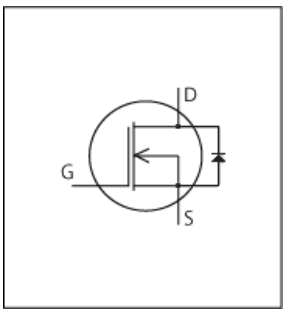
# PSpice Model
# NMOS
# Infineon
# IPB180N04S4L-01




## Model Information

| | | |
|---|---|---|
| **Model** | A macro model based on BSIM3 model | |
| **Call Name** | MDC_IPB180N04S4L-01_PS | |
| **Pin Assign** | 1:G 2:S 3:S 4:D 5:S 6:S 7:S | |
| **File List** | Model Library | MDC_IPB180N04S4L-01_PS02.lib |
| | Model Report | MDC_IPB180N04S4L-01_PS.pdf (this file) |
| **Verified Simulator Version** | | PSpice version 17.2 |
| **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],VthTemp[Id],CapacitanceVds[Cname],IsVsd[Temp],BvTemp[ir],VgsQg[Vdd],SwitchingIdd[Tname],TrrIf[Ir],QrrIf[Ir],SwitchingWaveform,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**

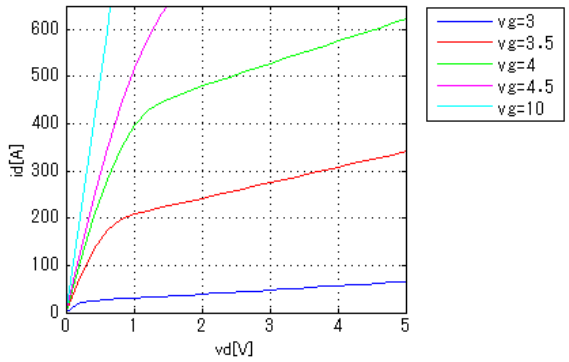
RANK=1

| 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

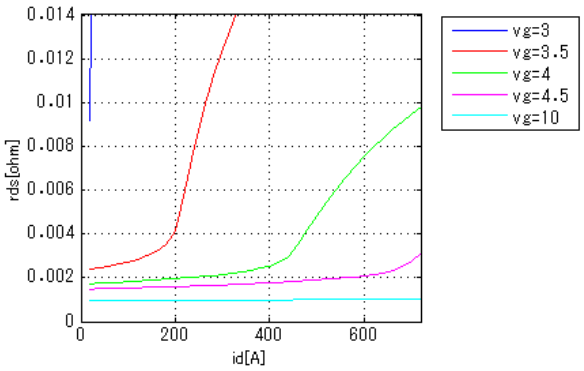
### IdVds[Vgs]

Temp = 25degC



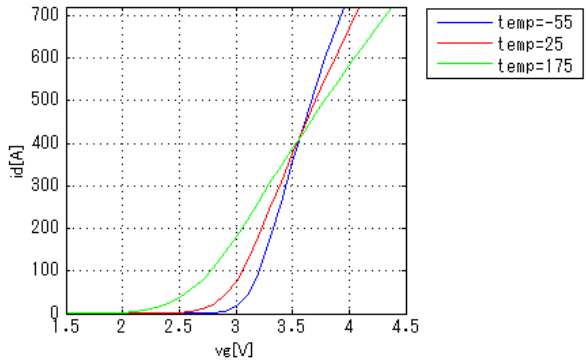

### Rds(on)Id[Vgs]

Temp = 25degC



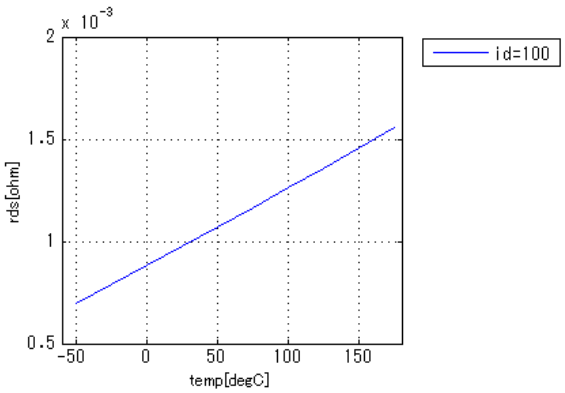

### IdVgs[Temp]

Vds = 6V



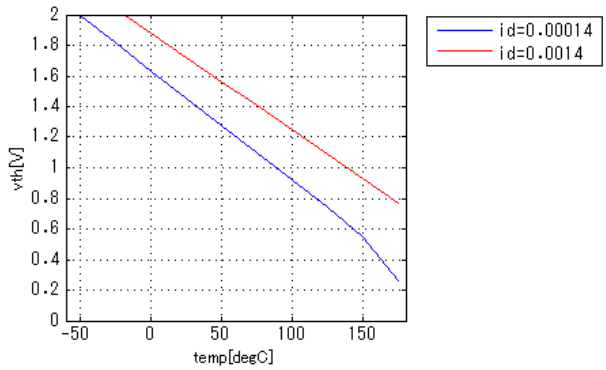

### Rds(on)Temp[Id]

Vgs = 10V



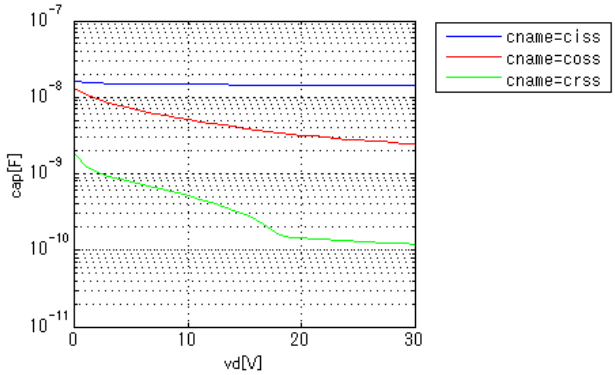

### VthTemp[Id]

Vd = Vg



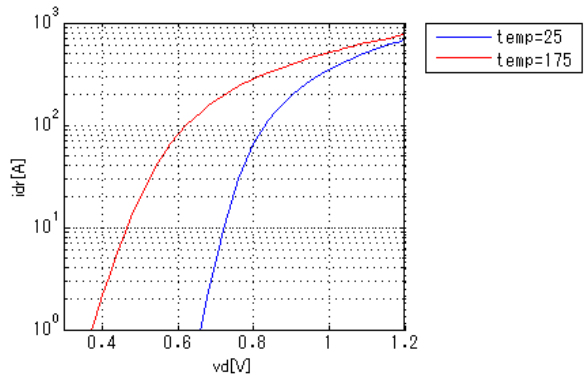

### CapacitanceVds[Cname]

freq = 1000000Hz

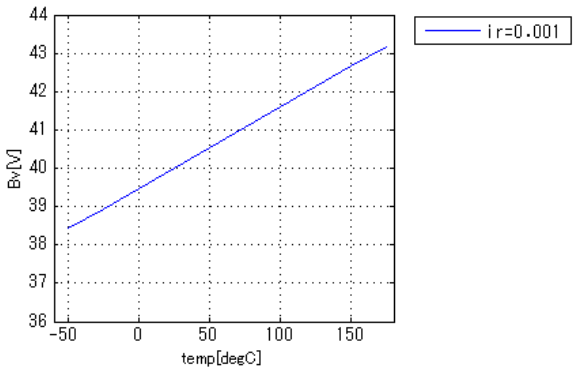


Simulation results are following.
Explanatory notes — : simulated

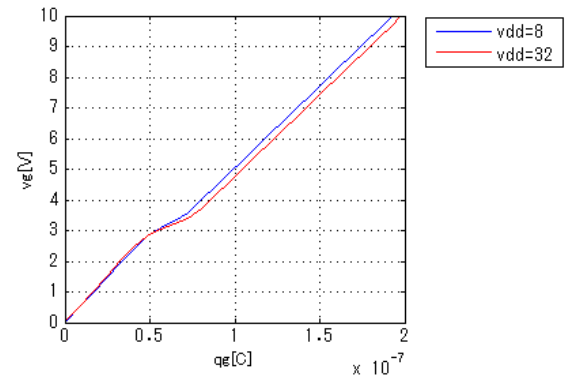
**IsVsd[Temp]**
vg = 0V



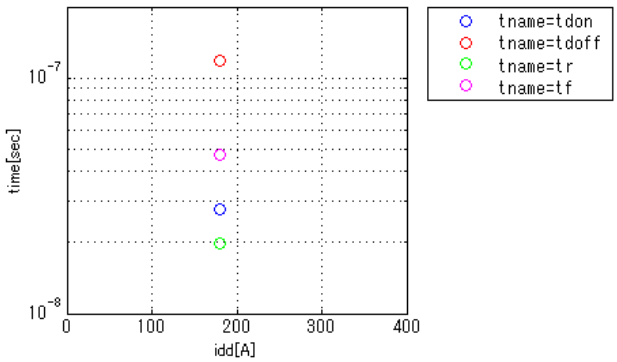

**BvTemp[ir]**
ir = 0.001A



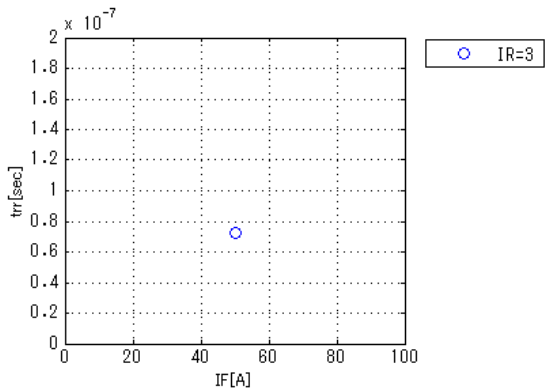

**VgsQg[Vdd]**
Id = 180A



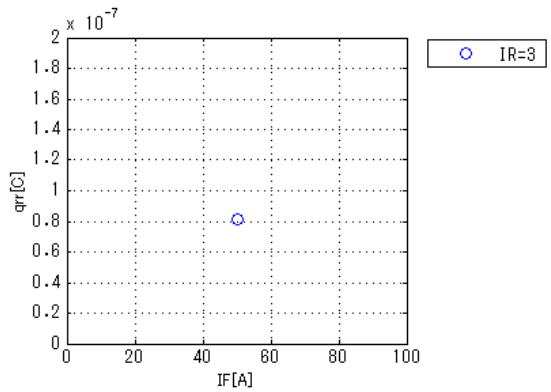

**SwitchingIdd[Tname]**
vgg = 10V, vdd = 20V, RGG = 3.5ohm




**TrrIf[Ir]**
vdd = 20V, didt = 100A/us, Temp = 25degC



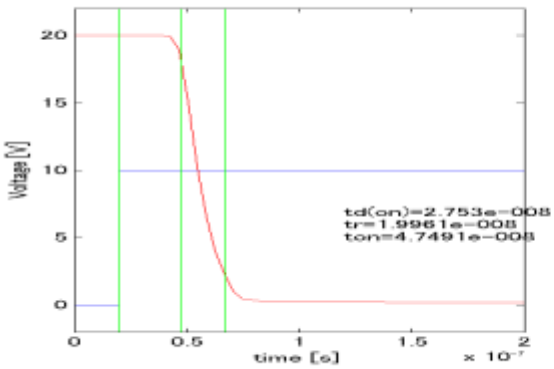

**QrrIf[Ir]**
vdd = 20V, didt = 100A/us, Temp = 25degC

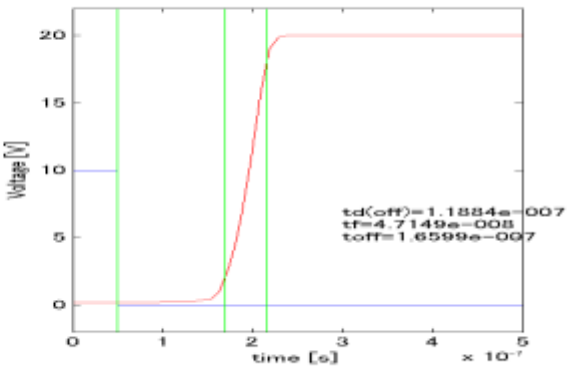


Simulation results are following.
Explanatory notes　— : simulated

**Switching Waveform ( Blue : INPUT　Red : OUTPUT )**

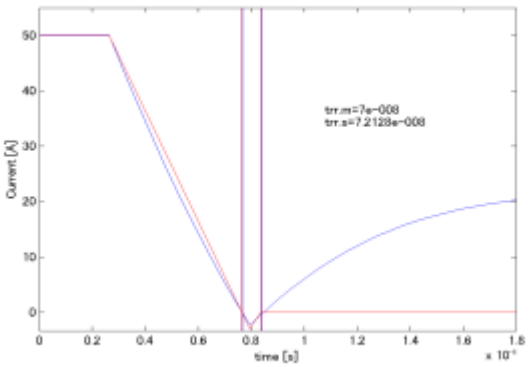
vgg = 10V, vdd = 20V, RGG = 3.5ohm, idd = 180A




**Trr Waveform ( Red : Datasheet　Blue : Simulation )**

vdd = 20V, didt = 100A/us, Temp = 25degC, idd = 50A



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