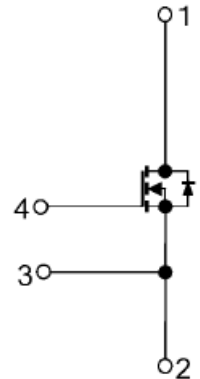


PSpice Model

NMOS

TOSHIBA

TK62Z60X



Model Information

Model A macro model based on BSIM3 model
Call Name MDC_TK62Z60X_PS
Pin Assign 1:D 2:S1 3:S2 4:G
File List Model Library MDC_TK62Z60X_PS02.lib
 Model Report MDC_TK62Z60X_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 2017-12-06 Rev.4.0
- Product name TK62Z60X
- Company name Toshiba Corporation
- Characteristics IdVds[Vgs], IdVds[Vgs]2, IdVgs[Temp], VdsVgs[Id], BvTemp[ir], Rds(on)Id[Vgs], Rds(on)Temp[Id], IsVsd[Temp], CapacitanceVds[Cname], VthTemp[Id], VgsQg[Vdd], VdsQg[Vdd], SwitchingIdd[Tname], 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	600	V
Gate-source voltage (DC)	-30	to	30	V
Temperature	-55	to	150	deg C

MOSFET

○ : Implemented
× : Not Implemented
— : Not applicable

Model Functions Table

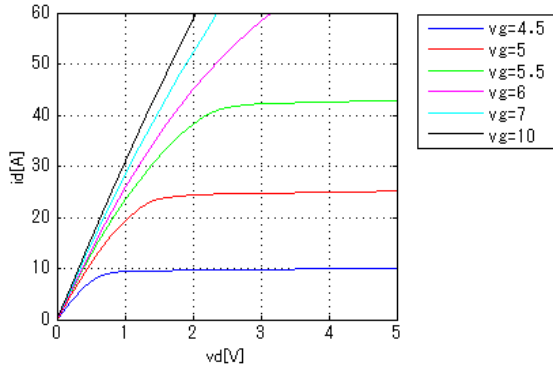
RANK=1

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

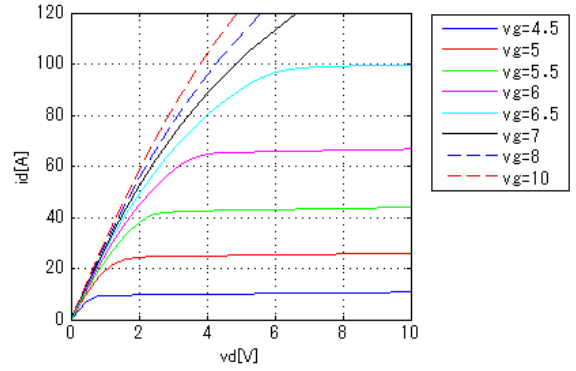
IdVds[Vgs]

Temp = 25degC



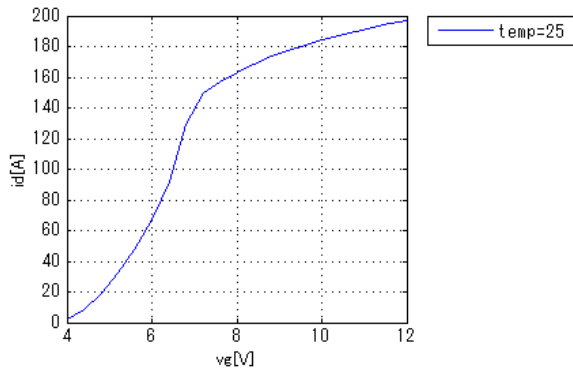
IdVds[Vgs]2

Temp = 25degC

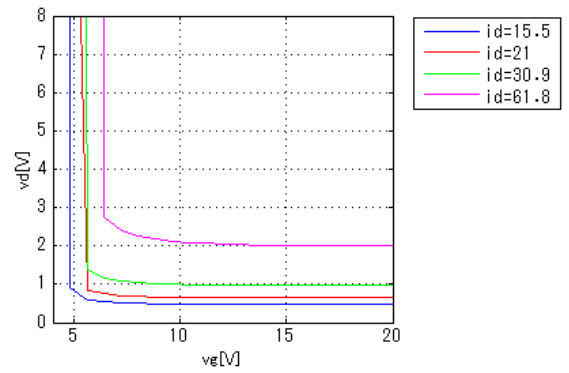


IdVgs[Temp]

Vds = 10V

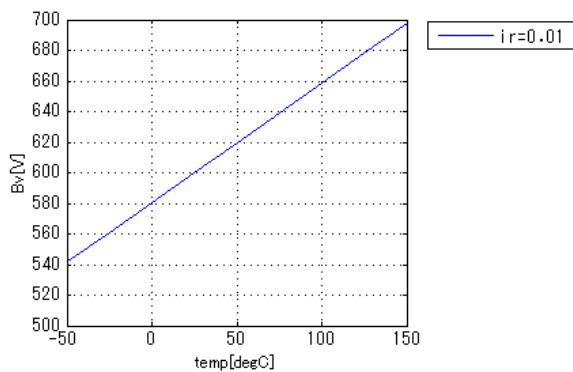


VdsVgs[Id]



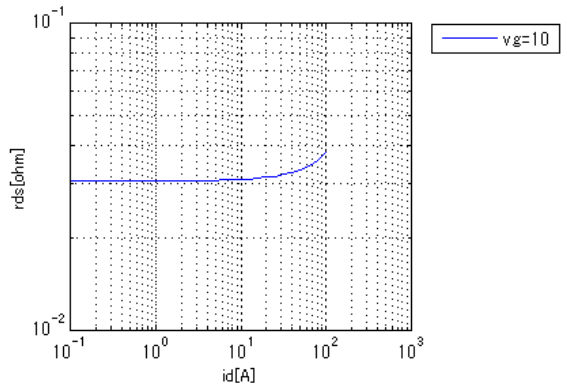
BvTemp[ir]

ir = 0.01A



Rds(on)Id[Vgs]

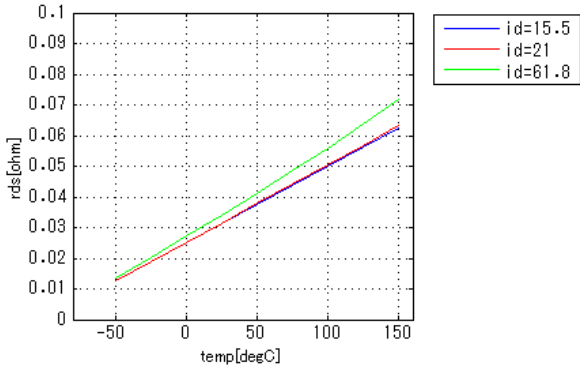
Temp = 25degC



Simulation results are following.
 Explanatory notes — : simulated

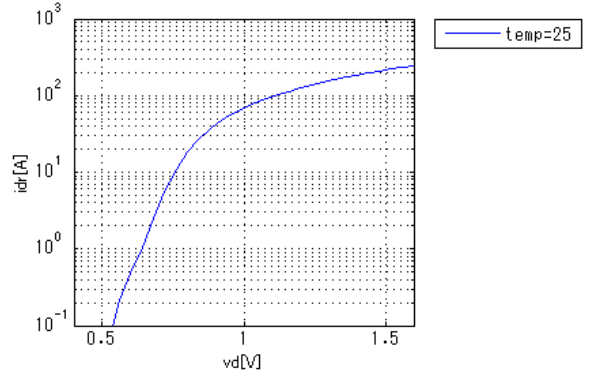
Rds(on)Temp[Id]

Vgs = 10V



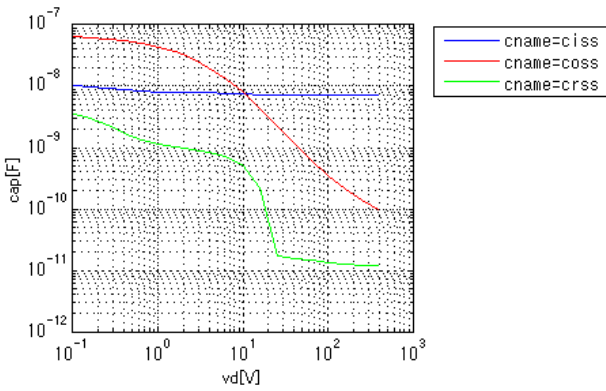
IsVsd[Temp]

vg = 0V



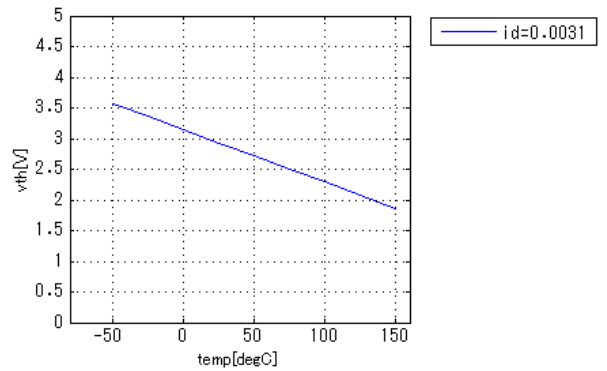
CapacitanceVds[Cname]

freq = 100000Hz



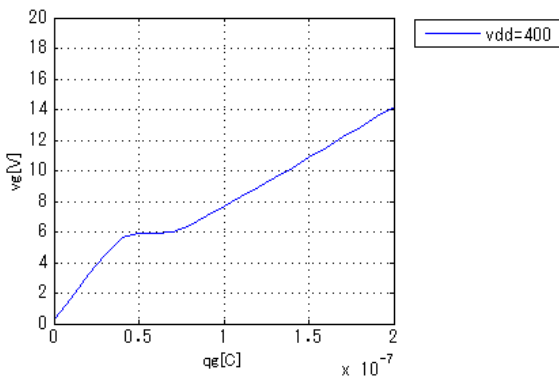
VthTemp[Id]

Vds = 10V



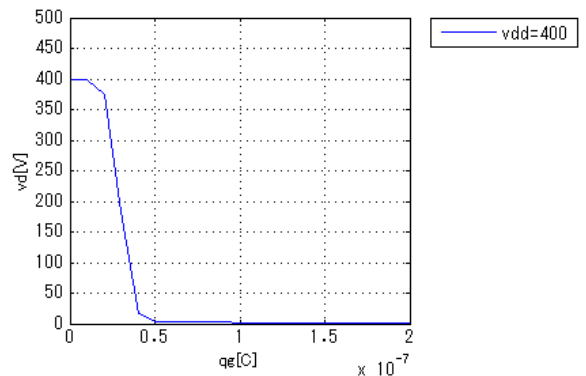
VgsQg[Vdd]

Id = 61.8A



VdsQg[Vdd]

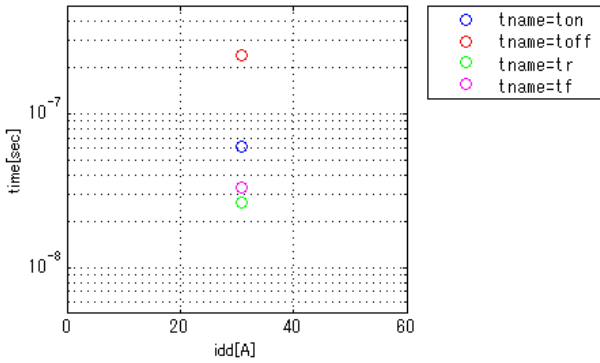
Id = 61.8A



Simulation results are following.
 Explanatory notes — : simulated

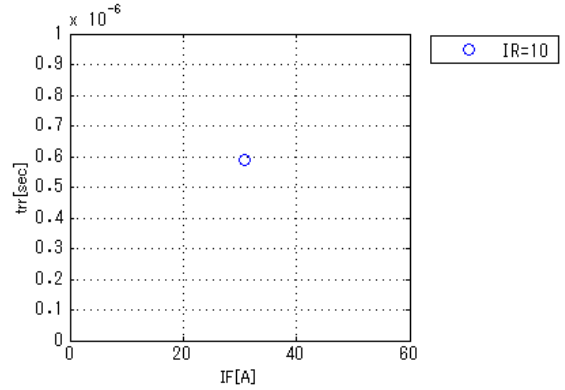
SwitchingIdd[Tname]

v_{gg} = 10V, v_{dd} = 400V, R_{GG} = 10ohm



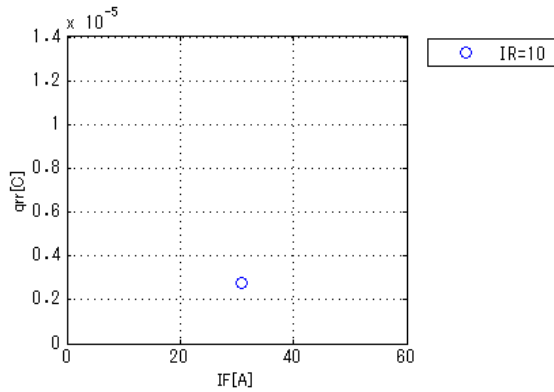
Trrlf[Ir]

v_{dd} = 400V, didt = 50A/us, Temp = 25degC



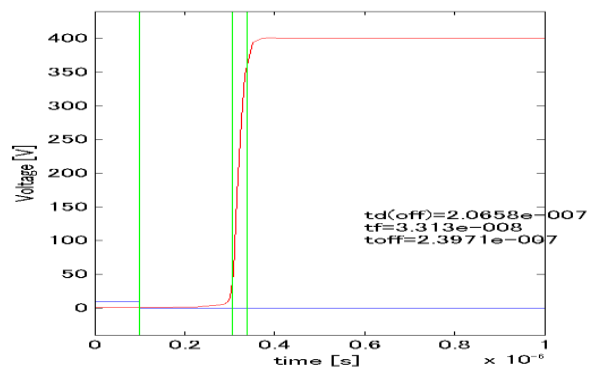
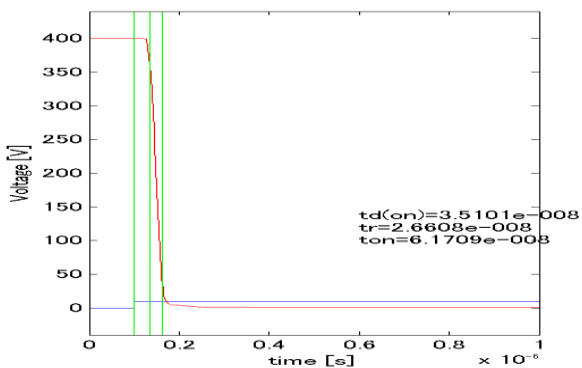
Qrrlf[Ir]

v_{dd} = 400V, didt = 50A/us, Temp = 25degC



Switching Waveform (Blue : INLUT Red : OUTPUT)

v_{gg} = 10V, v_{dd} = 400V, R_{GG} = 10ohm, idd = 30.9A

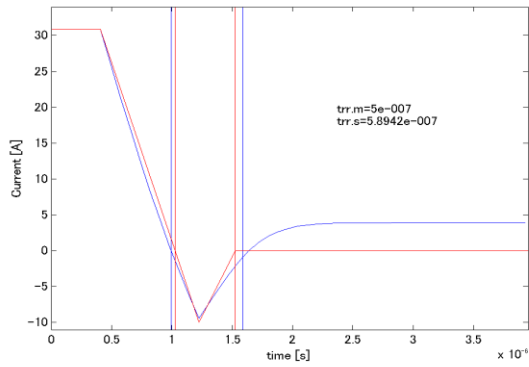


Simulation results are following.

Explanatory notes — : simulated

Trr Waveform (Red : Datasheet Blue : Simulation)

vdd = 400V, didt = 50A/us, Temp = 25degC, idd = 30.9A



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