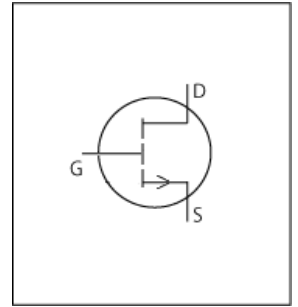


LTspice Model

GaN

STM

SGT120R65AL



Model Information

Model A macro model based on BSIM3 model
Call Name MDC_SGT120R65AL_LT
Pin Assign 1:S 2:S 3:S 4:G 5:D 6:D 7:D 8:D
File List Model Library MDC_SGT120R65AL_LT01.lib
 Model Report MDC_SGT120R65AL_LT.pdf (this file)

Verified Simulator Version LTspice version XVII
Note

References

The information which was used for modeling is as follow :

[Data Sheet]

- Date/Version 2023 Rev 12
- Product name SGT120R65AL
- Company name STMicroelectronics N.V.
- Characteristics IdVds[Vgs], IdVds[Vgs]2, IdVgs[Temp], VgsQg[Vdd], CapacitanceVds[Cname], NormRds(on)Temp[Vgs], Rds(on)Id[Vgs], Rds(on)Id[Vgs]2, IdVds[Vgs]3, IdVds[Vgs]4, NormVthTemp[Id], SwitchingLoad[Tname], SwitchingLoad[Tname]2, 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	650	V
Gate-source voltage (DC)	-10	to	7	V
Temperature	-55	to	150	deg C

MOSFET

○ : Implemented
× : Not Implemented
— : Not applicable

Model Functions Table

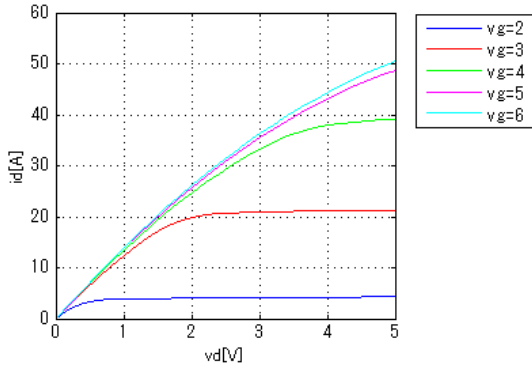
RANK=1

Functions	RANK	Implemented
ID-VDS-VGS	1	○
ID-VGS(Temp)	1	○
RDS(on)	1	○
Capacitance	1	○
Gate Charge	1	○
IS-VSD	1	○
Reverse recovery	1	—
Switching(Typ.)	1	○
Bv	1	—
Yfs	1	—
Vth	1	○

Simulation results are following.
 Explanatory notes — : simulated

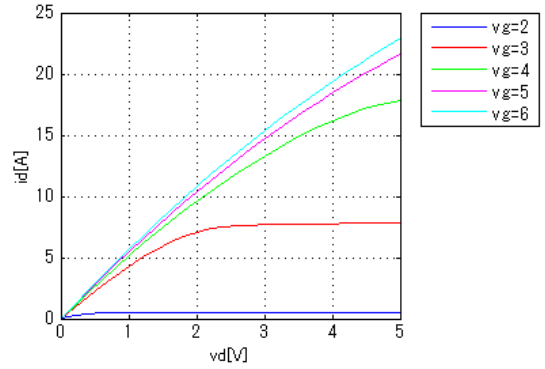
IdVds[Vgs]

Temp = 25degC



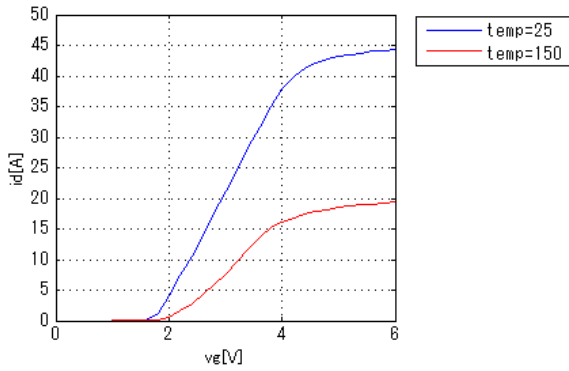
IdVds[Vgs]2

Temp = 150degC



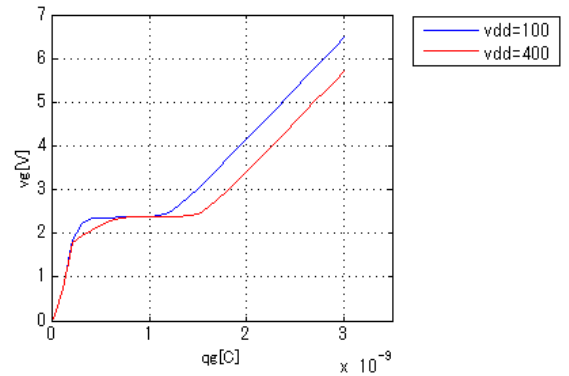
IdVgs[Temp]

Vds = 4V



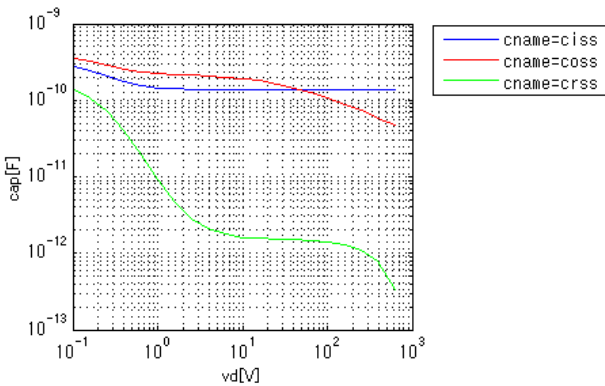
VgsQg[Vdd]

Id = 10A



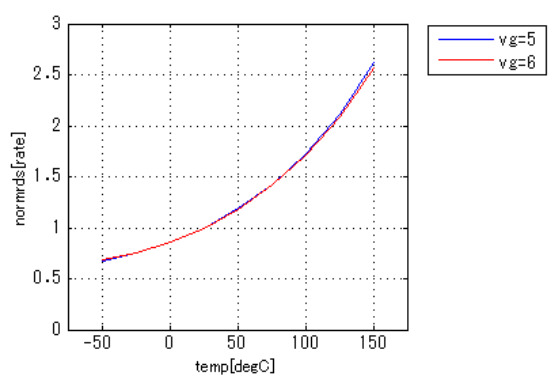
CapacitanceVds[Cname]

freq = 1000000Hz



NormRds(on)Temp[Vgs]

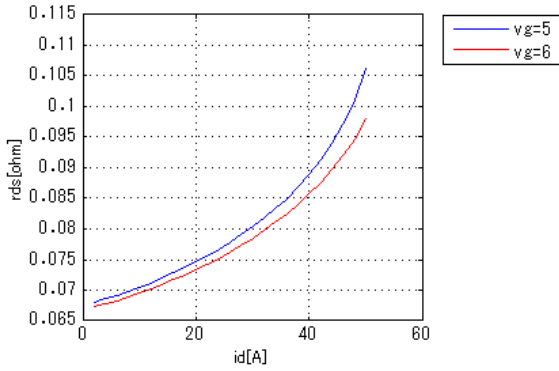
Id = 5A



Simulation results are following.
 Explanatory notes — : simulated

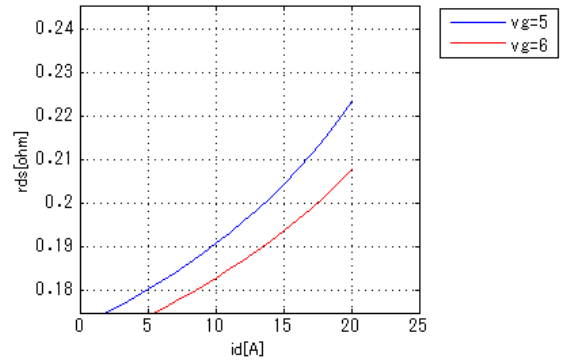
Rds(on)Id[Vgs]

Temp = 25degC



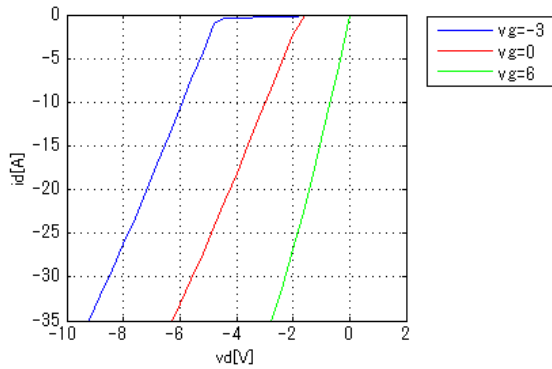
Rds(on)Id[Vgs]2

Temp = 150degC



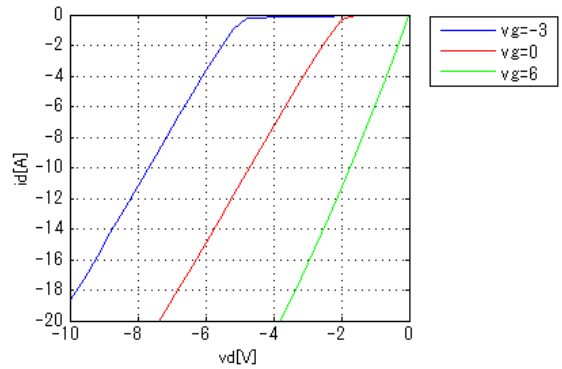
IdVds[Vgs]3

Temp = 25degC



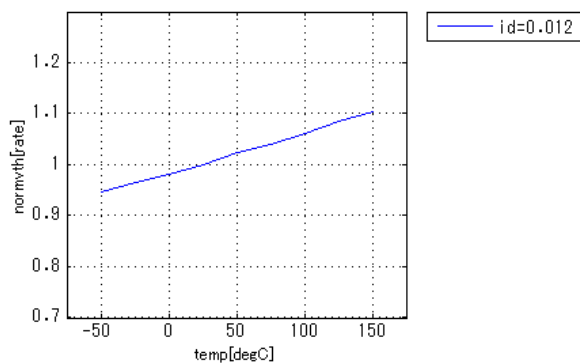
IdVds[Vgs]4

Temp = 150degC



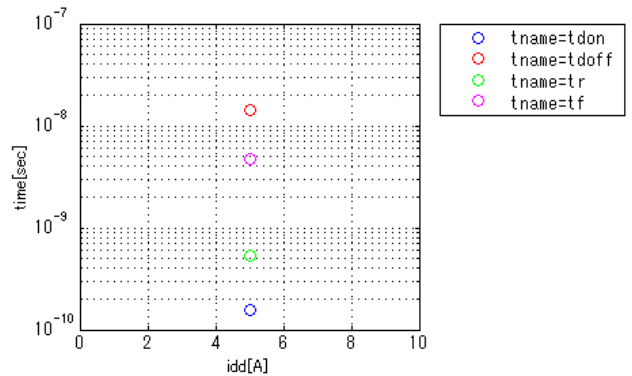
NormVthTemp[Id]

vd = 0.1V



SwitchingLoad[Tname]

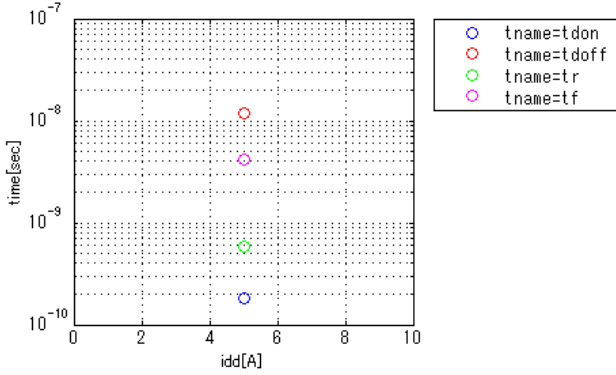
v_{gg} = 6V, v_{dd} = 400V, L_{load} = 0.0005H, R_{Gon} = 10ohm, R_{Goff} = 3.3ohm, Temp = 25degC



Simulation results are following.
 Explanatory notes — : simulated

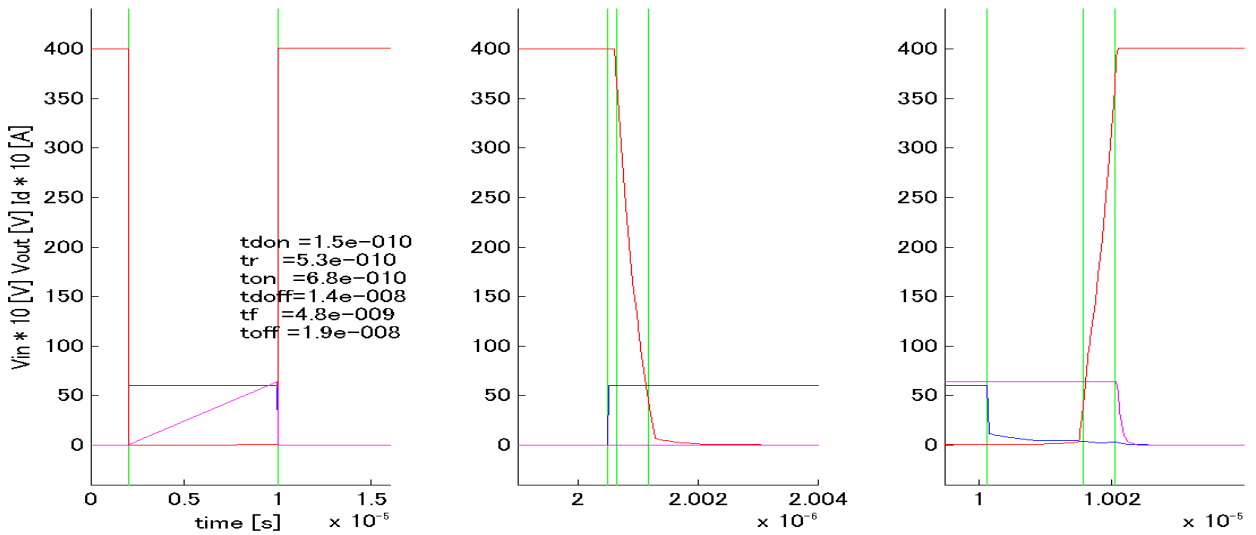
SwitchingLload[Tname]2

vgg = 6V, vdd = 400V, Lload = 0.0005H, RGon = 10ohm, RGon = 3.3ohm, Temp = 150degC



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

vgg = 6V, vdd = 400V, Lload = 0.0005H, RGon = 10ohm, RGon = 3.3ohm, Temp = 25degC, Id = 6A



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