

JFET

Name	Alias	Description
CQGD	LX12	Gate-drain charge current (CQGD)
CAP_GS	LX13	Gate-source capacitance
CAP_GD	LX14	Gate-drain capacitance
–	LX15	Body-source voltage (not used in Star-Hspice releases after 95.3)
QDS	LX16	Drain-source charge (QDS)
CQDS	LX17	Drain-source charge current (CQDS)
GMBS	LX18	Drain-body (backgate) transconductance (GMBS)

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Name	Alias	Description
L	LV1	Channel length (L)
W	LV2	Channel width (W)
AD	LV3	Area of the drain diode (AD)
AS	LV4	Area of the source diode (AS)
ICVDS	LV5	Initial condition for drain-source voltage (VDS)
ICVGS	LV6	Initial condition for gate-source voltage (VGS)
ICVBS	LV7	Initial condition for bulk-source voltage (VBS)
–	LV8	Device polarity: 1=forward, -1=reverse (not used in Star-Hspice releases after 95.3)
VTH	LV9	Threshold voltage (bias dependent)
VDSAT	LV10	Saturation voltage (VDSAT)
PD	LV11	Drain diode periphery (PD)

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Name	Alias	Description
PS	LV12	Source diode periphery (PS)
RDS	LV13	Drain resistance (squares) (RDS)
RSS	LV14	Source resistance (squares) (RSS)
XQC	LV15	Charge sharing coefficient (XQC)
GDEFF	LV16	Effective drain conductance (1/RDeff)
GSEFF	LV17	Effective source conductance (1/RSeff)
IDBS	LV18	Drain-bulk saturation current at -1 volt bias
ISBS	LV19	Source-bulk saturation current at -1 volt bias
VDBEFF	LV20	Effective drain bulk voltage
BETAEFF	LV21	BETA effective
GAMMAEFF	LV22	GAMMA effective
DELTAL	LV23	ΔL (MOS6 amount of channel length modulation) (only valid for Levels 1, 2, 3 and 6)
UBEFF	LV24	UB effective (only valid for Levels 1, 2, 3 and 6)
VG	LV25	VG drive (only valid for Levels 1, 2, 3 and 6)
VFBEFF	LV26	VFB effective
–	LV31	Drain current tolerance (not used in Star-Hspice releases after 95.3)
IDSTOL	LV32	Source diode current tolerance
IDDTOL	LV33	Drain diode current tolerance
COVLGS	LV36	Gate-source overlap capacitance
COVLGD	LV37	Gate-drain overlap capacitance
COVLGB	LV38	Gate-bulk overlap capacitance

MOSFET

Name	Alias	Description
VBS	LX1	Bulk-source voltage (VBS)
VGS	LX2	Gate-source voltage (VGS)
VDS	LX3	Drain-source voltage (VDS)
CDO	LX4	DC drain current (CDO)
CBSO	LX5	DC source-bulk diode current (CBSO)
CBDO	LX6	DC drain-bulk diode current (CBDO)
GMO g_m	LX7	DC gate transconductance (GMO)
GDSO r_o^{-1}	LX8	DC drain-source conductance (GDSO)
GMBSO g_{mb}	LX9	DC substrate transconductance (GMBSO)
GBDO	LX10	Conductance of the drain diode (GBDO)
GBSO	LX11	Conductance of the source diode (GBSO)
Meyer and Charge Conservation Model Parameters		
QB	LX12	Bulk charge (QB)
CQB	LX13	Bulk charge current (CQB)
QG	LX14	Gate charge (QG)
CQG	LX15	Gate charge current (CQG)
QD	LX16	Channel charge (QD)
CQD	LX17	Channel charge current (CQD)
CGGBO	LX18	$\partial Qg / \partial Vg_i = CGS + CGD + CGB$
CGDBO	LX19	$\partial Qg / \partial Vd_i$ (for Meyer $CGD = -CGDBO$)
CGSBO	LX20	$\partial Qg / \partial Vs_i$ (for Meyer $CGS = -CGSBO$)

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Name	Alias	Description
CBGBO	LX21	$\gamma_{BGBO} = \partial Qb / \partial V_{g_i}$ (for Meyer CGB=-CBGBO)
CBDBO	LX22	$\gamma_{BDBO} = \partial Qb / \partial V_{d_i}$
CBSBO	LX23	$\gamma_{BSBO} = \partial Qb / \partial V_{s_i}$
QBD	LX24	Drain-bulk charge (QBD)
–	LX25	Drain-bulk charge current (CQBD) (not used in Star-Hspice releases after 95.3)
QBS	LX26	Source-bulk charge (QBS)
–	LX27	Source-bulk charge current (CQBS) (not used in Star-Hspice releases after 95.3)
CAP_BS	LX28	Bulk-source capacitance
CAP_BD	LX29	Bulk-drain capacitance
CQS	LX31	Channel charge current (CQS)
CDGBO	LX32	$\gamma_{DGBO} = \partial Qd / \partial V_{g_i}$
CDDBO	LX33	$\gamma_{DDBO} = \partial Qd / \partial V_{d_i}$
CDSBO	LX34	$\gamma_{DSBO} = \partial Qd / \partial V_{s_i}$

Saturable Core Element

Name	Alias	Description
MU	LX0	Dynamic permeability (mu) Weber/(amp-turn-meter)
H	LX1	Magnetizing force (H) Ampere-turns/meter
B	LX2	Magnetic flux density (B) Webers/meter ²

The example shows how to easily create input files, and how to display the complete graphical results. The following features aid model evaluations:

Table 83 MOS I-V and C-V Plotting Demo

Value	Description
SCALE=1u	Sets the element units to microns (not meters). Most circuit designs use microns.
DCCAP	Forces HSPICE to evaluate the voltage variable capacitors, during a DC sweep.
node names	Eases circuit clarity. Symbolic name contains up to 16 characters.
.PRINT	.PRINT statements print internal variables.

Printing Variables

Use this template to print internal variables, such as:

Table 84 Demo Printing Variables

Variable	Description
i(mn1)	i1, i2, i3, or i4 specifies true branch currents for each transistor node.
LV18(mn6)	Total gate capacitance (C-V plot).
LX7(mn1)	GM gate transconductance. (LX8 specifies GDS; LX9 specifies GMB).