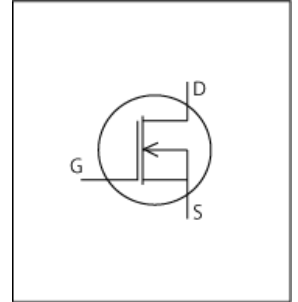


PSpice Model

NMOS

ROHM

SCT3160KL



Model Information

Model A macro model based on BSIM3 model
Call Name MDC_SCT3160KL_PS
Pin Assign 1:G 2:D 3:S
File List Model Library MDC_SCT3160KL_PS01.lib
 Model Report MDC_SCT3160KL_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 2016.06 - Rev.A
- Product name SCT3160KL
- Company name ROHM Co., Ltd.
- Characteristics IdVds[Vgs], IdVds[Vgs]2, IdVds[Vgs]3, IdVds[Vgs]4, IdVgs[Temp], IdVgs[Temp]2, VthTemp[Id], Yfsld[Temp], Rds(on)Vgs[Id], Rds(on)Temp[Id], Rds(on)Id[Temp], CapacitanceVds[Cname], SwitchingIdd[Tname], VgsQg[Vdd], IsVsd[Temp], 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	1,200	V
Gate-source voltage (DC)	-4	to	22	V
Temperature	-55	to	175	deg C

MOSFET

○ : Implemented
× : Not Implemented
— : Not applicable

Model Functions Table

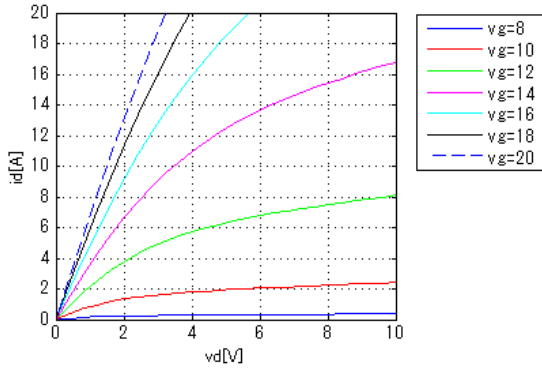
RANK=1

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

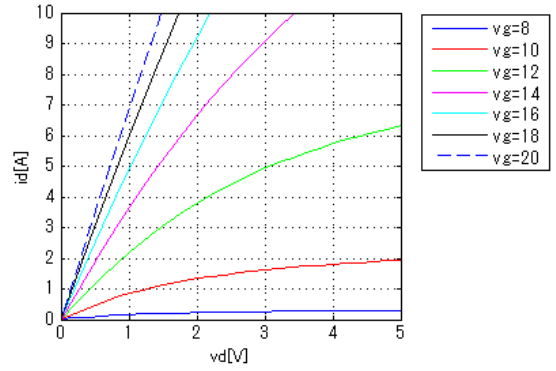
IdVds[Vgs]

Temp = 25degC



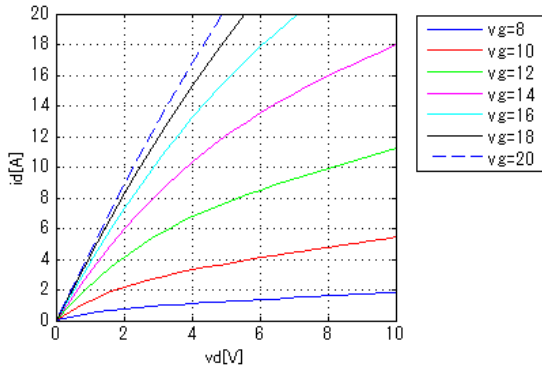
IdVds[Vgs]2

Temp = 25degC



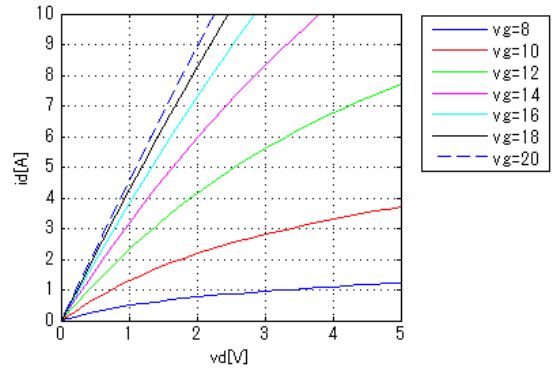
IdVds[Vgs]3

Temp = 150degC



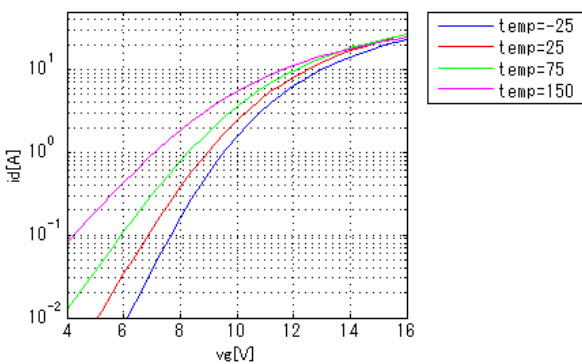
IdVds[Vgs]4

Temp = 150degC



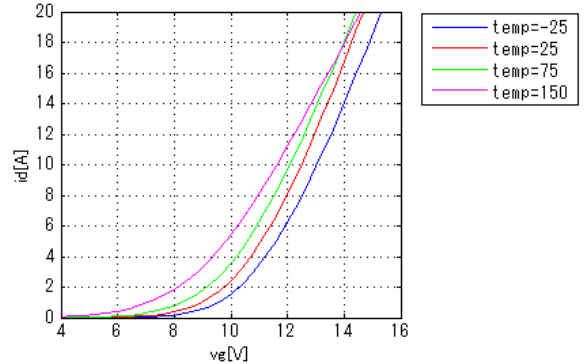
IdVgs[Temp]

Vds = 10V



IdVgs[Temp]2

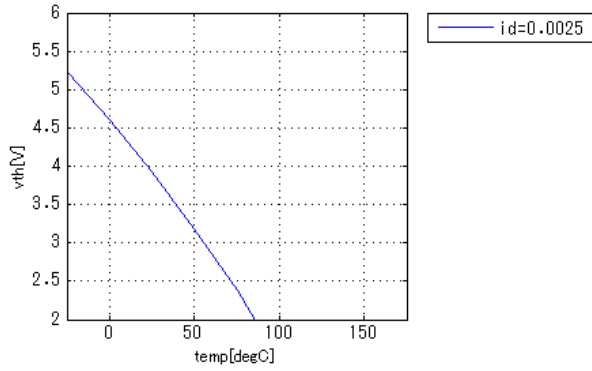
Vds = 10V



Simulation results are following.
 Explanatory notes — : simulated

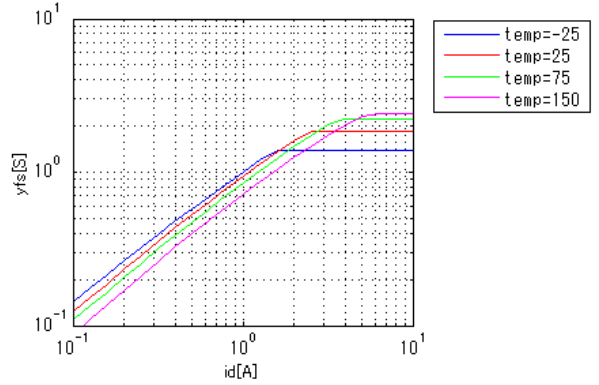
VthTemp[Id]

Vds = 10V



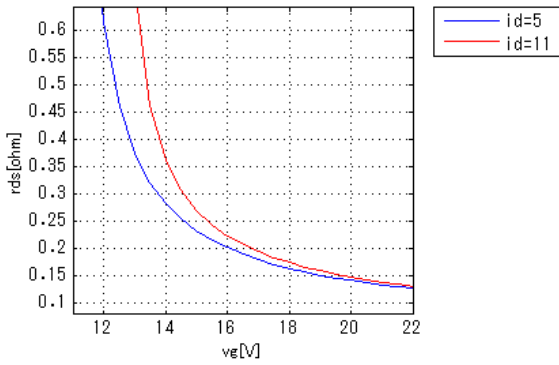
YfsId[Temp]

Vds = 10V



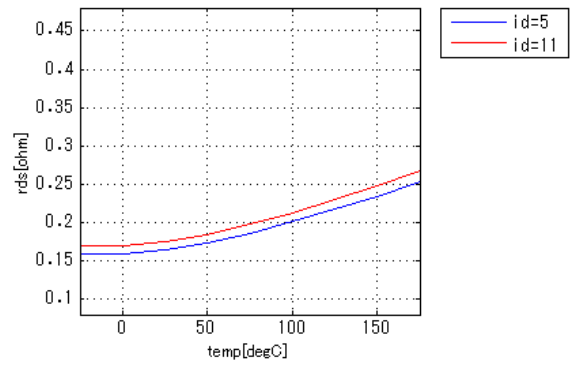
Rds(on)Vgs[Id]

Temp = 25degC



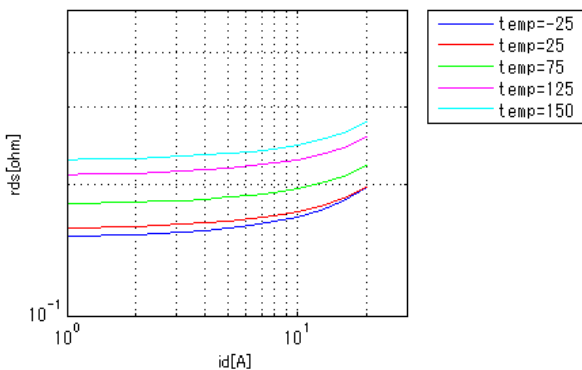
Rds(on)Temp[Id]

Vgs = 18V



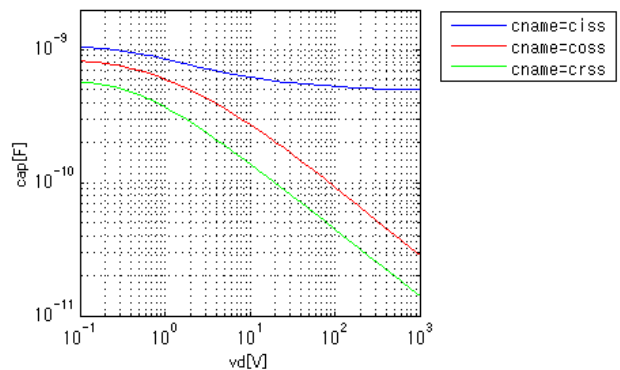
Rds(on)Id[Temp]

Vgs = 18V



CapacitanceVds[Cname]

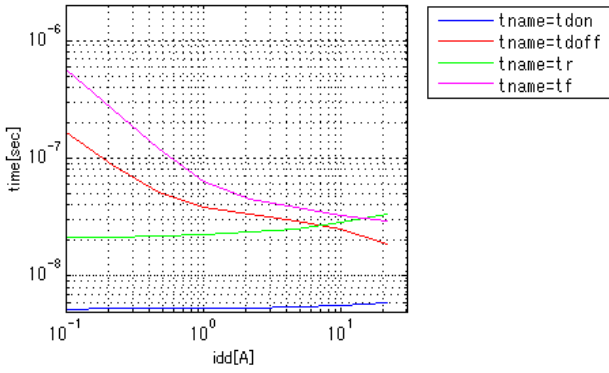
freq = 1000000Hz



Simulation results are following.
 Explanatory notes — : simulated

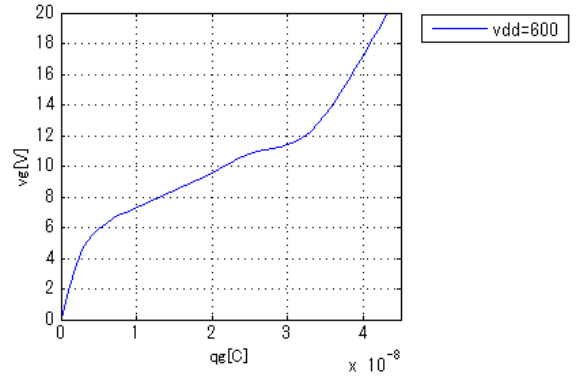
SwitchingIdd[Tname]

vgg = 18V, vdd = 400V, RGG = 0.1ohm



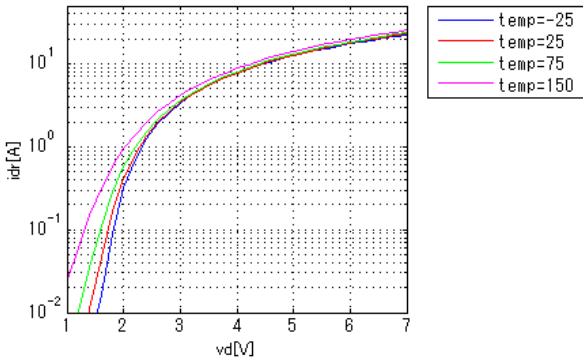
VgsQg[Vdd]

$I_d = 5A$



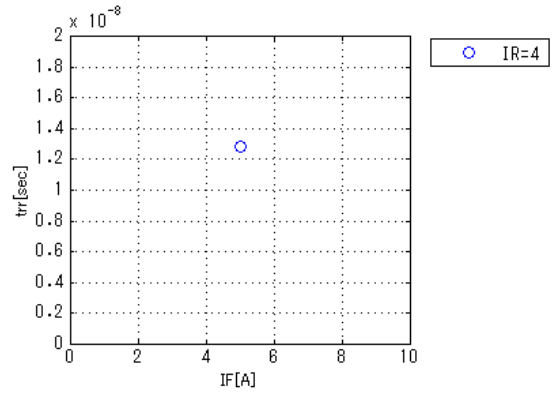
IsVsd[Temp]

$v_g = 0V$



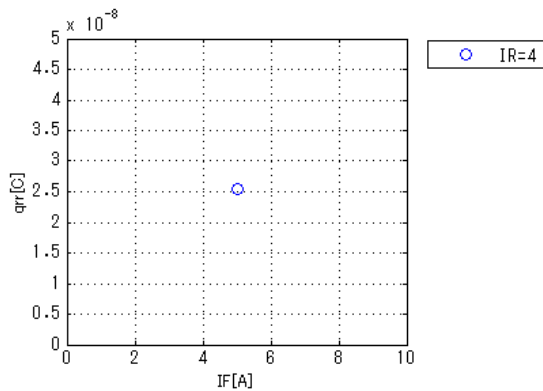
Trrlf[Ir]

$v_{dd} = 600V$, $di_{dt} = 1100A/us$, Temp = 25degC



Qrrlf[Ir]

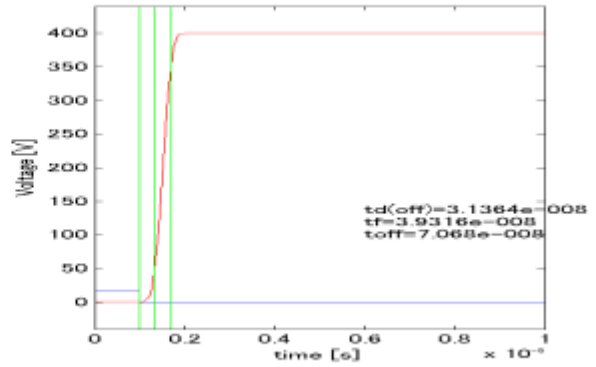
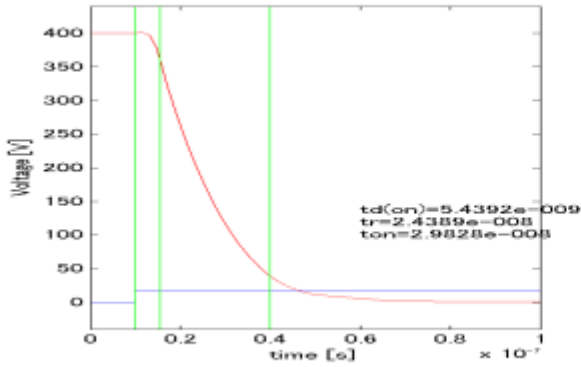
$v_{dd} = 600V$, $di_{dt} = 1100A/us$, Temp = 25degC



Simulation results are following.
 Explanatory notes — : simulated

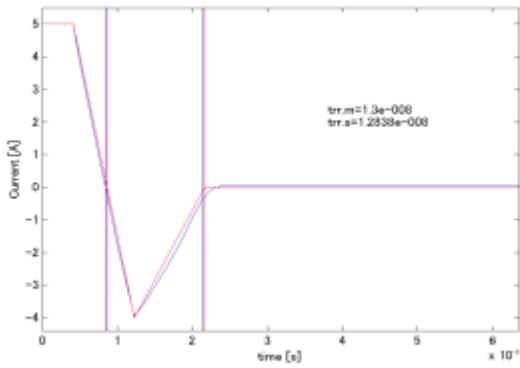
Switching Waveform (Blue : INPUT Red : OUTPUT)

vgg = 18V, vdd = 400V, RGG = 0.1ohm , icc = 5A



Trr Waveform (Red : Datasheet Blue : Simulation)

vdd = 600V, didt = 1100A/us, Temp = 25degC, icc = 5A



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