

PSpice Model

NMOS

Infineon

IPD95R450P7



Model Information

Model An original macro model based on BSIM3 model
Call Name MDC_IPD95R450P7_PS
Pin Assign 1:G 2:D 3:S
File List Model Library MDC_IPD95R450P7_PS01.lib
 Model Report MDC_IPD95R450P7_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. 2.2, 2022-01-12
- Product name IPD95R450P7
- Company name Infineon Technologies AG
- Characteristics IdVds[Vgs], IdVds[Vgs]2, Rds(on)Id[Vgs], NormRds(on)Temp[Id], IdVgs[Temp], VgsQg[Vdd], IsVsd[Temp], BvTemp[ir], CapacitanceVds[Cname], VthTemp[Id], SwitchingLoad[Tname], Trrlf[Temp], Qrrlf[Temp], 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	950	V
Gate-source voltage (DC)	-20	to	20	V
Temperature	-55	to	150	deg C

MOSFET

○ : Implemented
× : Not Implemented
— : Not applicable

Model Functions Table

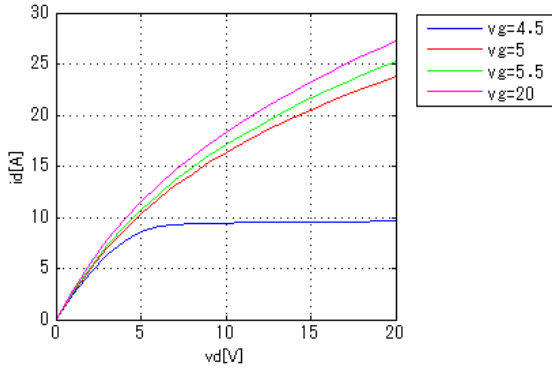
RANK=1

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

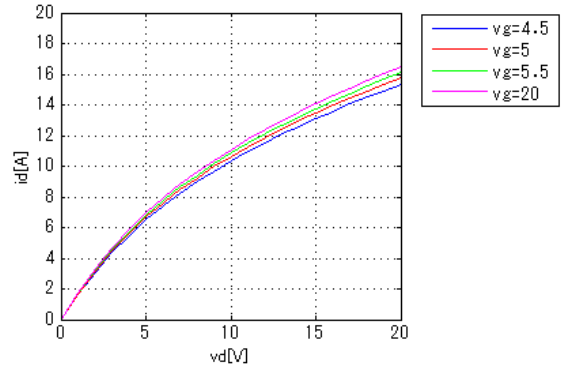
IdVds[Vgs]

Temp = 25degC



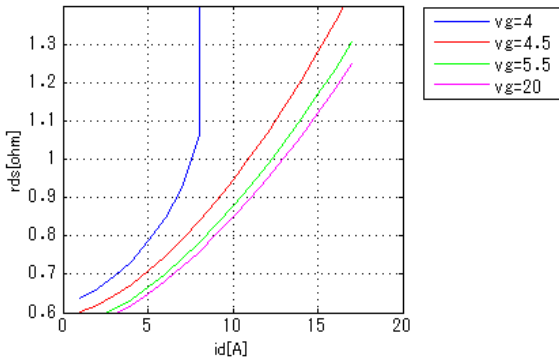
IdVds[Vgs]2

Temp = 125degC



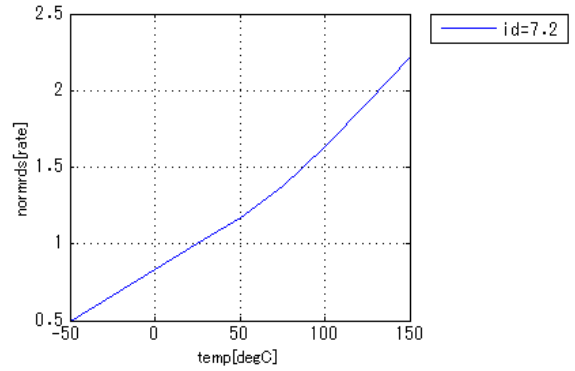
Rds(on)Id[Vgs]

Temp = 125degC



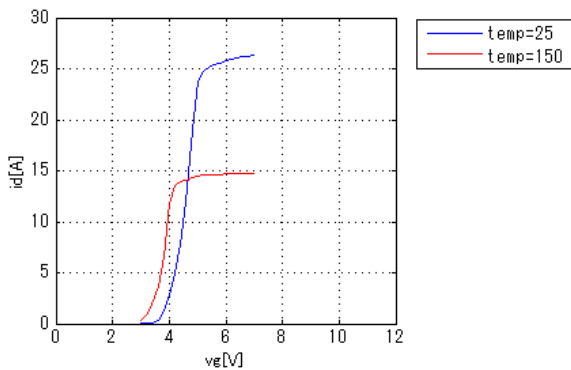
NormRds(on)Temp[Id]

$V_{gs} = 10V$



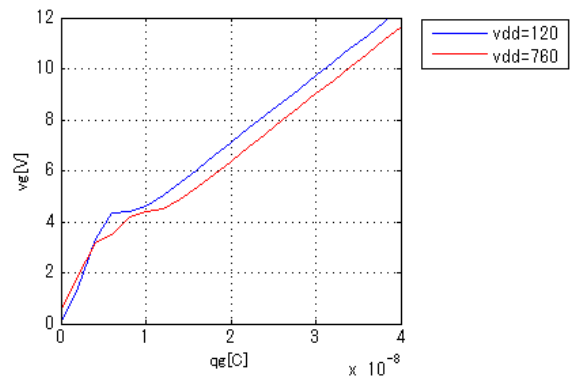
IdVgs[Temp]

$V_{ds} = 20V$



VgsQg[Vdd]

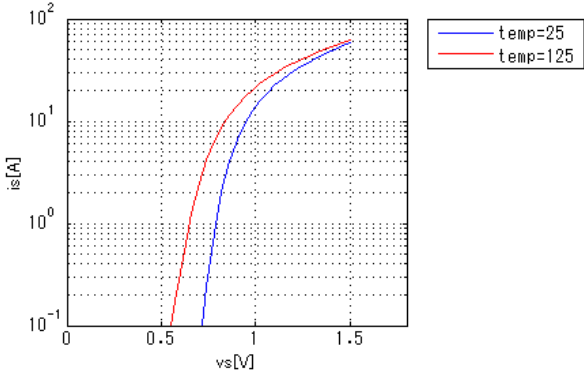
$I_d = 7.2A$



Simulation results are following.
 Explanatory notes — : simulated

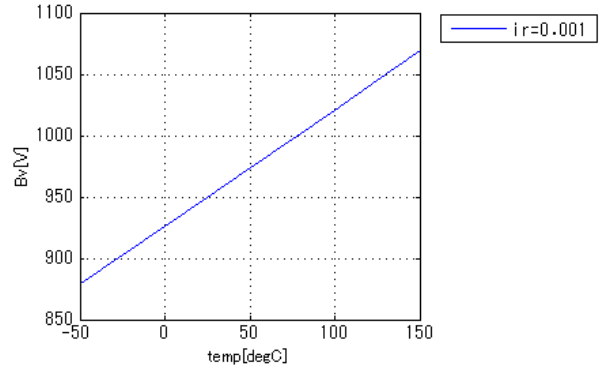
IsVsd[Temp]

vg = 0V



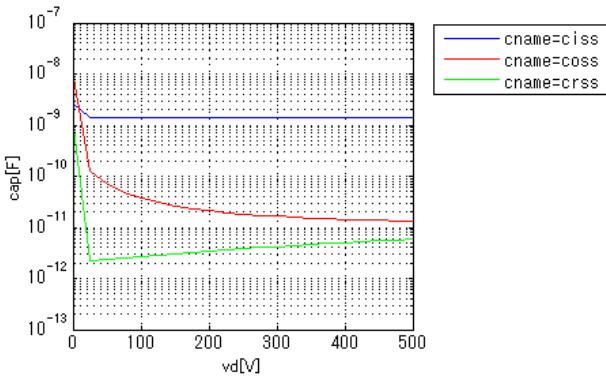
BvTemp[ir]

ir = 0.001A



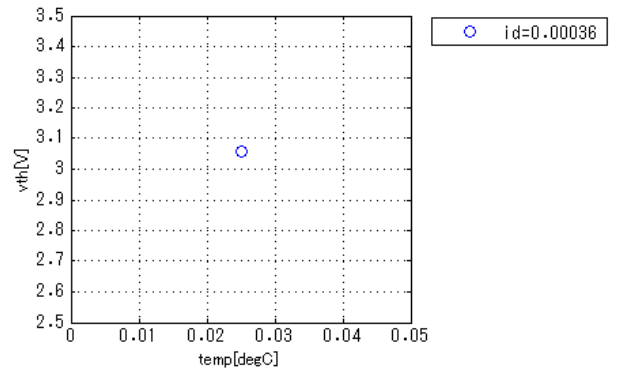
CapacitanceVds[Cname]

freq = 250000Hz



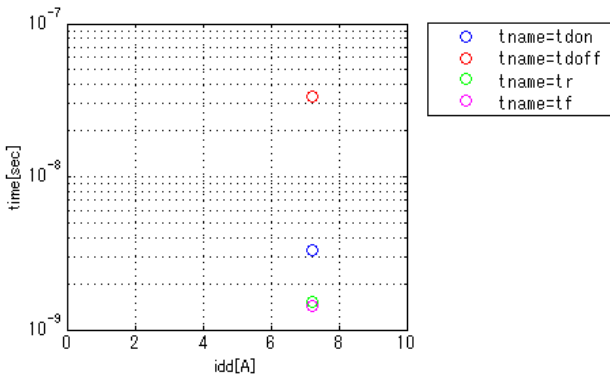
VthTemp[Id]

Vd = Vg



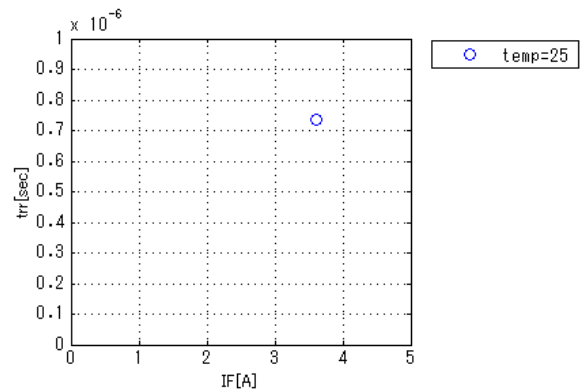
SwitchingLoad[Tname]

vgg = 13V, vdd = 400V, Lload = 0.00111H, Temp = 25degC



Trrlf[Temp]

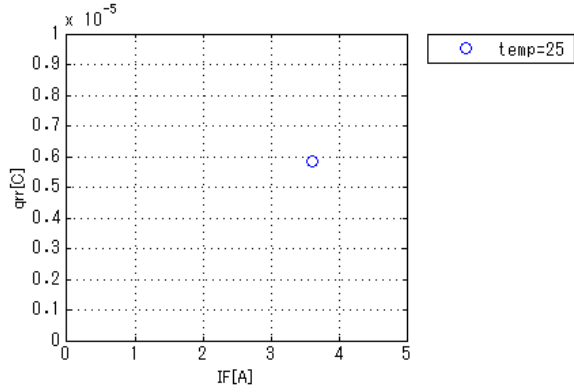
vdd = 400V, didt = 50A/us



Simulation results are following.
 Explanatory notes — : simulated

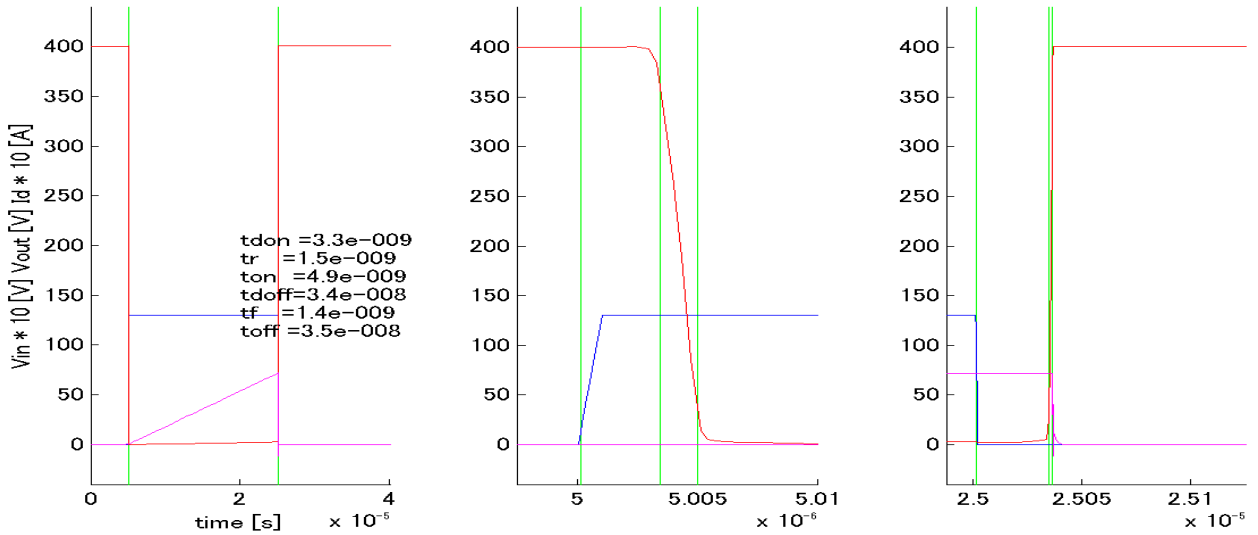
Qrrlf[Temp]

vdd = 400V, didt = 50A/us



Switching Waveform (Blue : INPUT Red : OUTPUT Magenta : Current)

v_{gg} = 13V, v_{cc} = 400V, R_{GG} = 5.3ohm, Temp = 25degC, I_d = 7.2A(Lload=0.00111H)



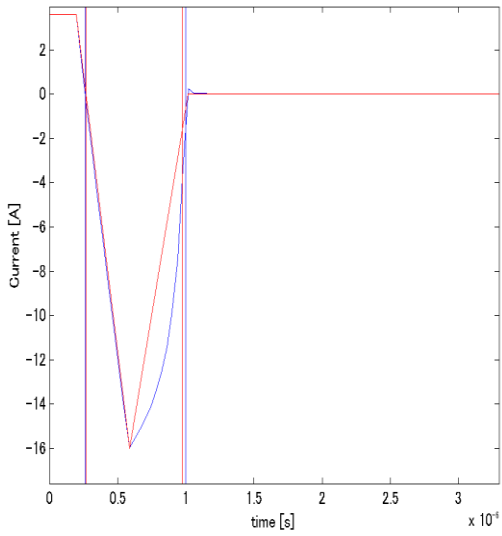
Simulation results are following.

Explanatory notes — : simulated

Trr Waveform (Red : Datasheet Blue : Simulation)

didt = 50A/us, vcc = 400V, if = 3.6A, ir = 16A

trr=7.3517e-007
qrr=5.8666e-006



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