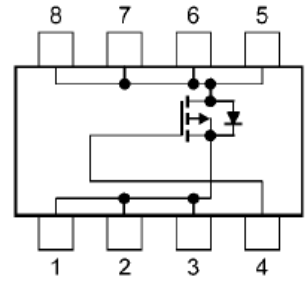
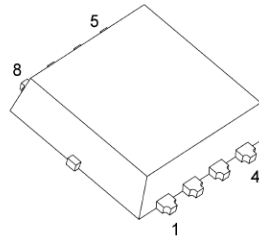


# PSpice Model PMOS TOSHIBA XPN9R614MC



## Model Information

**Model** A macro model based on BSIM3 model  
**Call Name** MDC\_XPN9R614MC\_PS  
**Pin Assign** 1:S 2:S 3:S 4:G 5:D 6:D 7:D 8:D  
**File List** Model Library MDC\_XPN9R614MC\_PS03.lib  
 Model Report MDC\_XPN9R614MC\_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 2015-07-27 Rev. 1.1
- Product name XPN9R614MC
- Company name Toshiba Corporation
- Characteristics IdVds[Vgs], IdVds[Vgs]2, VdsVgs[Temp], VdsVgs[Temp]2, VdsVgs[Temp]3, VdsVgs[Temp]4, IdVgs[Temp], Rds(on)Id[Vgs], Rds(on)Temp[Id], Rds(on)Temp[Id]2, IsVsd[Vgs], BvTemp[ir], VthTemp[Id], CapacitanceVds[Cname], VgsQg[Vdd], VdsQg[Vdd], SwitchingIdd[Tname]RgRs, 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	-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

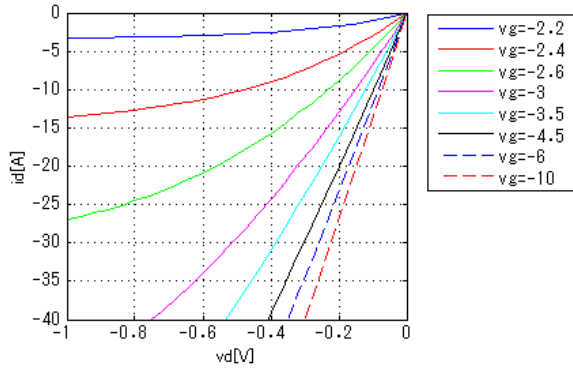
RANK=1

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

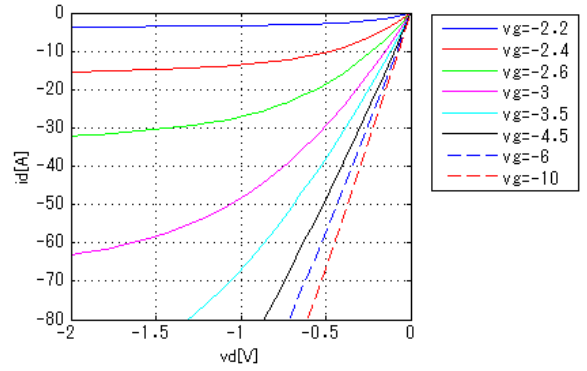
**IdVds[Vgs]**

Temp = 25degC

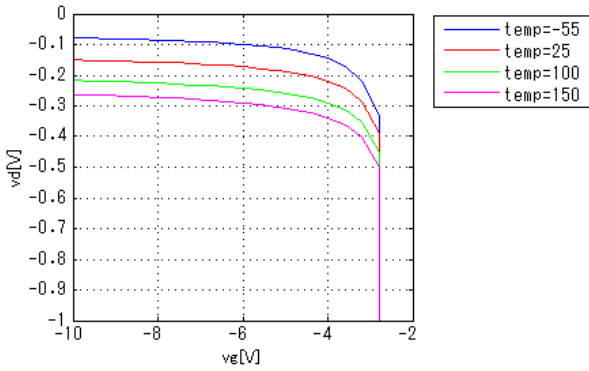


**IdVds[Vgs]2**

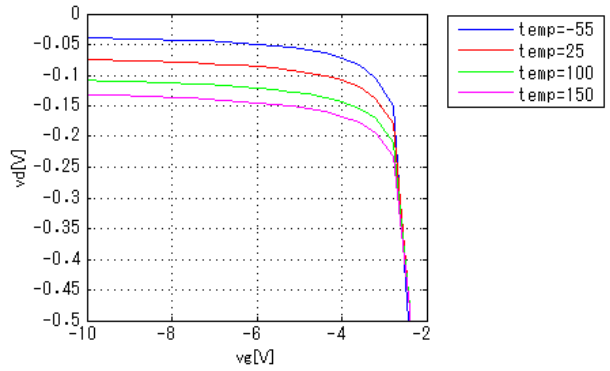
Temp = 25degC



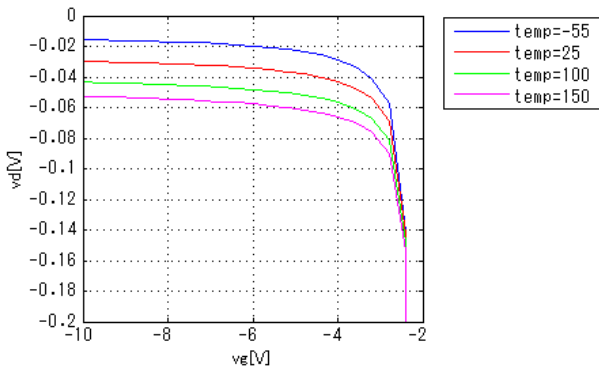
**VdsVgs[Temp]**



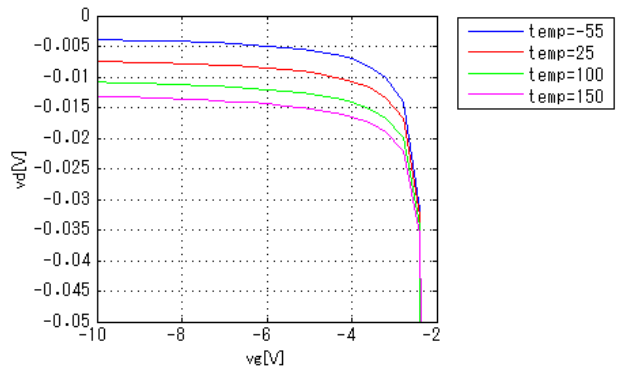
**VdsVgs[Temp]2**



**VdsVgs[Temp]3**



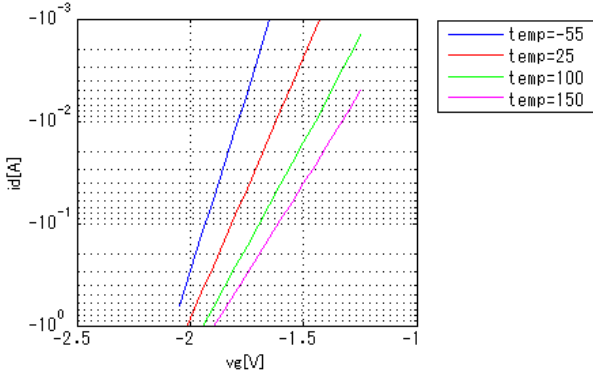
**VdsVgs[Temp]4**



Simulation results are following.  
 Explanatory notes — : simulated

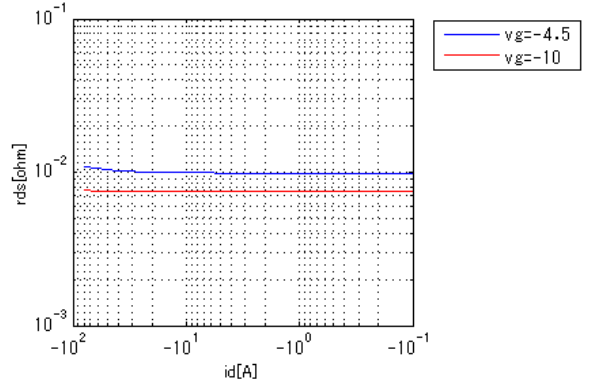
**IdVgs[Temp]**

Vds = -10V



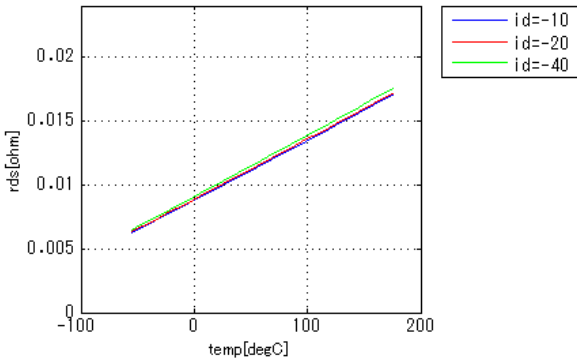
**Rds(on)Id[Vgs]**

Temp = 25degC



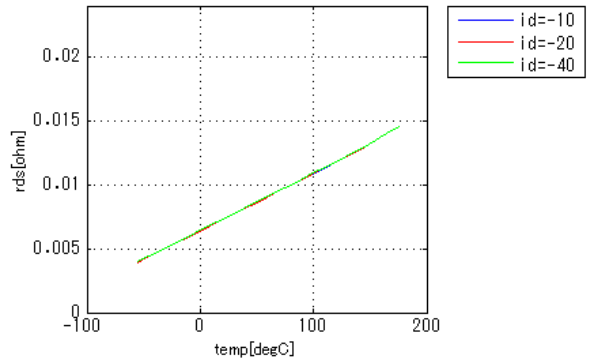
**Rds(on)Temp[Id]**

Vgs = -4.5V

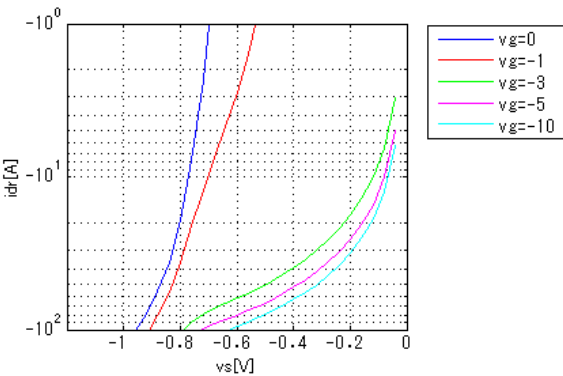


**Rds(on)Temp[Id]2**

Vgs = -10V

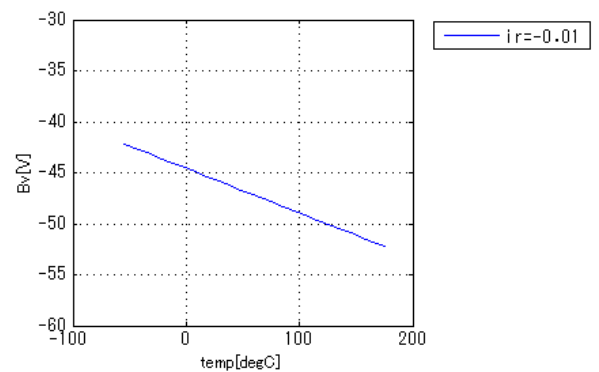


**IsVsd[Vgs]**



**BvTemp[ir]**

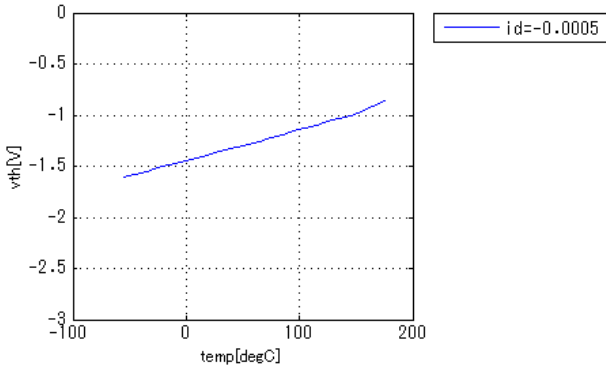
ir = -0.01A



Simulation results are following.  
 Explanatory notes — : simulated

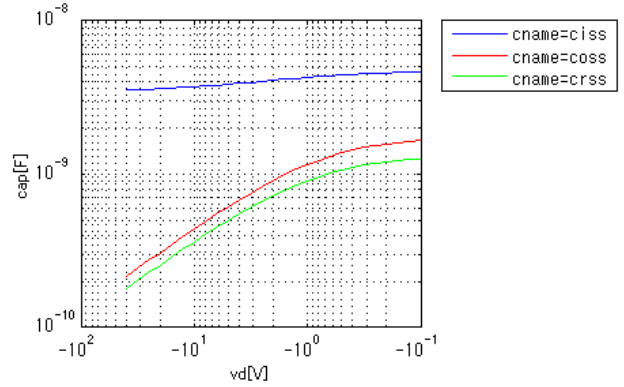
**VthTemp[Id]**

Vds = -10V



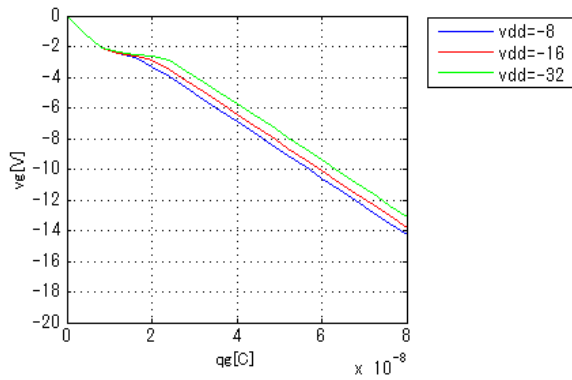
**CapacitanceVds[Cname]**

freq = 1000000Hz



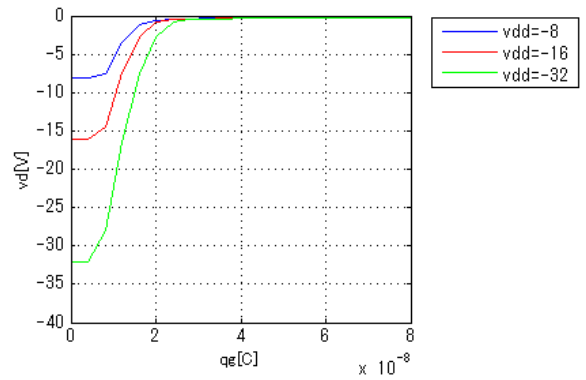
**VgsQg[Vdd]**

Id = -40A



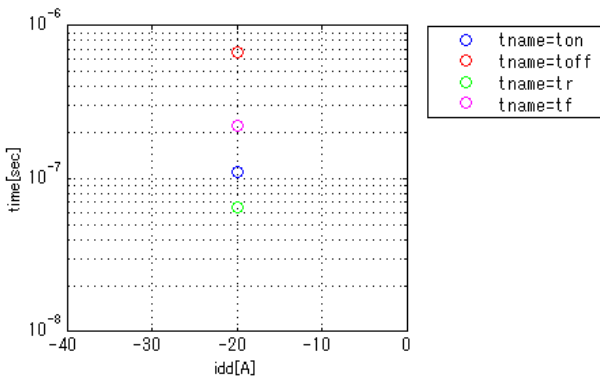
**VdsQg[Vdd]**

Id = -40A



**SwitchingIdd[Tname]RgRs**

v<sub>gg</sub> = -10V, v<sub>dd</sub> = -20V, R<sub>G</sub> = 50ohm

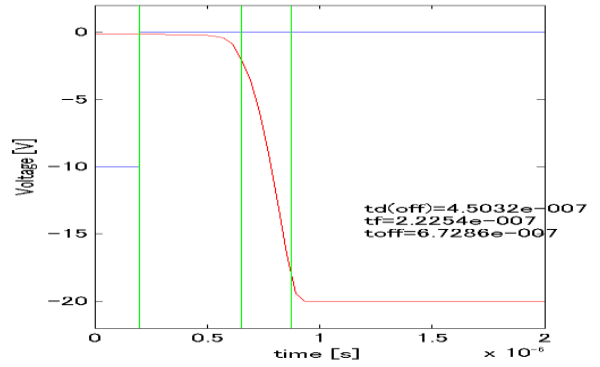
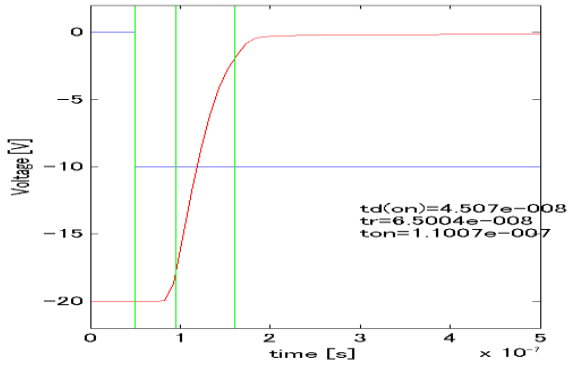


Simulation results are following.

Explanatory notes — : simulated

**Switching Waveform ( Blue : INPUT Red : OUTPUT )**

vgg = -10V, vdd = -20V, RGG = 50ohm, Temp = 25degC, Idd = -20A



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