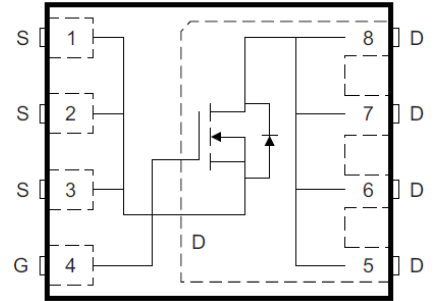


# PSpice Model

## NMOS

## TI

## CSD18537NQ5A



### Model Information

**Model** A macro model based on BSIM3 model  
**Call Name** MDC\_CSD18537NQ5A\_PS  
**Pin Assign** 1:S 2:S 3:S 4:G 5:D 6:D 7:D 8:D  
**File List** Model Library MDC\_CSD18537NQ5A\_PS02.lib  
 Model Report MDC\_CSD18537NQ5A\_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 JULY 2014
- Product name CSD18537NQ5A
- Company name Texas Instruments Inc.
- Characteristics IdVds[Vgs], IdVgs[Temp], VgsQg[Vdd], CapacitanceVds[Cname], VthTemp[Id], Rds(on)Vgs[Temp], NormRds(on)Temp[Vgs], IsVsd[Temp], SwitchingIdd[Tname], TrrIf[Ir], QrrIf[Ir], Switching Waveform, 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	60	V
Gate-source voltage (DC)	-20	to	20	V
Temperature	-55	to	150	deg C

## MOSFET

○ : Implemented  
× : Not Implemented  
— : Not applicable

Model Functions Table

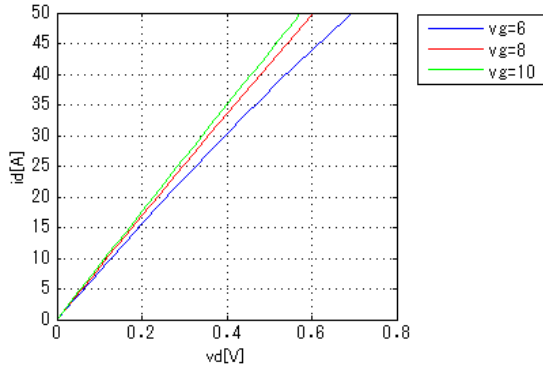
RANK=1

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

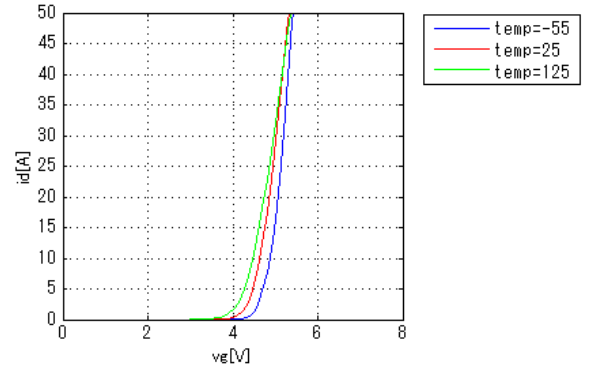
**IdVds[Vgs]**

Temp = 25degC



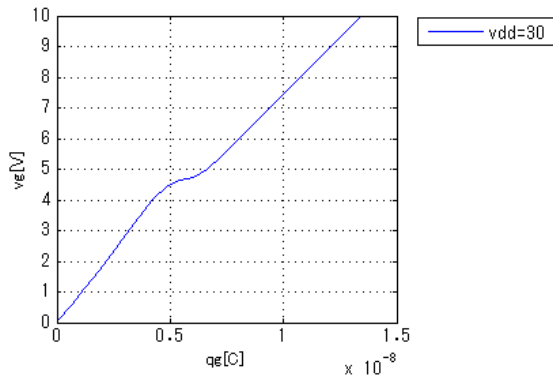
**IdVgs[Temp]**

Vds = 5V



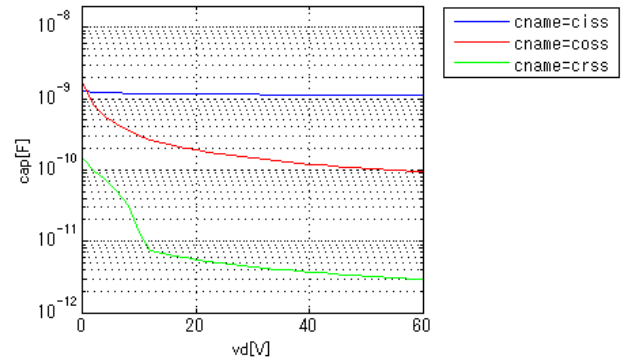
**VgsQg[Vdd]**

Id = 12A



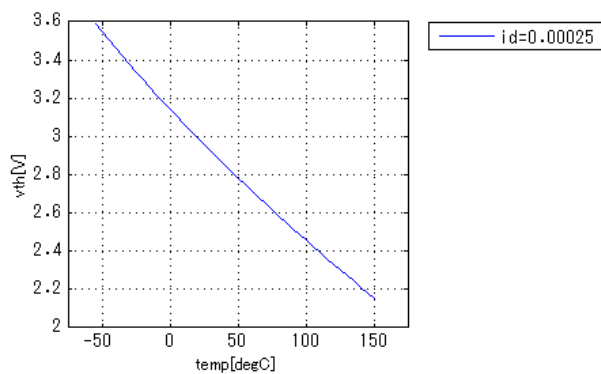
**CapacitanceVds[Cname]**

freq = 1000000Hz



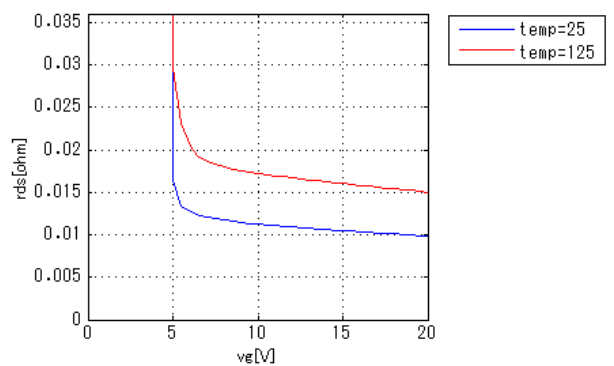
**VthTemp[Id]**

Vd = Vg



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

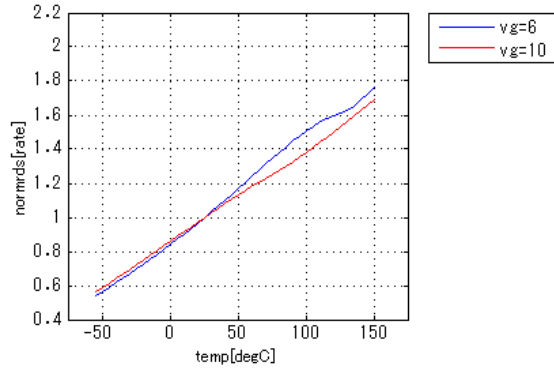
Id = 12A



Simulation results are following.  
 Explanatory notes — : simulated

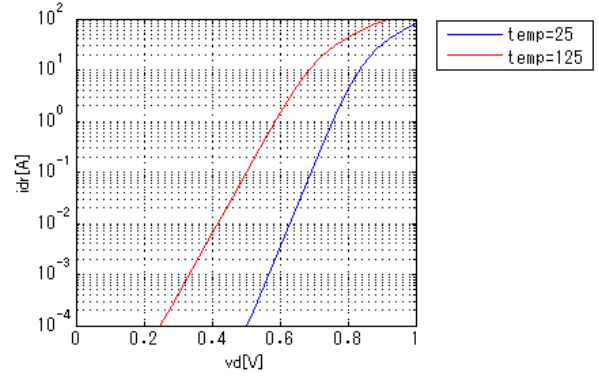
**NormRds(on)Temp[Vgs]**

$I_d = 12A$



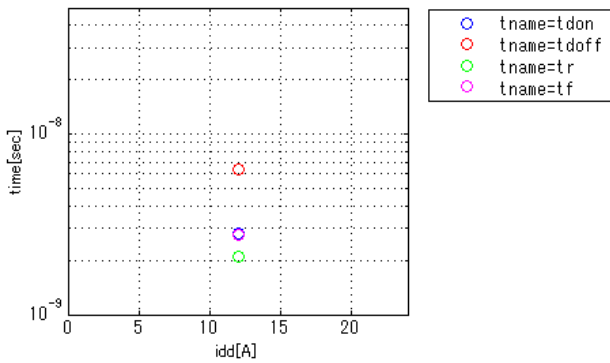
**IsVsd[Temp]**

$v_g = 0V$



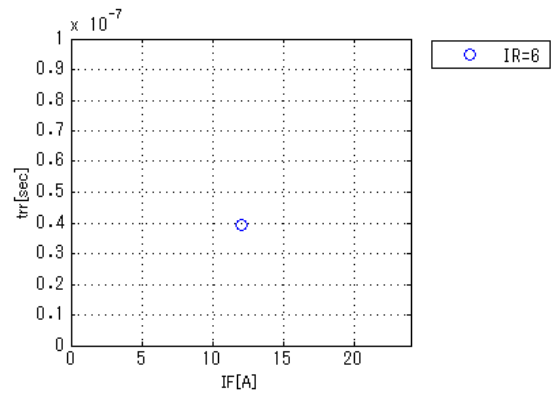
**SwitchingIdd[Tname]**

$v_{gg} = 10V, v_{dd} = 30V, R_{GG} = 0.1ohm$



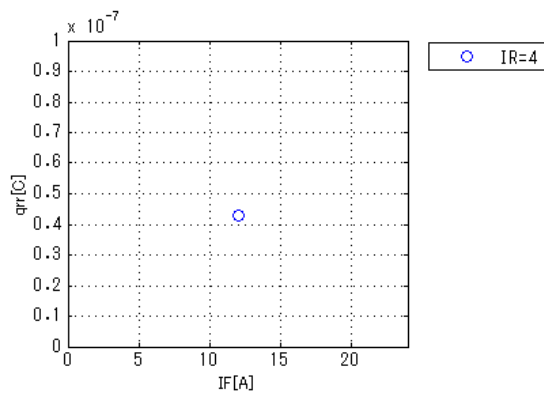
**Trrlf[Ir]**

$v_{dd} = 30V, didt = 300A/us, Temp = 25degC$



**Qrrlf[Ir]**

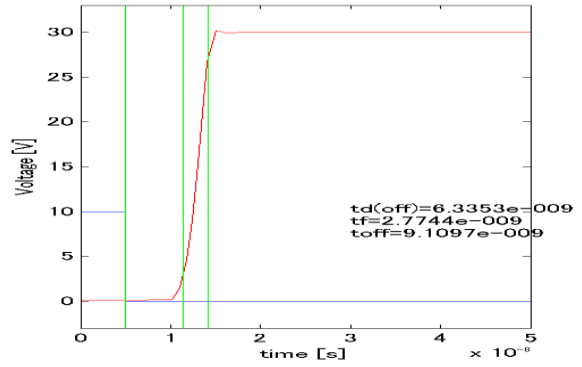
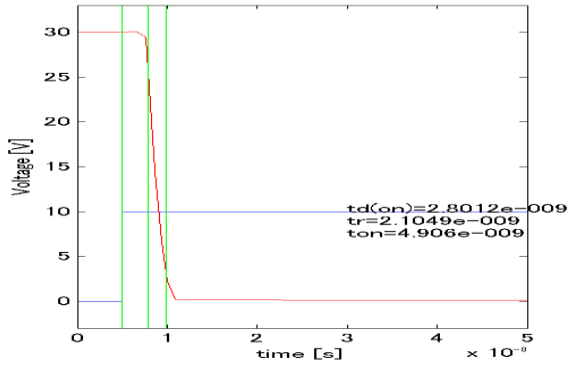
$v_{dd} = 30V, didt = 300A/us, Temp = 25degC$



Simulation results are following.  
 Explanatory notes — : simulated

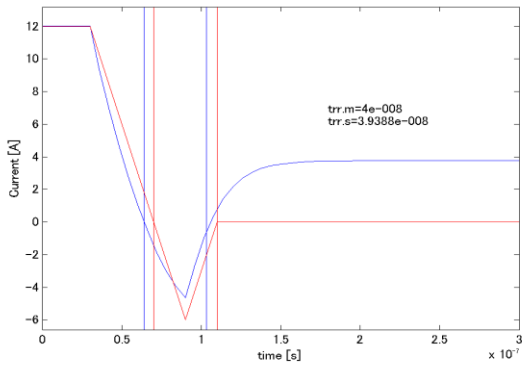
**Switching Waveform ( Blue : INPUT Red : OUTPUT )**

vgg = 10V, vdd = 30V, RGG = 0.1ohm, idd = 12A



**Trr Waveform ( Red : Datasheet Blue : Simulation )**

vdd = 30V, didt = 300A/us, Temp = 25degC, IF = 12A, IR = 6A



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