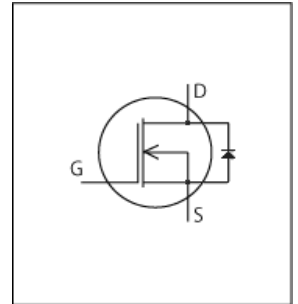


PSpice Model

NMOS

Nexperia

BUK7M8R5-40H



Model Information

Model A macro model based on BSIM3 model
Call Name MDC_BUK7M8R5-40H_PS
Pin Assign 1:S 2:S 3:S 4:G mb:D
File List Model Library MDC_BUK7M8R5-40H_PS01.lib
 Model Report MDC_BUK7M8R5-40H_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 5 February 2019
- Product name BUK7M8R5-40H
- Company name Nexperia B.V.
- Characteristics $I_{dV_{ds}[V_{gs}], R_{ds}(on)V_{gs}[Temp], I_{dV_{gs}[Temp], I_{dV_{gs}[Temp]^2, V_{thTemp}[I_d], R_{ds}(on)I_d[V_{gs}], NormR_{ds}(on)Temp[I_d], V_{gs}Q_g[V_{d,d}], CapacitanceV_{ds}[Cname], I_{sV_{sd}[Temp], SwitchingR_{load}[Tname], TrrI_{f}[I_r], QrrI_{f}[I_r], SwitchingWaveform, TrrWaveform, SwitchingWaveform, TrrWaveform}$

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)	-10	to	20	V
Temperature	-55	to	175	deg C

MOSFET

○ : Implemented
× : Not Implemented
— : Not applicable

Model Functions Table

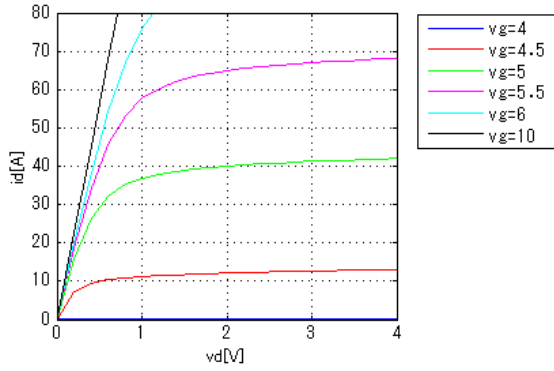
RANK=1

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

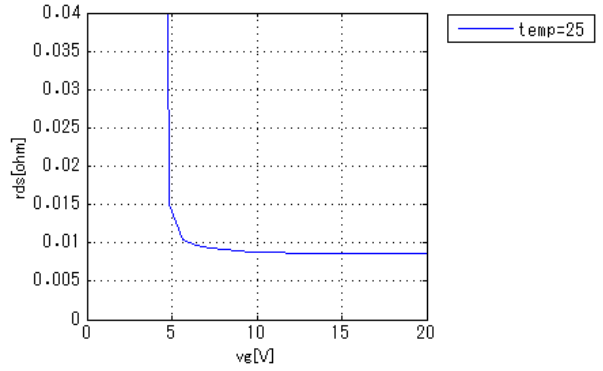
IdVds[Vgs]

Temp = 25degC



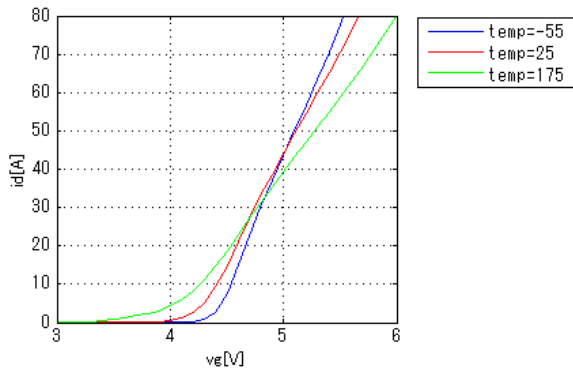
Rds(on)Vgs[Temp]

Id = 15A



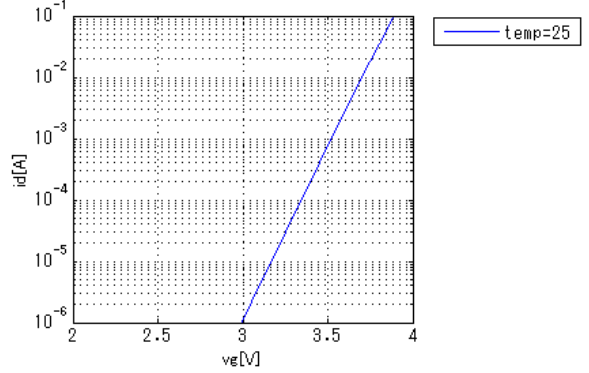
IdVgs[Temp]

Vds = 8V



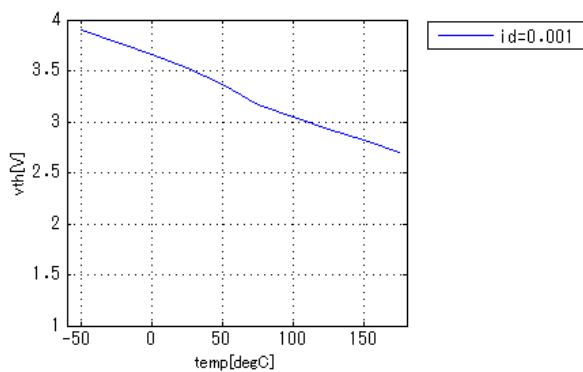
IdVgs[Temp]2

Vds = 5V



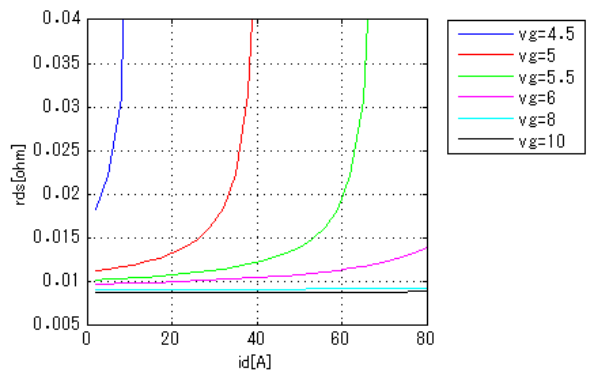
VthTemp[Id]

Vd = Vg



Rds(on)Id[Vgs]

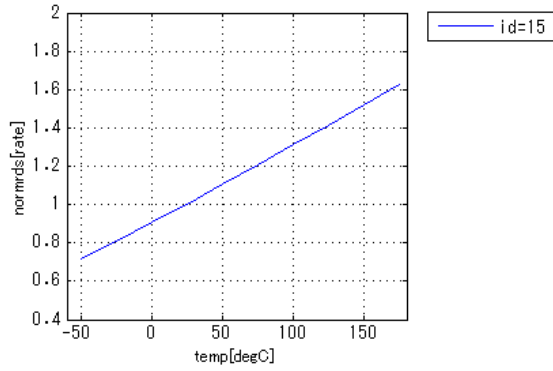
Temp = 25degC



Simulation results are following.
 Explanatory notes — : simulated

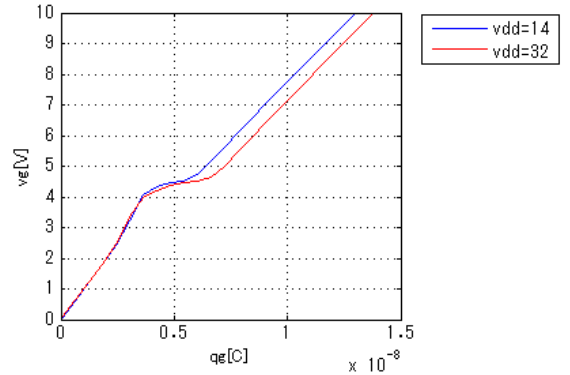
NormRds(on)Temp[Id]

Vgs = 10V



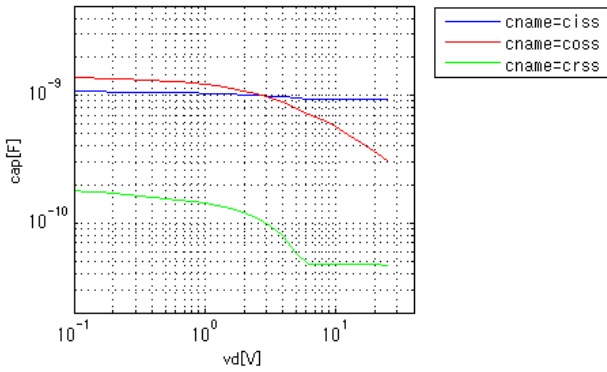
VgsQg[Vdd]

Id = 15A



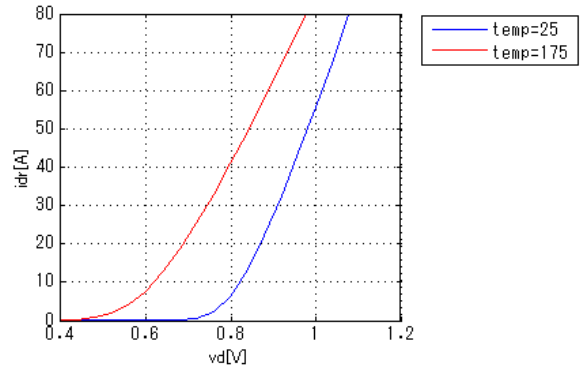
CapacitanceVds[Cname]

freq = 1000000Hz



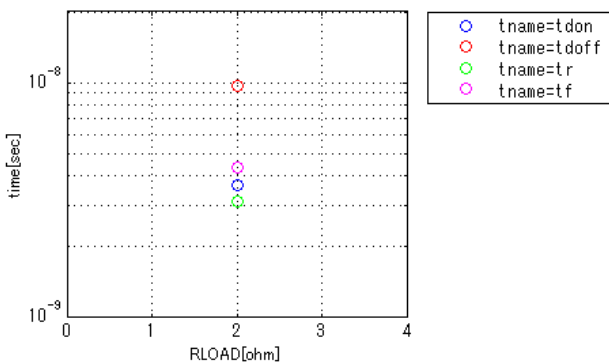
IsVsd[Temp]

vg = 0V



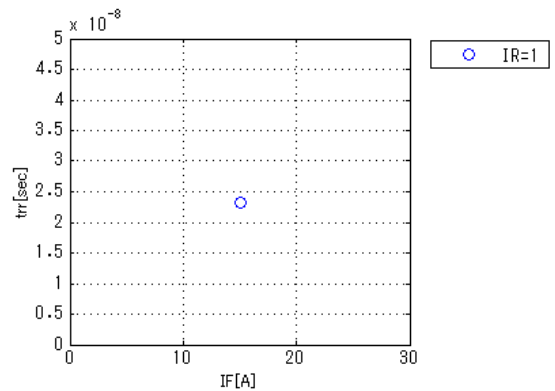
SwitchingRload[Tname]

vgg = 10V, vdd = 30V, RGG = 5ohm



TrrIf[Ir]

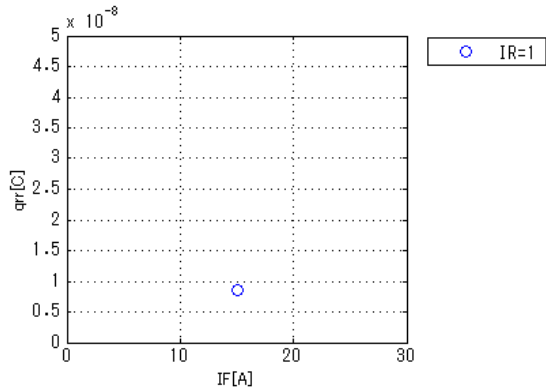
vdd = 20V, didt = 100A/us, Temp = 25degC



Simulation results are following.
 Explanatory notes — : simulated

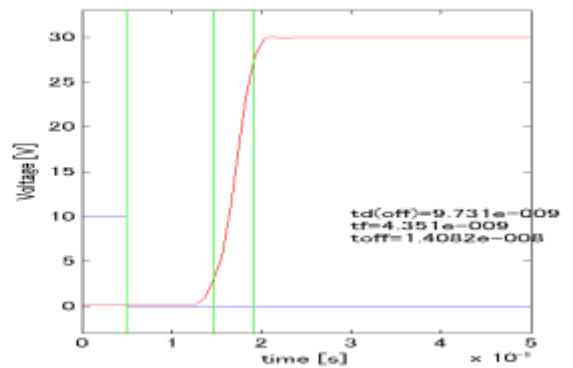
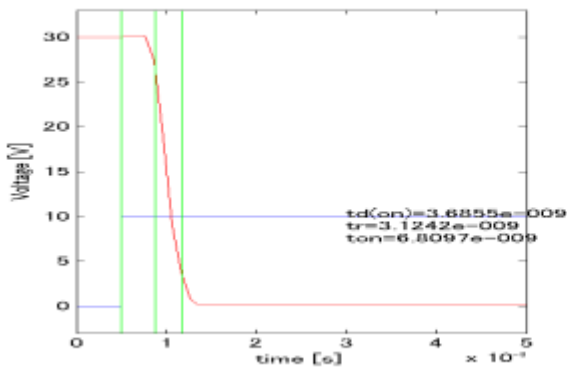
Qrrlf[Ir]

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



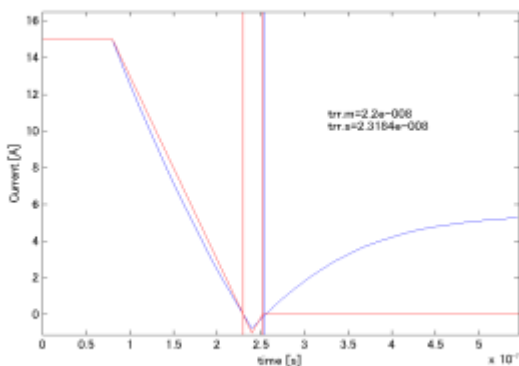
Switching Waveform (Blue : INPUT Red : OUTPUT)

v_{gg} = 10V, v_{dd} = 20V, R_{GG} = 3.5ohm, R_{LOAD} = 2ohm



Trr Waveform (Red : Datasheet Blue : Simulation)

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



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