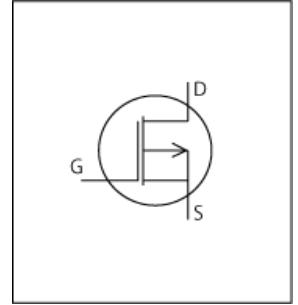


PSpice Model

PMOS

ROHM

RSR020P05FRA



Model Information

Model A macro model based on BSIM3 model
Call Name MDC_RSR020P05FRA_PS
Pin Assign 1:G 2:S 3:D
File List Model Library MDC_RSR020P05FRA_PS01.lib
 Model Report MDC_RSR020P05FRA_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 20160808 - Rev.001
- Product name RSR020P05FRA
- Company name ROHM Co., Ltd.
- Characteristics IdVds[Vgs], IdVds[Vgs]2, BvTemp[ir], IdVgs[Temp], VthTemp[Id], YfsId[Temp], Rds(on)Vgs[Id], Rds(on)Temp[Vgs], Rds(on)Id[Vgs], Rds(on)Id[Temp], Rds(on)Id[Temp]2, Rds(on)Id[Temp]3, CapacitanceVds[Cname], SwitchingIdd[Tname], VgsQg[Vdd], IsVsd[Temp], SwitchingWaveform

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	-45	V
Gate-source voltage (DC)	20	to	-20	V
Temperature	-55	to	150	deg C

MOSFET

○ : Implemented
× : Not Implemented
— : Not applicable

Model Functions Table

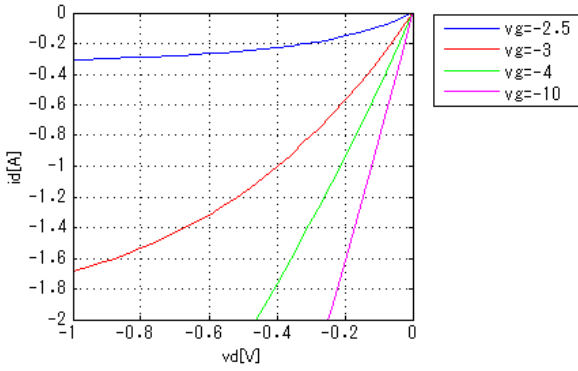
RANK=1

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

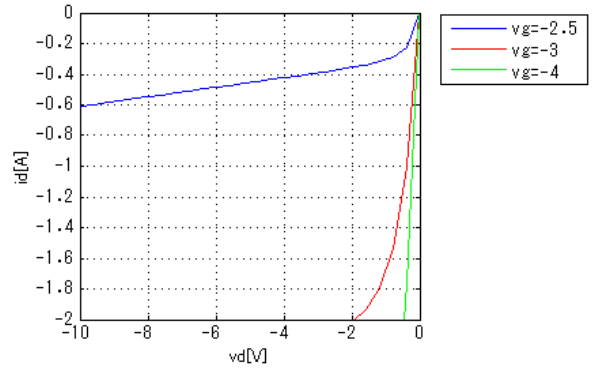
IdVds[Vgs]

Temp = 25degC



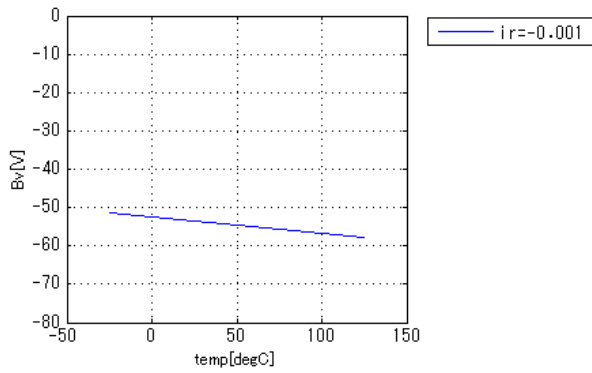
IdVds[Vgs]2

Temp = 25degC



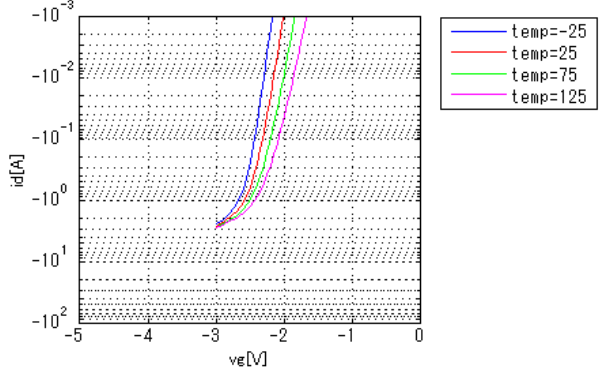
BvTemp[ir]

$i_r = -0.001A$



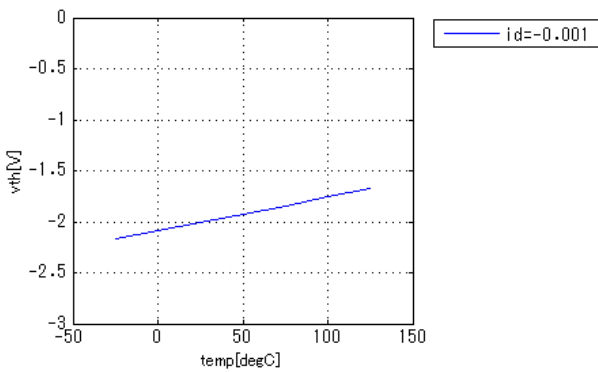
IdVgs[Temp]

$V_{ds} = -10V$



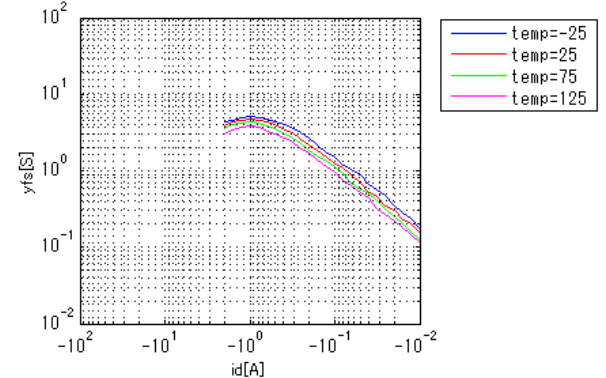
VthTemp[Id]

$V_{ds} = -10V$



YfsId[Temp]

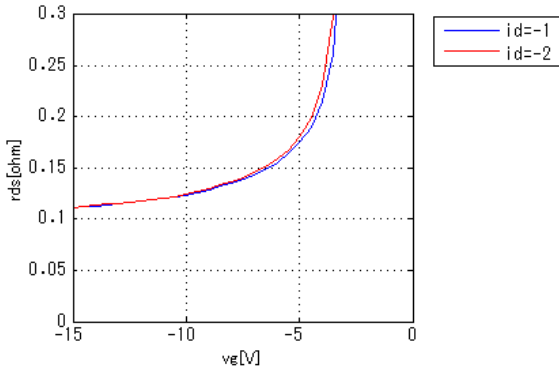
$V_{ds} = -10V$



Simulation results are following.
 Explanatory notes — : simulated

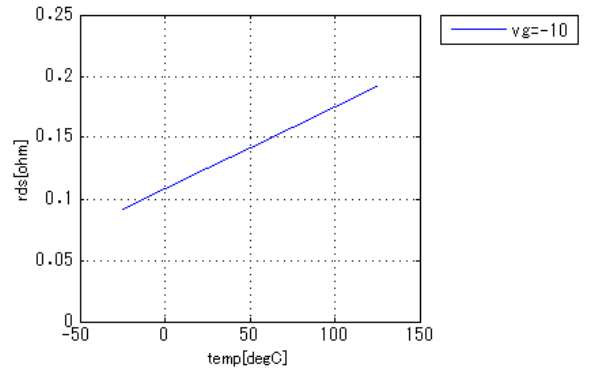
Rds(on)Vgs[Id]

Temp = 25degC



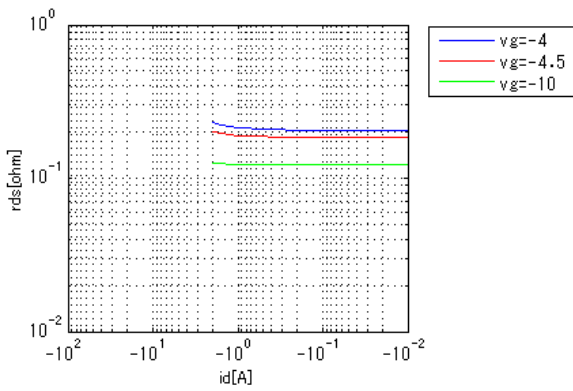
Rds(on)Temp[Vgs]

Id = -2A



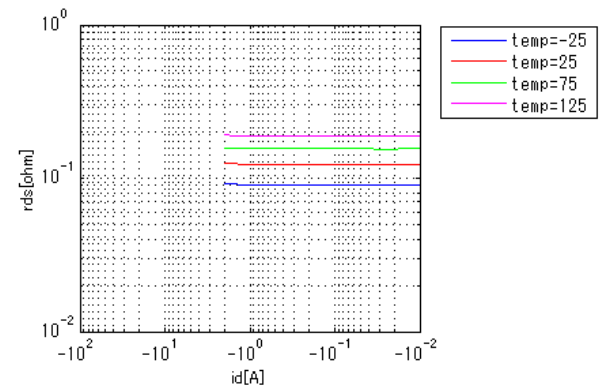
Rds(on)Id[Vgs]

Temp = 25degC



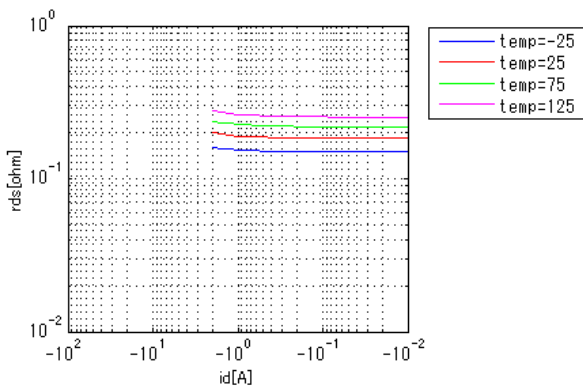
Rds(on)Id[Temp]

Vgs = -10V



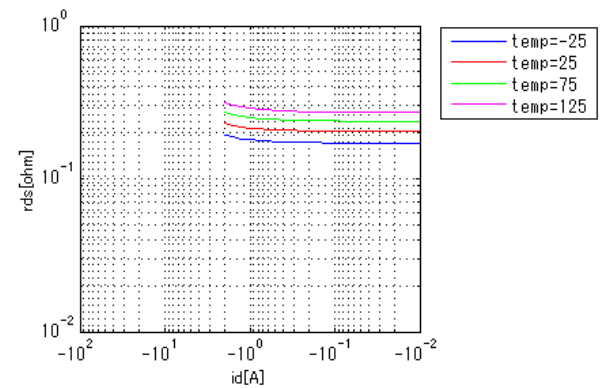
Rds(on)Id[Temp]2

Vgs = -4.5V



Rds(on)Id[Temp]3

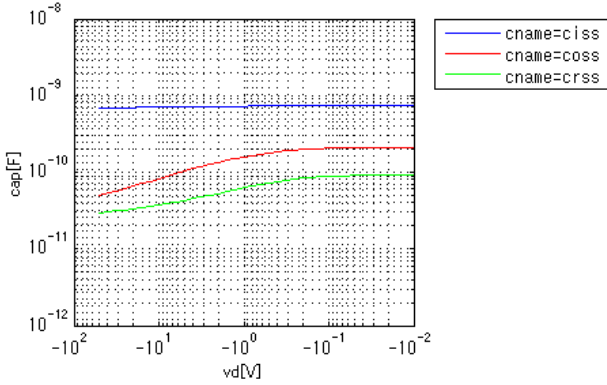
Vgs = -4V



Simulation results are following.
 Explanatory notes — : simulated

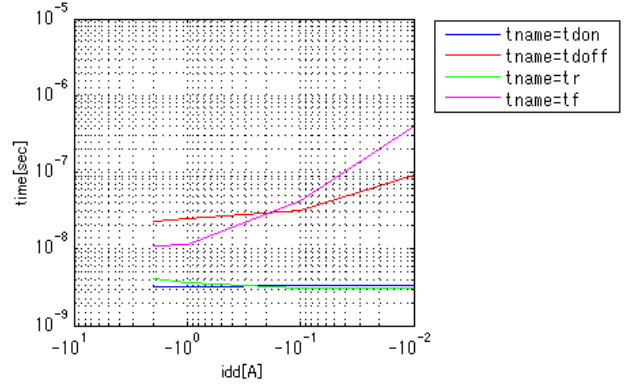
CapacitanceVds[Cname]

freq = 1000000Hz



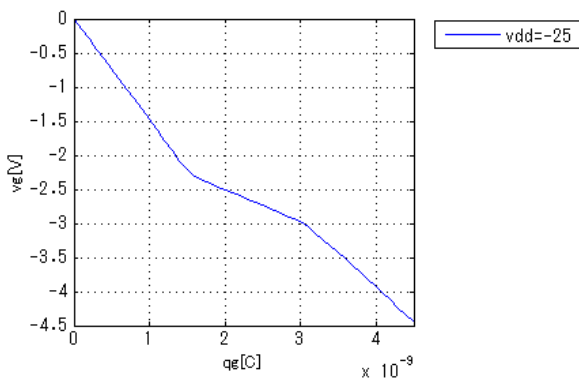
SwitchingIdd[Tname]

vgg = -10V, vdd = -25V, RGG = 10ohm



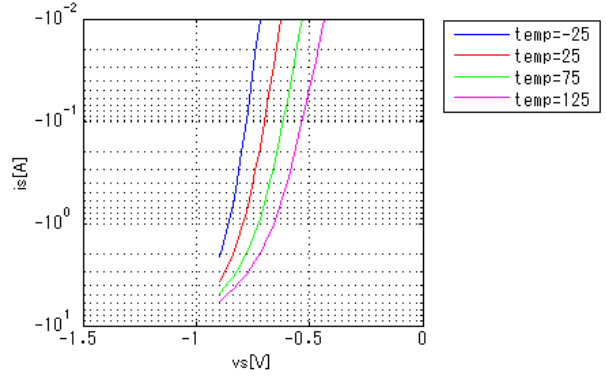
VgsQg[Vdd]

Id = -2A



IsVsd[Temp]

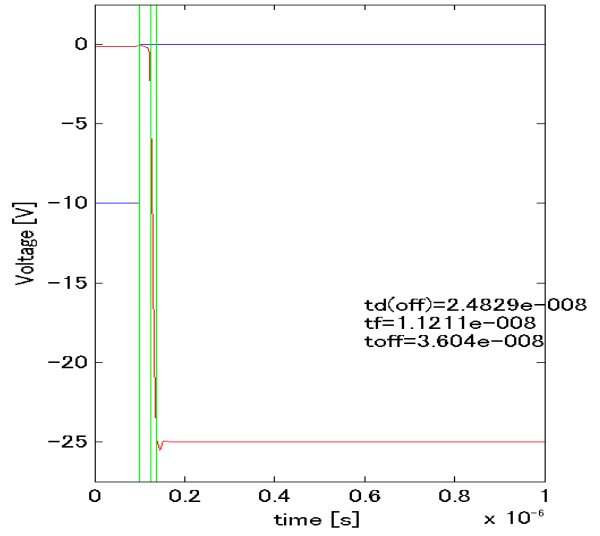
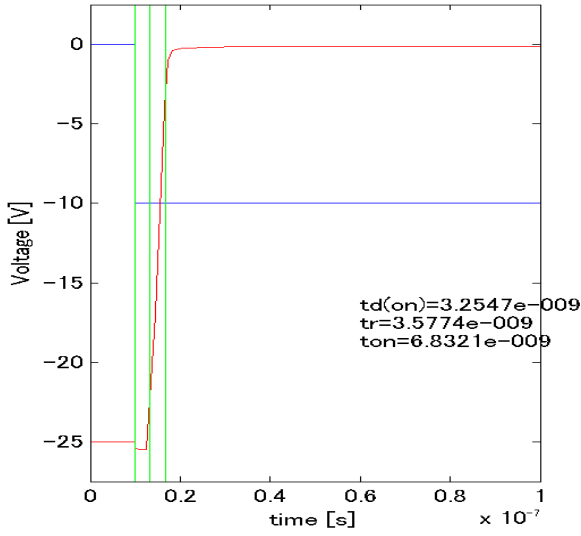
vg = 0V



Simulation results are following.
Explanatory notes — : simulated

Switching Waveform (Blue : INPUT Red : OUTPUT)

vgg = -10V, vcc = -25V, RGG = 10ohm, Temp = 25degC, Ic = -1A



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