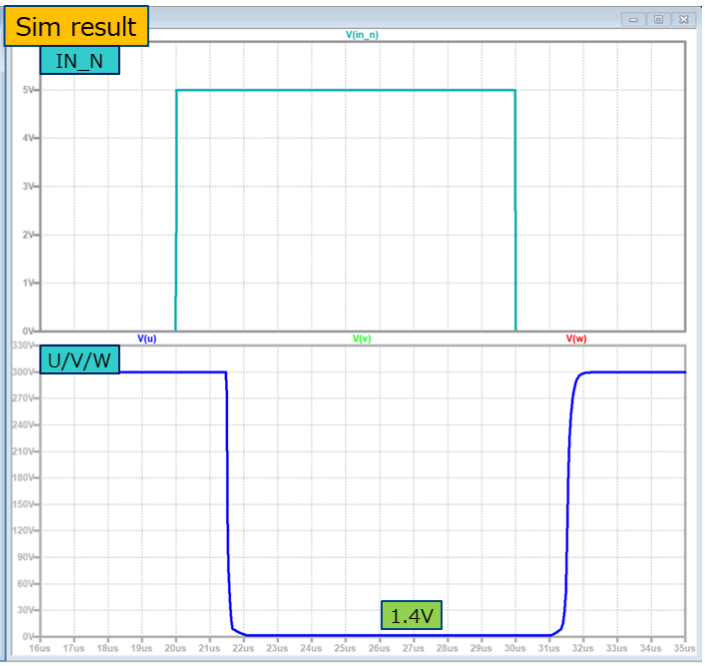
Model Functions Table

	RANK=1	
Functions	RANK	Implemented
UVLO_N	1	○
UVLO_P	1	○
VINTH_N	1	○
VINTH_P	1	○
Switching	1	○
FWDi_Vdrop	1	○
VCE(sat)	1	○

Collector-emitter saturation voltage

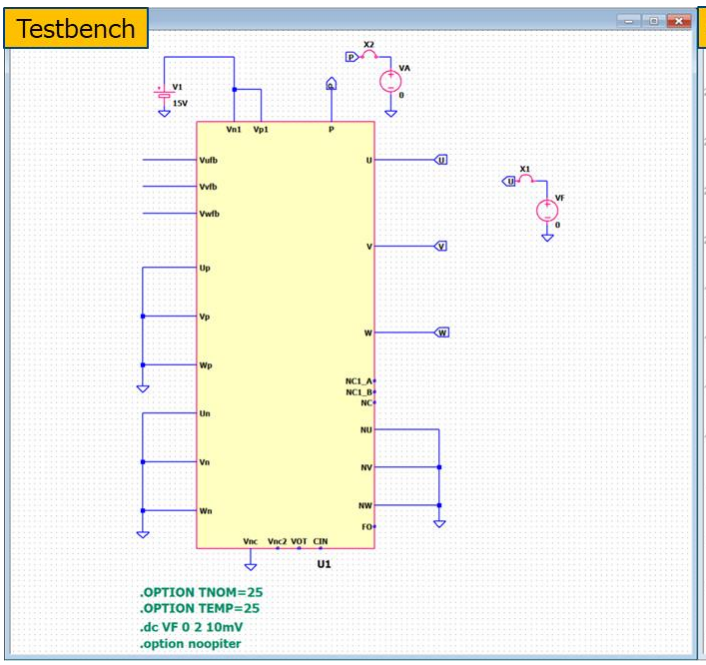
Simulation results are following.
Explanatory notes — : simulated

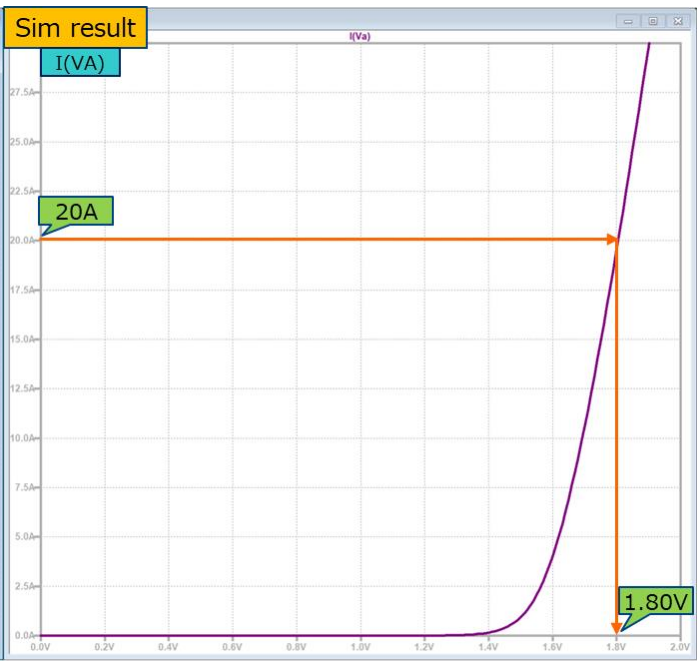




FWD forward voltage drop

Simulation results are following.
Explanatory notes — : simulated

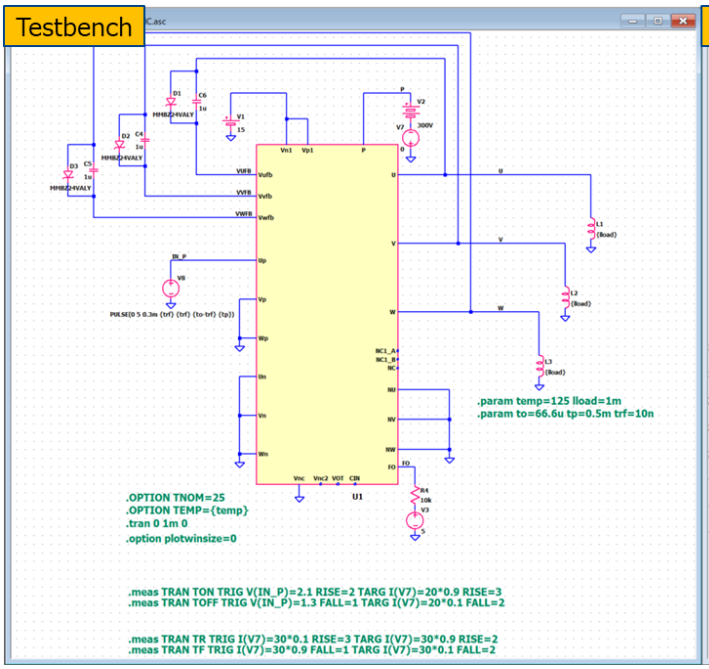




Switching time(P-side)

Simulation results are following.
Explanatory notes　— : simulated

Testbench

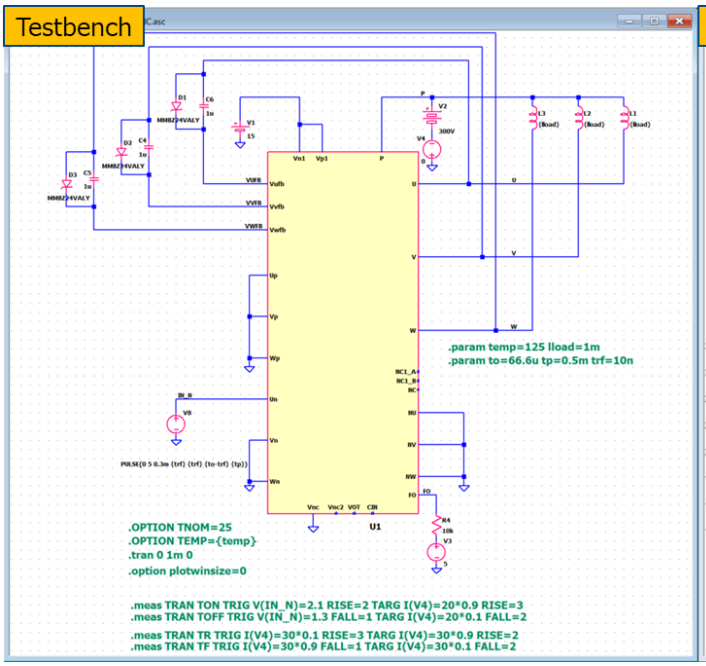


Sim result

Switching time(N-side)

Simulation results are following.
Explanatory notes　— : simulated

Testbench

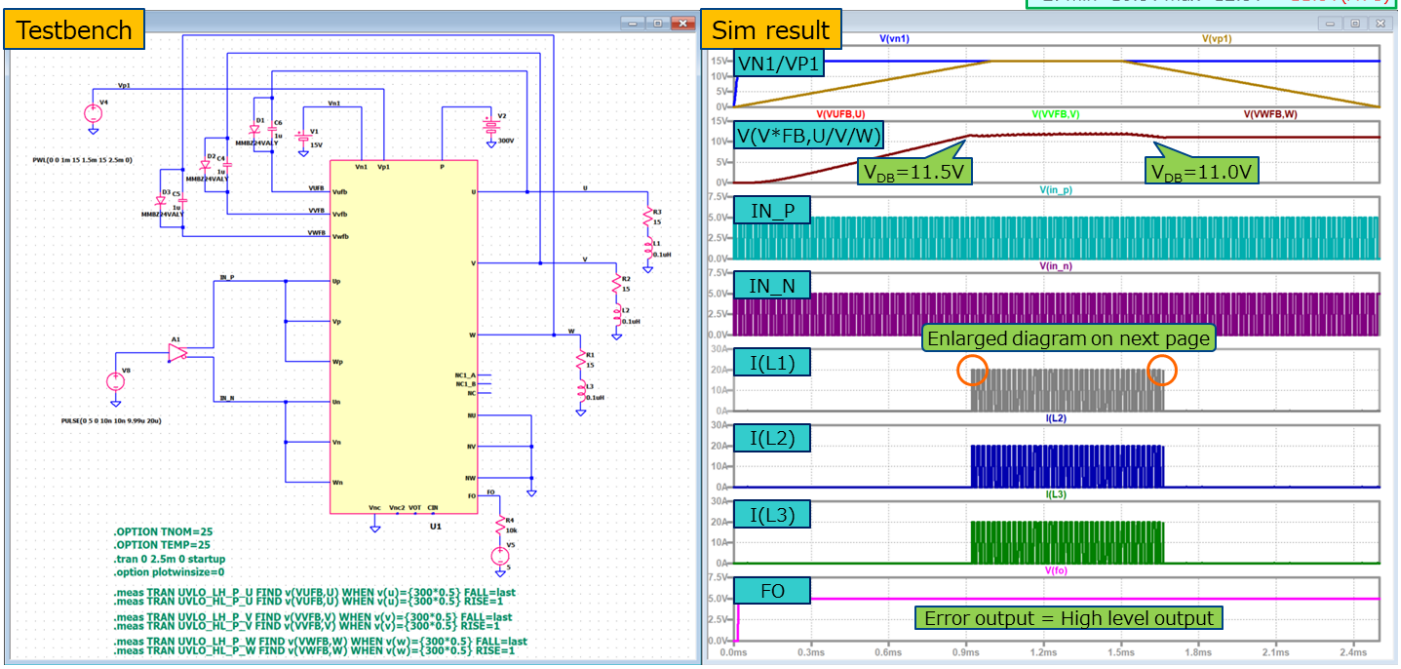


Sim result

Undervoltage (UV) protection circuit (for P-side IGBT)

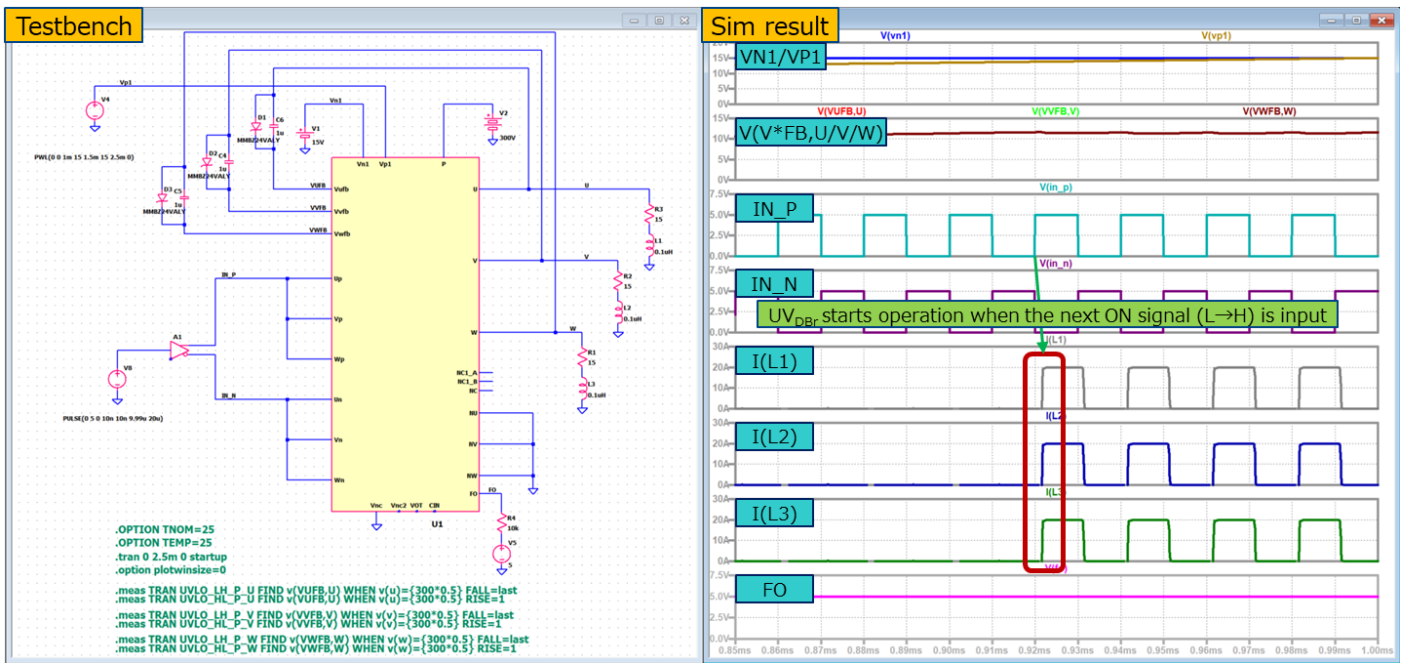
Simulation results are following.
Explanatory notes — : simulated

*1: min=10.0V max=12.0V⇒ 11.0V(AVG)
*2: min=10.5V max=12.5V⇒ 11.5V(AVG)



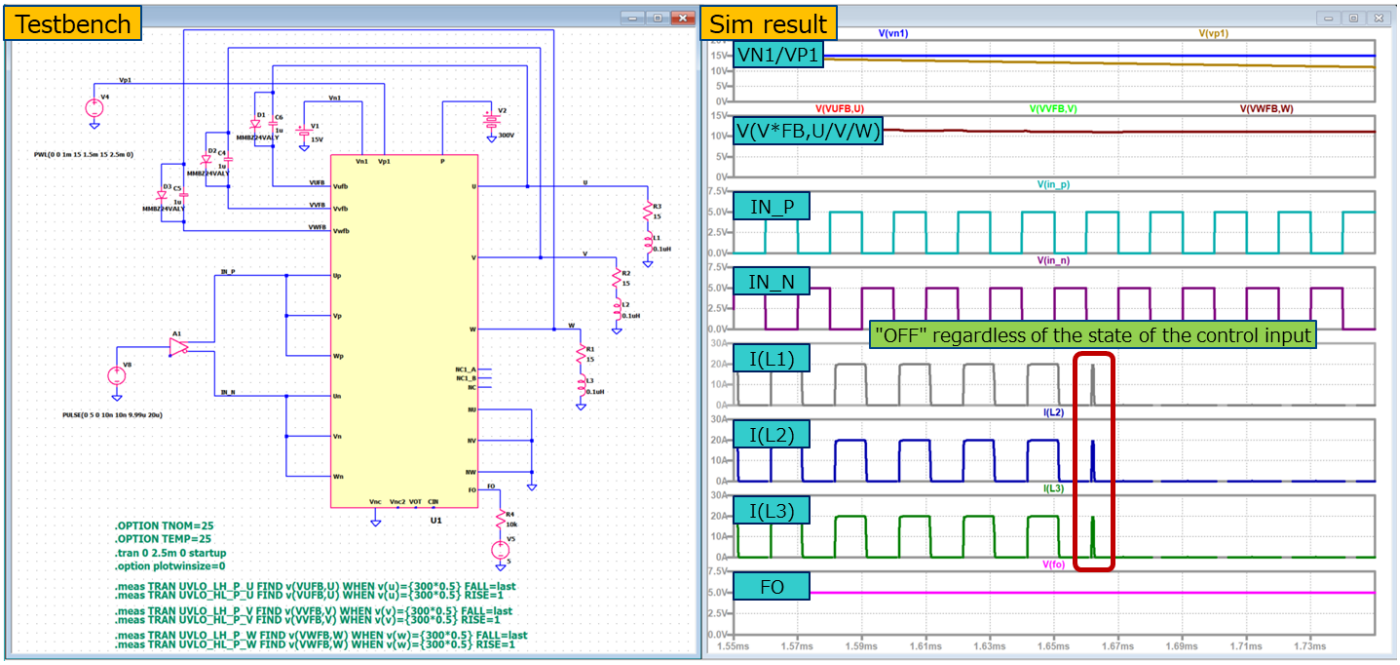
Undervoltage (UV) protection circuit (for P-side IGBT)

Simulation results are following.
Explanatory notes — : simulated



Undervoltage (UV) protection circuit (for P-side IGBT)

Simulation results are following.
Explanatory notes　— : simulated

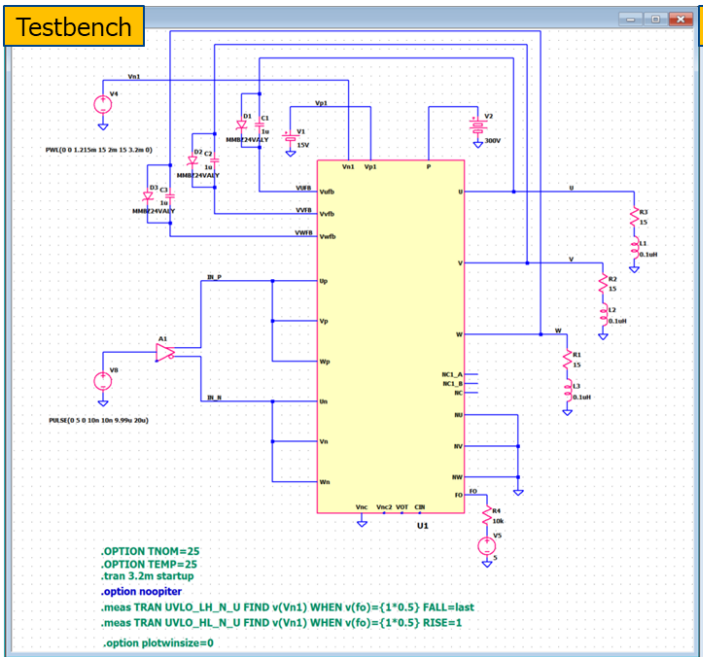


Undervoltage (UV) protection circuit (for N-side IGBT)

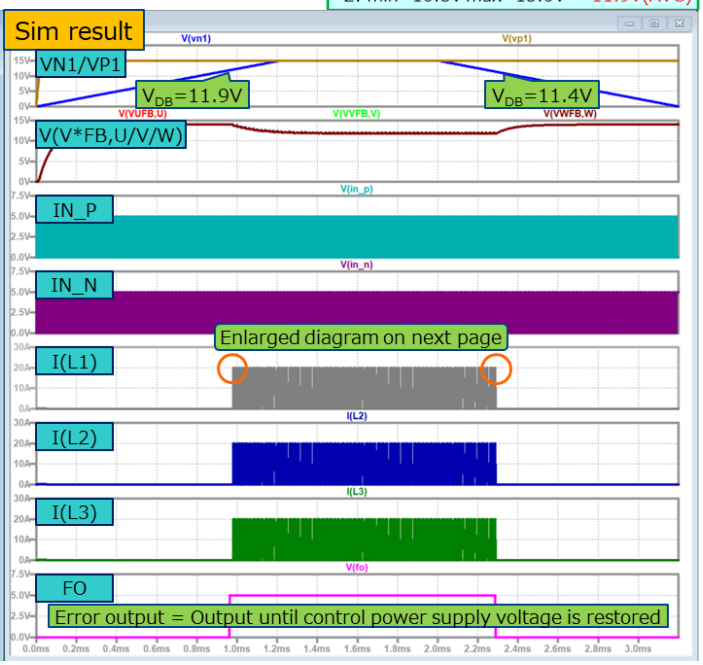
Simulation results are following.
Explanatory notes — : simulated

*1: min=10.3V max=12.5V⇒ 11.4V(AVG)
*2: min=10.8V max=13.0V⇒ 11.9V(AVG)

Testbench



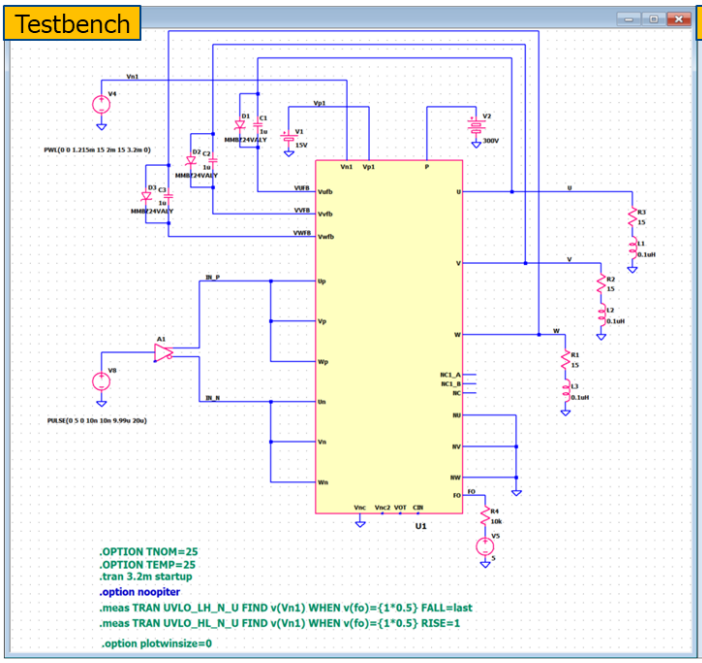
Sim result



Undervoltage (UV) protection circuit (for N-side IGBT)

Simulation results are following.
Explanatory notes — : simulated

Testbench

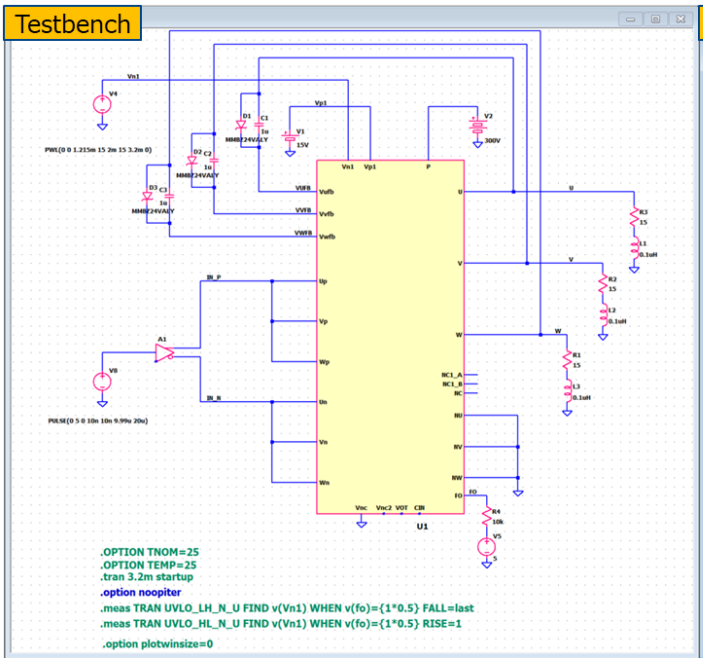


Sim result

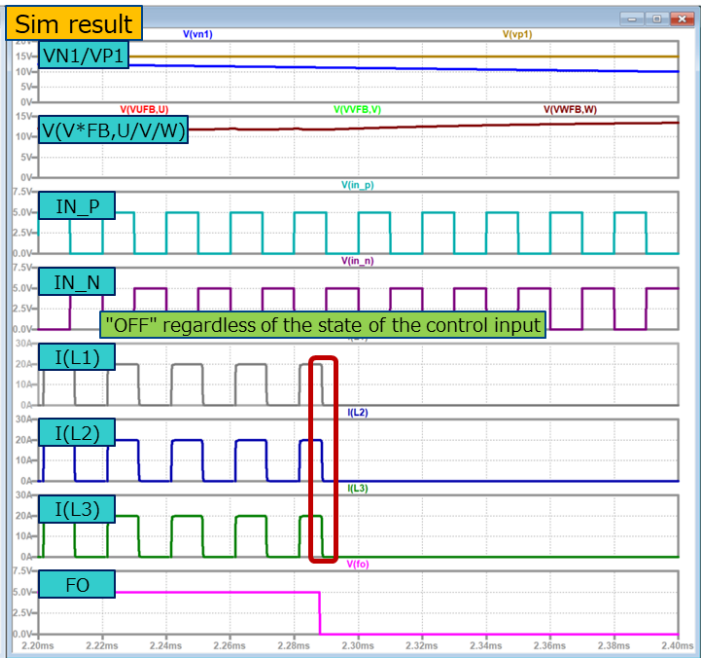
Undervoltage (UV) protection circuit (for N-side IGBT)

Simulation results are following.
Explanatory notes　　— : simulated

Testbench



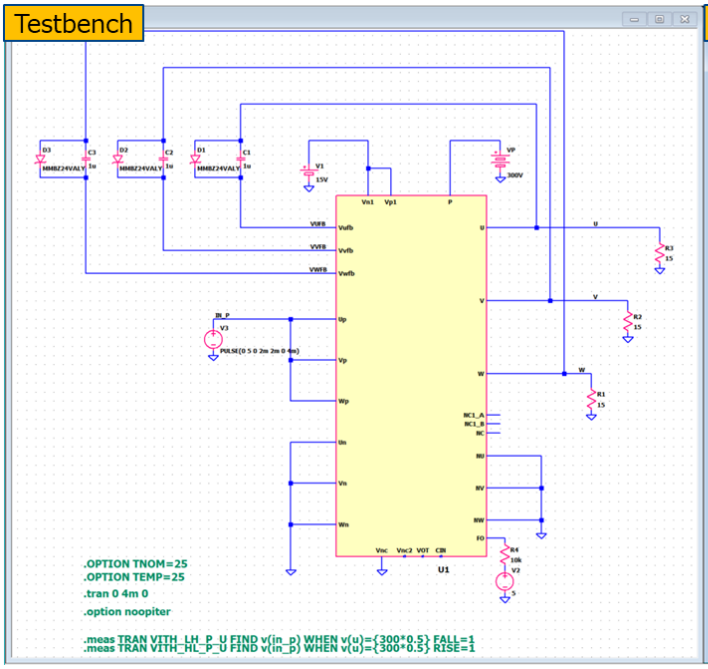
Sim result



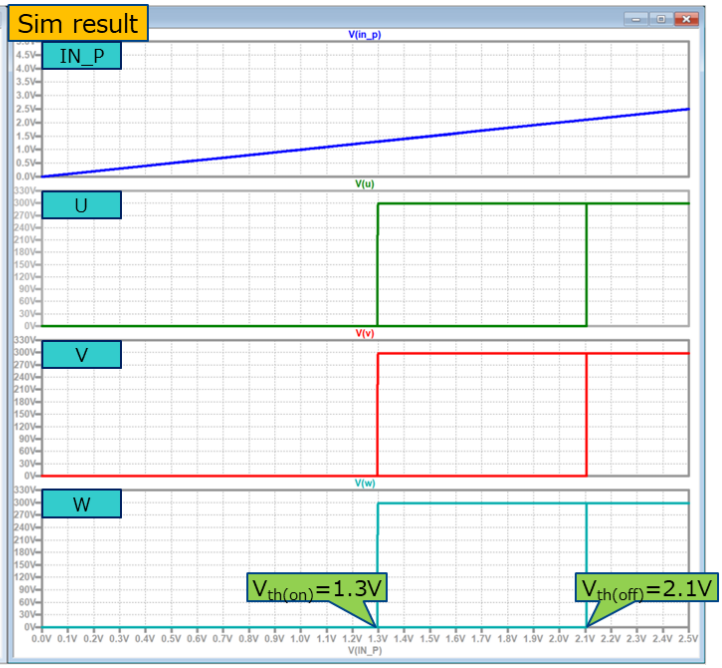
Input ON/OFF threshold voltage(P-side)

Simulation results are following.
Explanatory notes — : simulated

Testbench



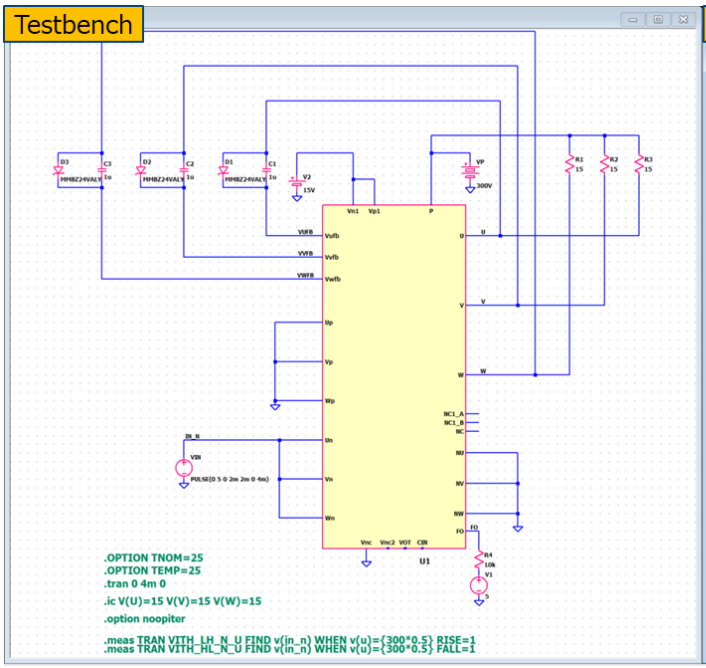
Sim result



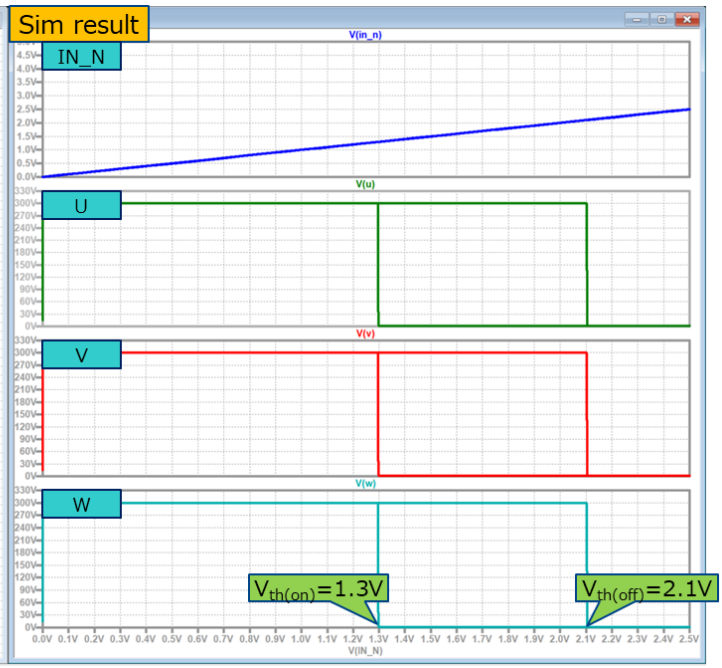
Input ON/OFF threshold voltage(N-side)

Simulation results are following.
Explanatory notes — : simulated

Testbench



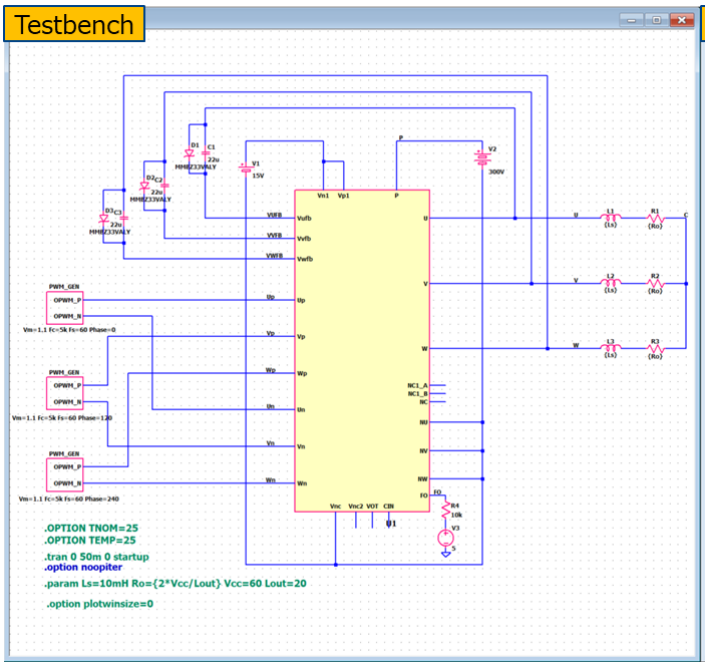
Sim result



Three-phase AC output operation

Simulation results are following.
Explanatory notes　　— : simulated

Testbench



Sim result

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