

of California at Berkeley.

31.6.9 BSIM4

The accessible device parameters (see Chapt. 31.1 for the syntax) are listed here.

31.6.9.1 BSIM4 accessible instance parameters

#	Name	Direction	Type	Description
	gmbs	Out	real	Body effect (Back gate) transconductance
	gm	Out	real	Transconductance
	gds	Out	real	Drain-Source conductance
	vdsat	Out	real	Saturation voltage
	vth	Out	real	Threshold voltage
	id	Out	real	Drain current
	ibd	Out	real	Diode current
	ibs	Out	real	Diode current
	gbd	Out	real	Diode conductance
	gbs	Out	real	Diode conductance
	isub	Out	real	Substrate current
	igidl	Out	real	Gate-Induced Drain Leakage current
	igisl	Out	real	Gate-Induced Source Leakage current
	igs	Out	real	Gate-Source current
	igd	Out	real	Gate-drain current
	igb	Out	real	Gate-Bulk current
	igcs	Out	real	
	vbs	Out	real	Bulk-Source voltage
	vgs	Out	real	Gate-Source voltage
	vds	Out	real	Drain-Source voltage
	cgg	Out	real	
	cgs	Out	real	
	cgd	Out	real	
	cbg	Out	real	
	cbd	Out	real	
	cbs	Out	real	
	cdg	Out	real	
	cdd	Out	real	
	cds	Out	real	
	csg	Out	real	
	csd	Out	real	
	css	Out	real	
	cgb	Out	real	
	cdb	Out	real	
	csb	Out	real	
	cbb	Out	real	

	capbd	Out	real	Diode capacitance
	capbs	Out	real	Diode capacitance
	qg	Out	real	Gate charge
	qb	Out	real	Bulk charge
	qd	Out	real	Drain charge
	qs	Out	real	
	qinv	Out	real	
	qdef	Out	real	
	gcrq	Out	real	
	gtau	Out	real	

The parameters are available in all BSIM4 models (level=14 or level=54) version=4.2.1 to version=4.8.

Negative capacitance values may occur, depending on the internal calculation. To compare with measured data, please just use the absolute values of the capacitance data. For an explanation of negative values and the basics on how capacitance values are evaluated in a BSIM model, please refer to the book [BSIM4 and MOSFET Modeling for IC Simulation by Liu and Hu](#), Chapt. 5.2.

31.6.9.2 BSIM4 manual

Detailed descriptions will not be given here. Unfortunately the details on these parameters are not documented, even not in the otherwise excellent [pdf manual](#) issued by University of California at Berkeley.