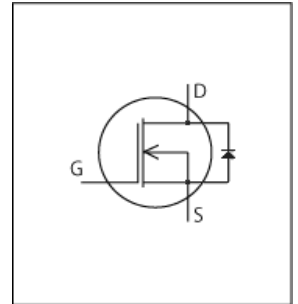


LTspice Model

NMOS

Infineon

IPB180N04S4L-01



Model Information

Model A macro model based on BSIM3 model
Call Name MDC_IPB180N04S4L-01_LT
Pin Assign 1:G 2:S 3:S 4:D 5:S 6:S 7:S
File List Model Library MDC_IPB180N04S4L-01_LT01.lib
 Model Report MDC_IPB180N04S4L-01_LT.pdf (this file)

Verified Simulator Version LTspice version XVII
Note

References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version Rev. 1.0 2013-06-03
- Product name IPB180N04S4L-01
- Company name Infineon Technologies AG
- Characteristics IdVds[Vgs],Rds(on)Id[Vgs],IdVgs[Temp],Rds(on)Temp[Id],Vt hTemp[Id],CapacitanceVds[Cname],IsVsd[Temp],BvTemp[ir],VgsQg[Vdd],SwitchingIdd[Tname],Trrlf[Ir],Qrrlf[Ir],Switching Waveform,TrrWaveform

Simulation Range

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

Item	Range			Unit
	Min.		Max.	
Drain-source voltage (DC)	0	to	40	V
Gate-source voltage (DC)	-16	to	20	V
Temperature	-55	to	175	deg C

MOSFET

○ : Implemented
× : Not Implemented
— : Not applicable

Model Functions Table

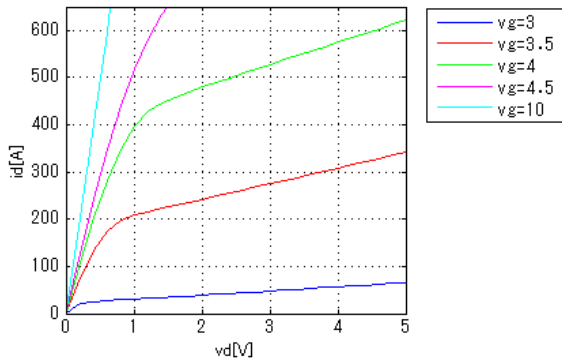
RANK=1

Functions	RANK	Implemented
ID-VDS-VGS	1	○
ID-VGS(Temp)	1	○
RDS(on)	1	○
Capacitance	1	○
Gate Charge	1	○
IS-VSD(Forward)	1	○
Reverse recovery	1	○
Switching(Typ.)	1	○
Bv	1	○
Yfs	1	—
Vth	1	○

Simulation results are following.
 Explanatory notes — : simulated

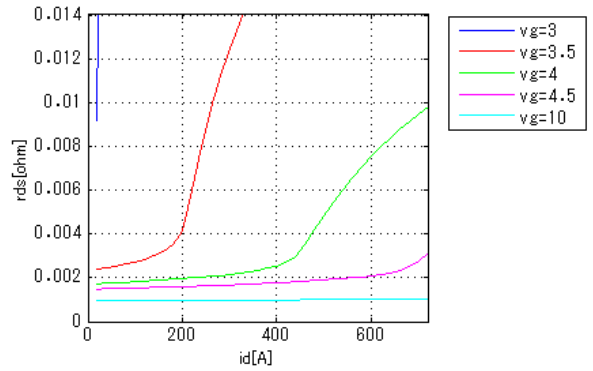
IdVds[Vgs]

Temp = 25degC



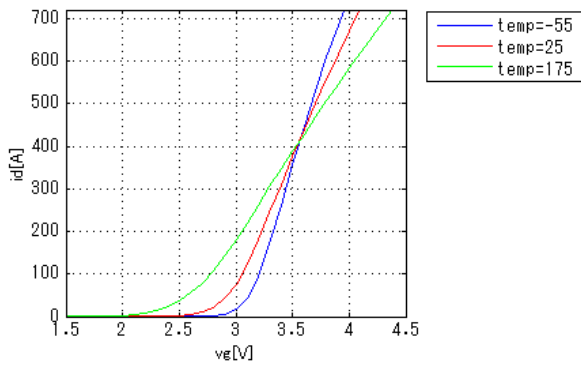
Rds(on)Id[Vgs]

Temp = 25degC



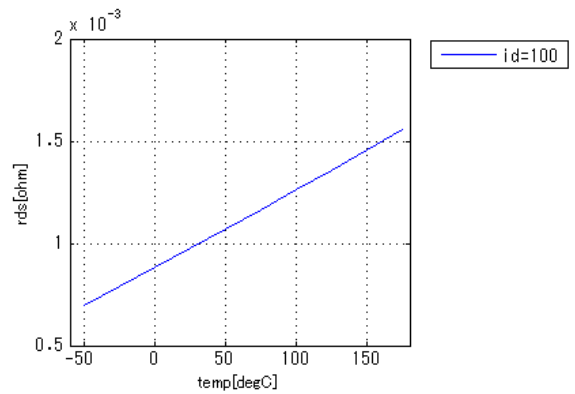
IdVgs[Temp]

Vds = 6V



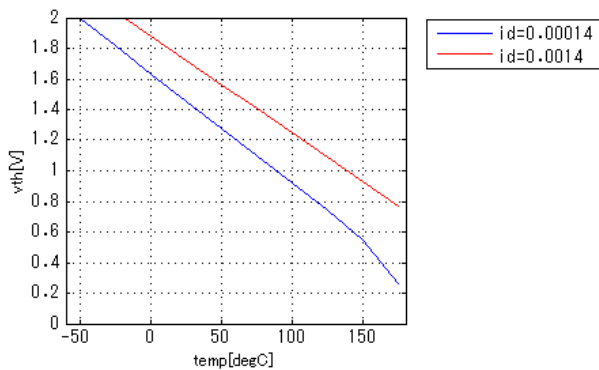
Rds(on)Temp[Id]

Vgs = 10V



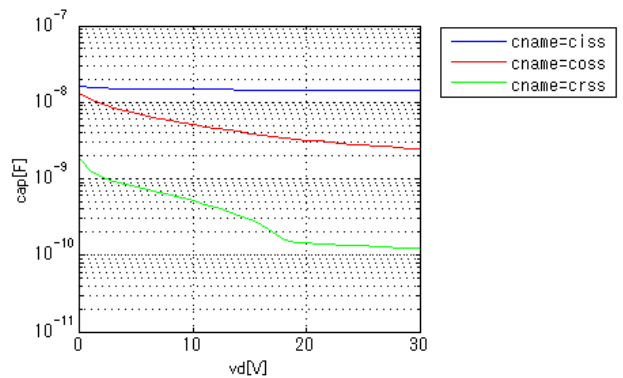
VthTemp[Id]

Vd = Vg



CapacitanceVds[Cname]

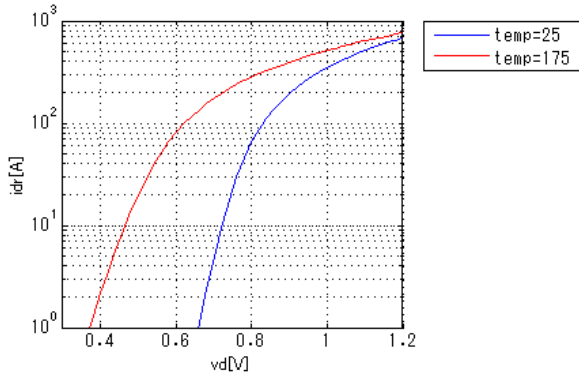
freq = 1000000Hz



Simulation results are following.
 Explanatory notes — : simulated

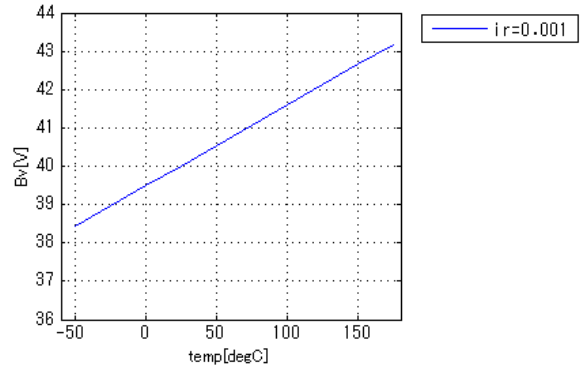
IsVsd[Temp]

vg = 0V



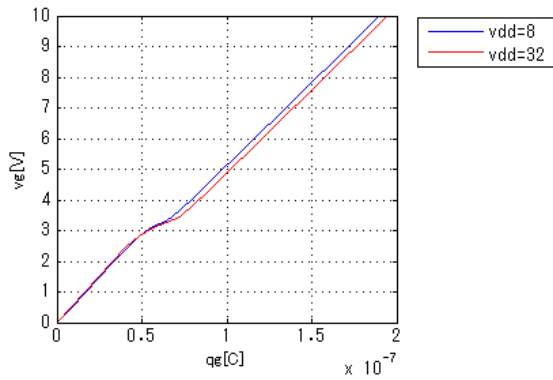
BvTemp[ir]

ir = 0.001A



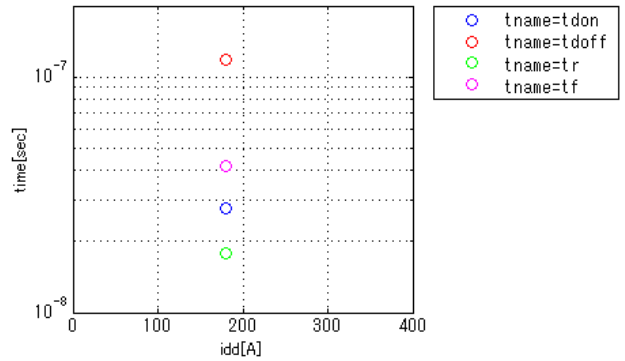
VgsQg[Vdd]

Id = 180A



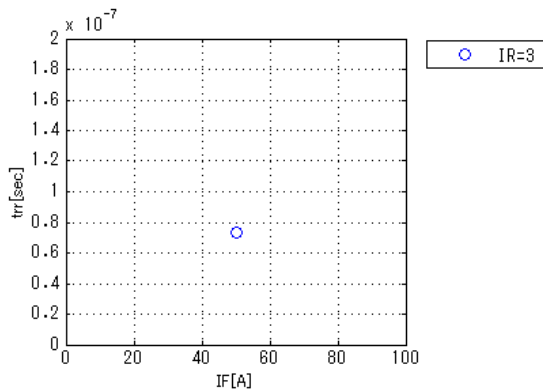
SwitchingIdd[Tname]

vgg = 10V, vdd = 20V, RGG = 3.5ohm



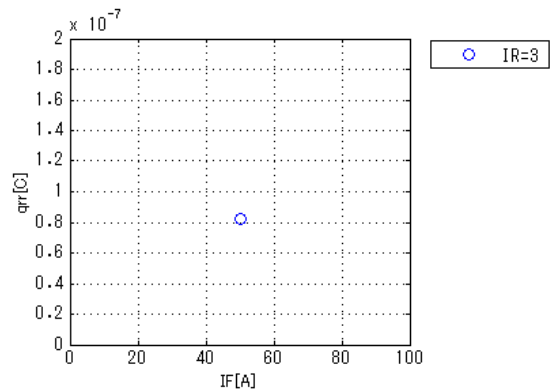
Trrlf[Ir]

vdd = 20V, didt = 100A/us, Temp = 25degC



Qrrlf[Ir]

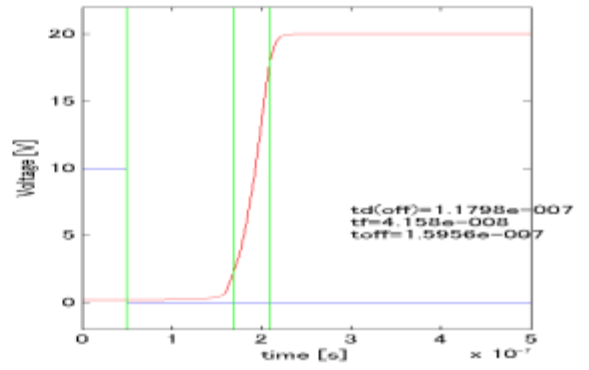
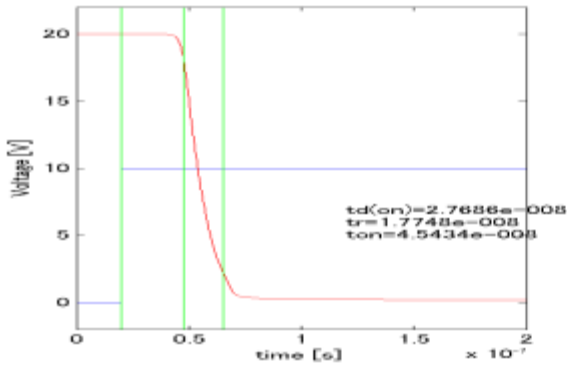
vdd = 20V, didt = 100A/us, Temp = 25degC



Simulation results are following.
 Explanatory notes — : simulated

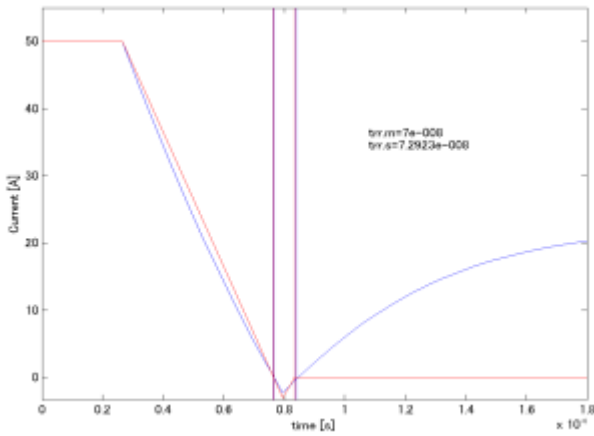
Switching Waveform (Blue : INPUT Red : OUTPUT)

v_{gg} = 10V, v_{dd} = 20V, R_{GG} = 3.5ohm, i_{dd} = 180A



Trr Waveform (Red : Datasheet Blue : Simulation)

v_{dd} = 20V, di/dt = 100A/us, Temp = 25degC, i_{dd} = 50A



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/>