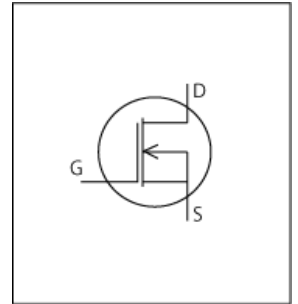


# PSpice Model

## NMOS

### SanKen

### FKI06190



### Model Information

**Model** A macro model based on BSIM3 model  
**Call Name** MDC\_FKI06190\_PS  
**Pin Assign** 1:D 2:G 3:S  
**File List** Model Library MDC\_FKI06190\_PS01.lib  
 Model Report MDC\_FKI06190\_PS.pdf (this file)

**Verified Simulator Version** PSpice version 16.6  
**Note**

### References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version Rev.1.3
- Product name FKI06190
- Company name Sanken Electric Co., Ltd.
- Characteristics  $R_{ds(on)}$ ,  $I_d$ [Temp],  $I_d V_{gs}$ [Temp],  $V_{ds} V_{gs}$ [ $I_d$ ],  $I_s V_{sd}$ [ $V_{gs}$ ],  $I_s V_{sd}$ [Temp],  $C_{rss}$ ,  $C_{oss}$ ,  $C_{iss}$ ,  $V_{gs} Q_g$ [ $V_{dd}$ ],  $V_{th}$ Temp[ $I_d$ ],  $R_{ds(on)}$ Temp[ $I_d$ ],  $t_{don}$ ,  $t_{doff}$ ,  $t_f$ ,  $t_r$

### Simulation Range

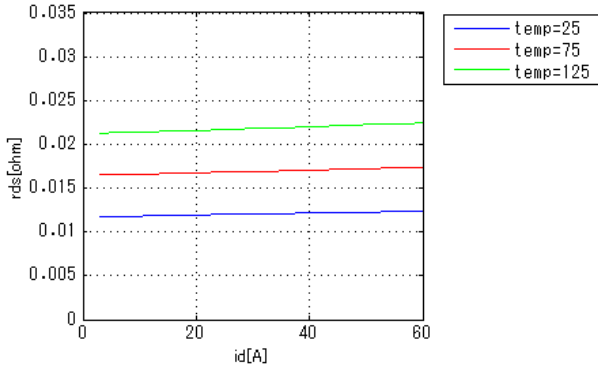
This table shows the range of evaluated simulation range that was not occurs any convergence problems in this area.

Item	Range			Unit
	Min.		Max.	
Drain-source voltage (DC)	0	to	60	V
Gate-source voltage (DC)	0	to	20	V
Temperature	-55	to	150	deg C

Simulation results are following.  
 Explanatory notes — : simulated

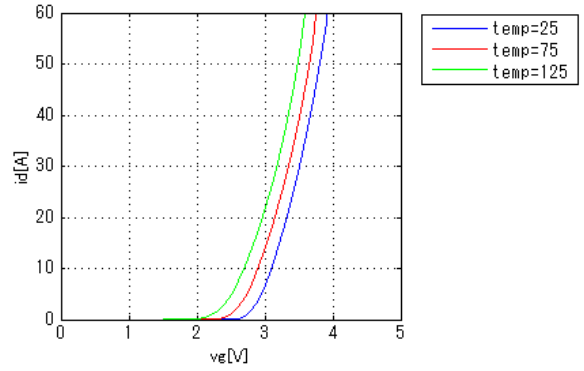
**Rds(on)Id[Temp]**

Vgs = 10V

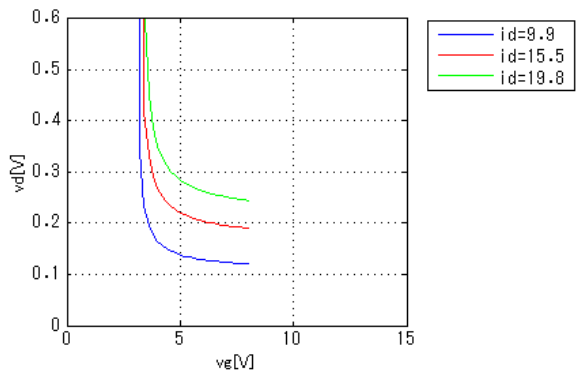


**IdVgs[Temp]**

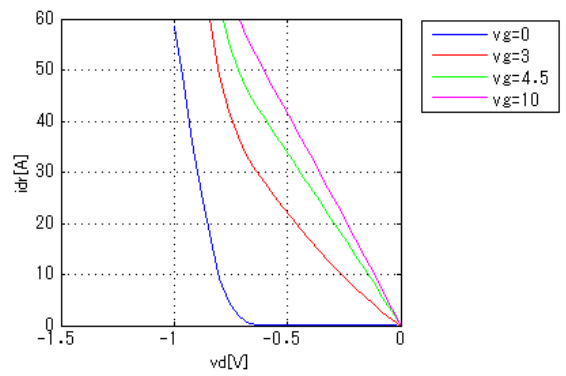
Vds = 5V



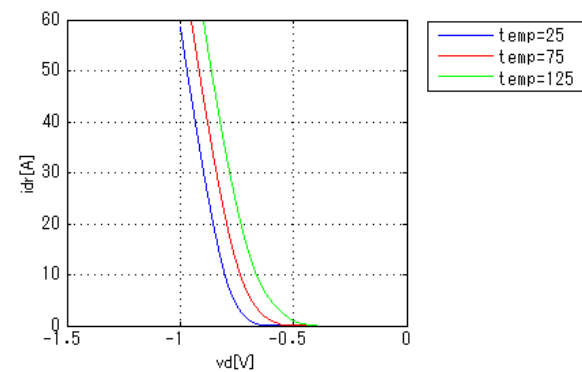
**VdsVgs[Id]**



**IsVsd[Vgs]**

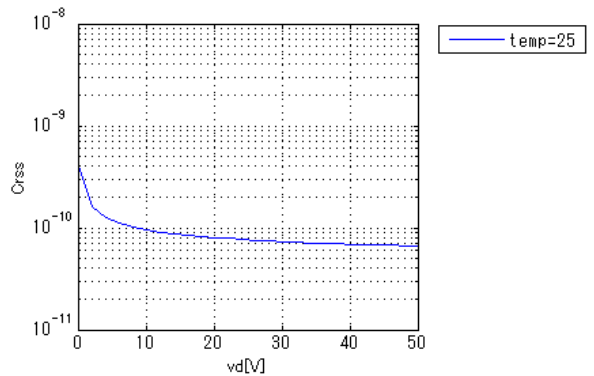


**IsVsd[Temp]**



**Crss**

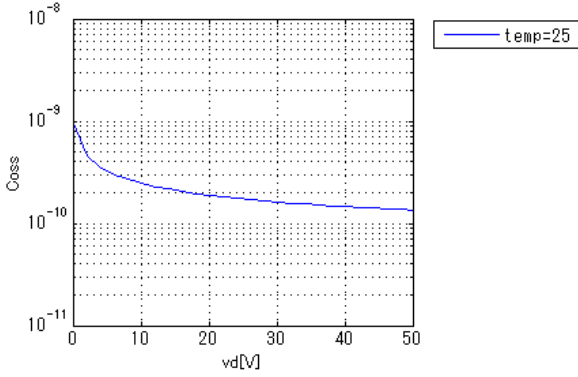
Freq. = 1MHz



Simulation results are following.  
 Explanatory notes — : simulated

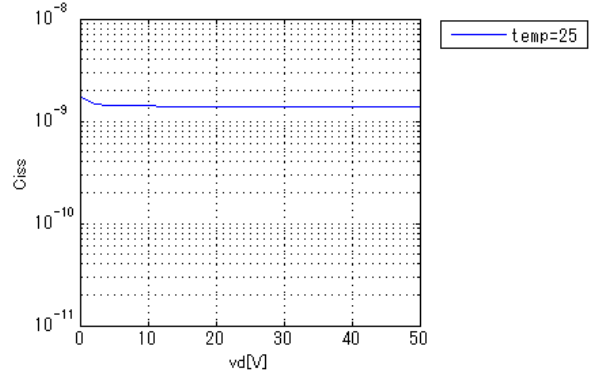
**Coss**

Freq. = 1MHz



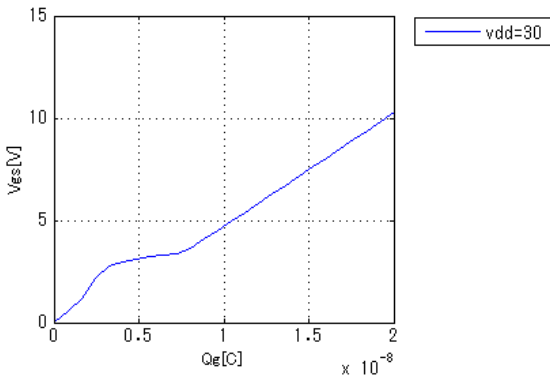
**Ciss**

Freq. = 1MHz



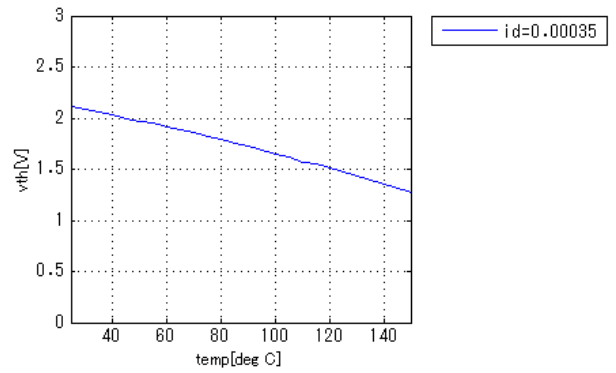
**VgsQg[Vdd]**

Id = 19.8A



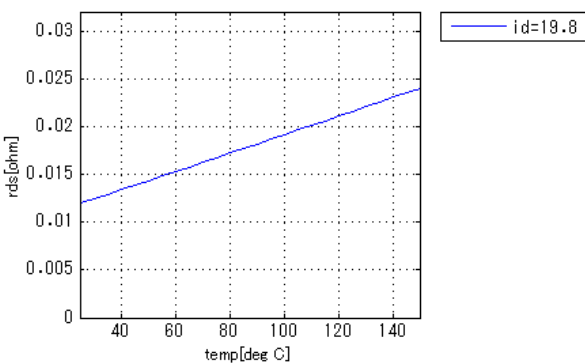
**VthTemp[Id]**

Vd = Vg



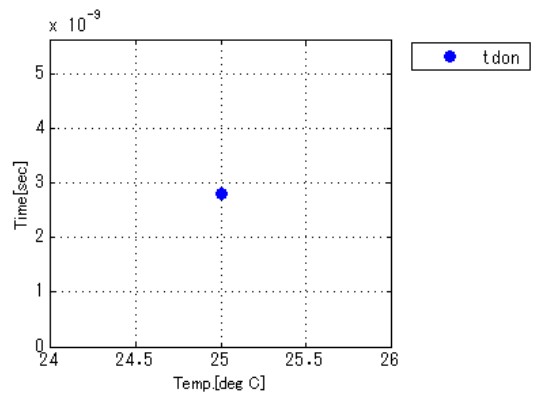
**Rds(on)Temp[Id]**

Vgs = 10V



**tdon**

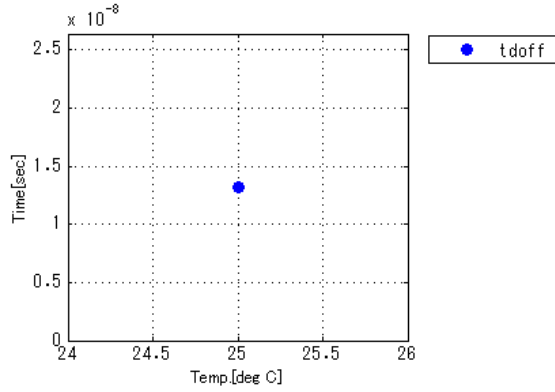
Vdd = 30V, Id = 19.8A, +Vg = 10V, -Vg = 0V, Rg = 0.001ohm



Simulation results are following.  
 Explanatory notes — : simulated

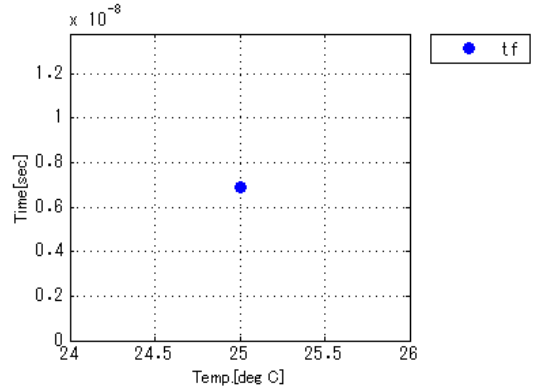
**tdoff**

Vdd = 30V, Id = 19.8A, +Vg = 10V, -Vg = 0V, Rg = 0.001ohm



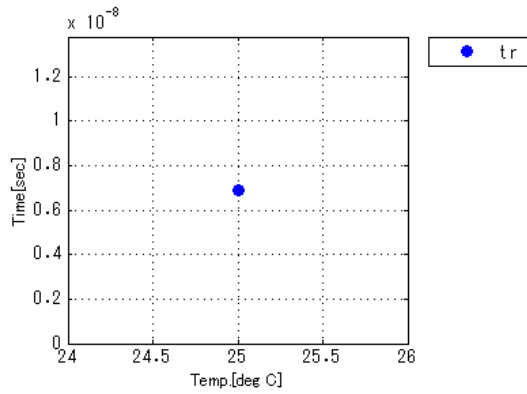
**tf**

Vdd = 30V, Id = 19.8A, +Vg = 10V, -Vg = 0V, Rg = 0.001ohm



**tr**

Vdd = 30V, Id = 19.8A, +Vg = 10V, -Vg = 0V, Rg = 0.001ohm



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