

# PSpice Model

## NMOS

## ON

## BS170



### Model Information

**Model** A macro model based on BSIM3 model  
**Call Name** MDC\_BS170\_PS  
**Pin Assign** 1:D 2:G 3:S  
**File List** Model Library MDC\_BS170\_PS00.lib  
 Model Report MDC\_BS170\_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.E2
- Product name BS170
- Company name ON Semiconductor.
- Characteristics IdVds[Vgs],Rds(on)Id[Vgs],Rds(on)Temp[Id],Rds(on)Id[Temp],IdVgs[Temp],VthTemp[Id],IsVsd[Temp],Ciss,Coss,Crss,VgsQg[Vdd],ton,toff

### Simulation Range

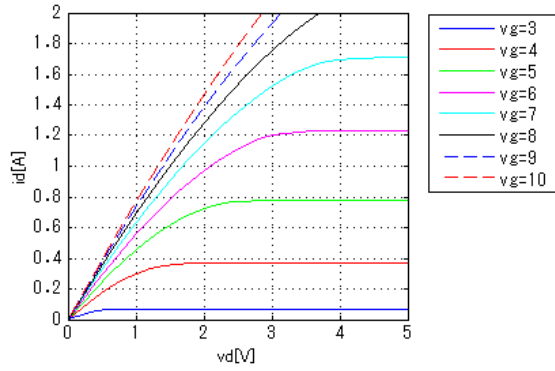
This table shows the range of evaluated simulation range that was not occurs any convergence problems in this area.

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

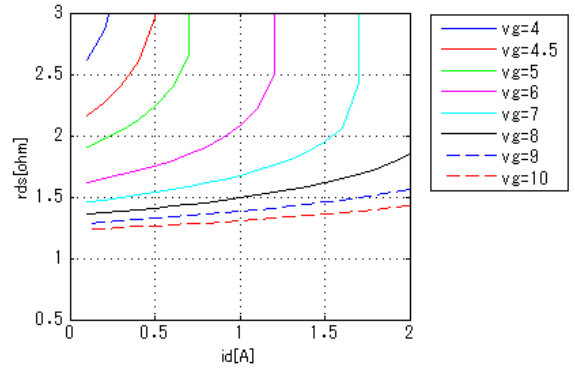
Simulation results are following.  
 Explanatory notes — : simulated

**IdVds[Vgs]**

Temp. = 25deg C

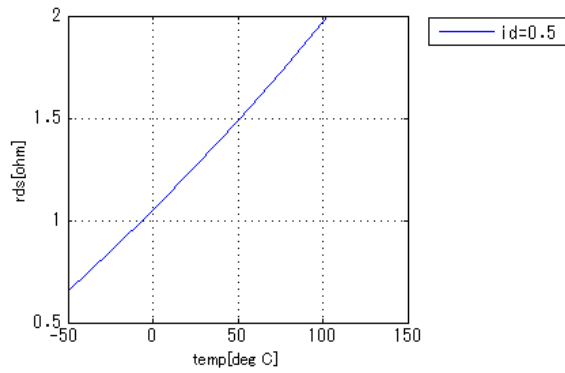


**Rds(on)Id[Vgs]**



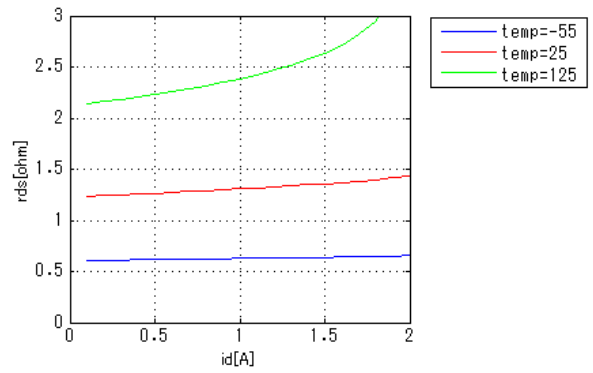
**Rds(on)Temp[Id]**

Vgs = 10V



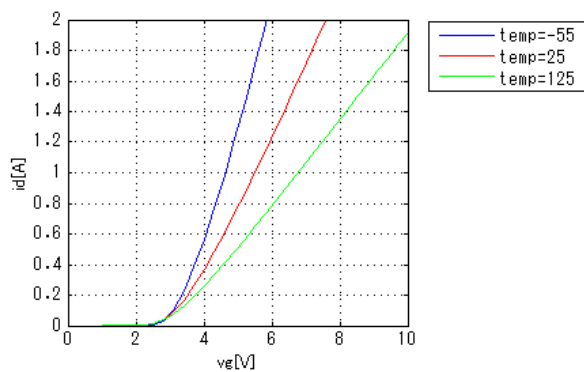
**Rds(on)Id[Temp]**

Vgs = 10V



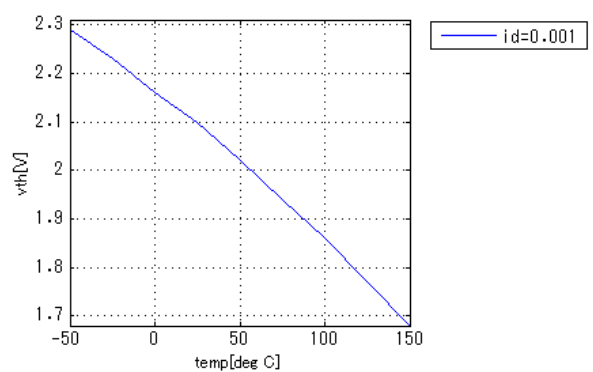
**IdVgs[Temp]**

Vds = 10V



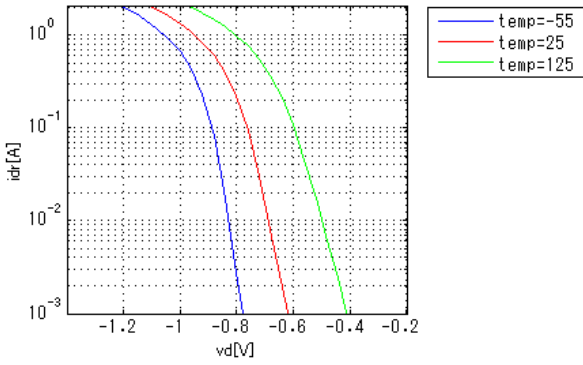
**VthTemp[Id]**

Vd = Vg



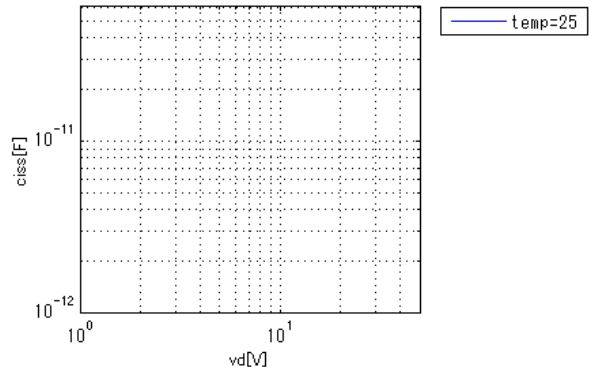
Simulation results are following.  
 Explanatory notes — : simulated

**IsVsd[Temp]**



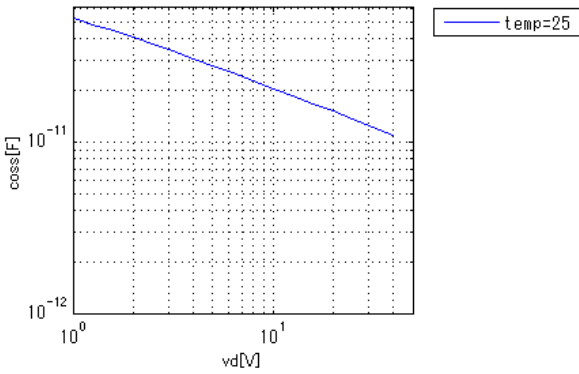
**Ciss**

Freq. = 1MHz



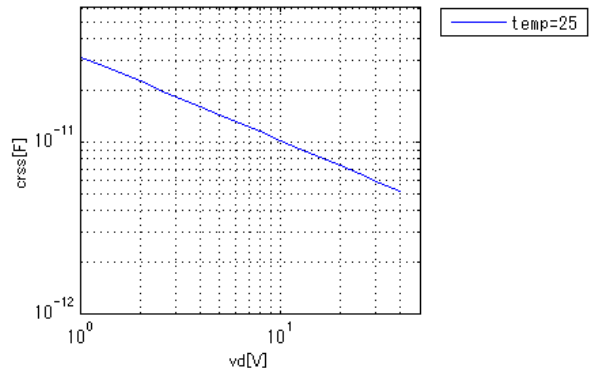
**Coss**

Freq. = 1MHz



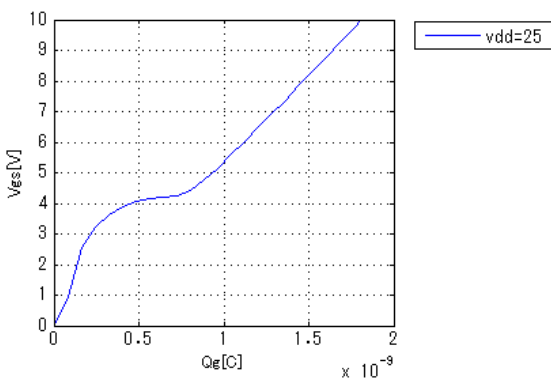
**Crss**

Freq. = 1MHz



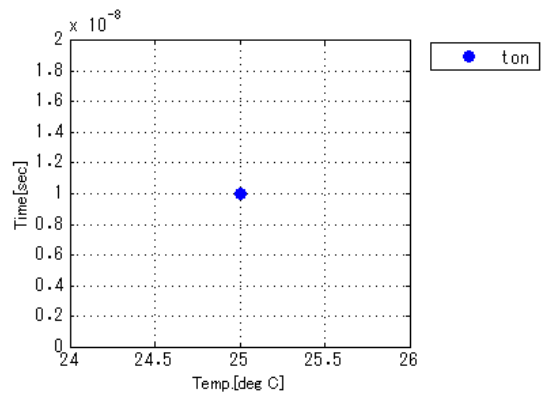
**VgsQg[Vdd]**

Id = 0.5A



**ton**

Vdd = 25V, Id = 200E-3A, +Vg = 10V, -Vg = 0V, Rg = 25ohm

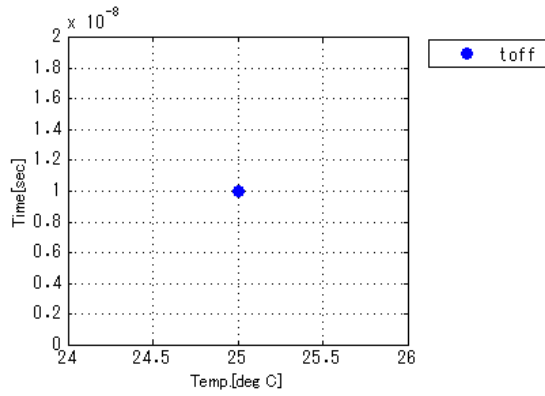


Simulation results are following.

Explanatory notes — : simulated

**toff**

Vdd = 25V, Id = 200E-3A, +Vg = 10V, -Vg = 0V, Rg = 25ohm



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