Symmetry

Interface Technologies

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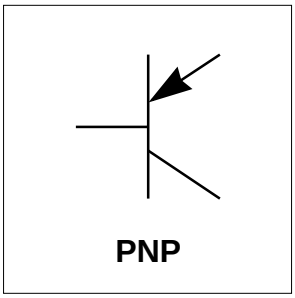


PNP

2sa1242

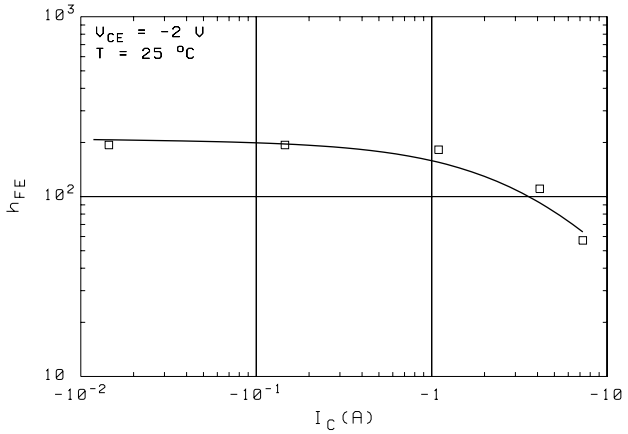
Revision Date: August 28, 2000

Electrical Characteristics (Ta = 25˚C unless otherwise noted)

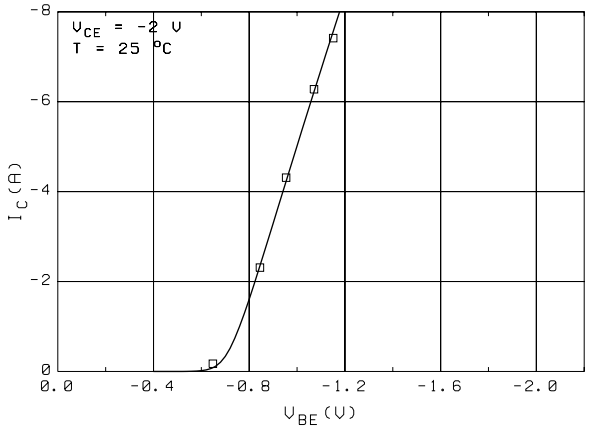
Testing Simulator: *MODPEX*

Spec.	Test Conditions	Min	Typ	Max	Model	Unit
HFE	IC = -4000mA, VCE = -2V	70			94.04	
HFE	IC = -500mA, VCE = -2V	100	320		178.2	
VCEsat	IC = -4000mA, IC/IB = 40			-1	-0.4764	V
VBEsat	IC = -4000mA, IC/IB = 40			-1.5	-1.078	V
FT	IC = -0.5mA, VCE = -2V		170		69.93	MHz

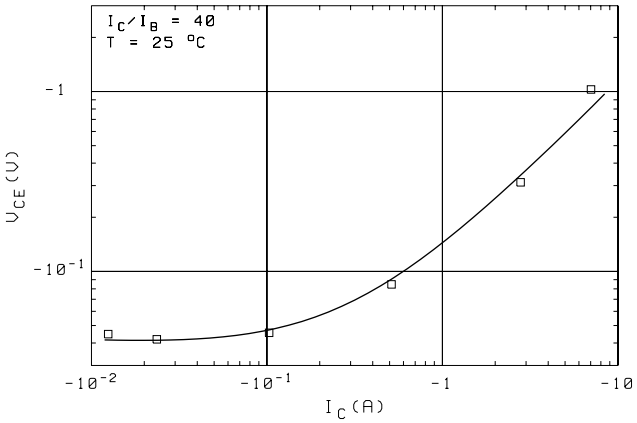
2sa1242: DC Extraction



IC-HFE(VCE)



IC-VBE(VCE)



IC-VCEsat

2sa1242: BJT Parameters

Symbol	Parameter Name	Value	Unit
IS	Transport saturaton current	7.7×10^{-11}	A
BF	Ideal maximum forward beta	225.5	
NF	Forward current emission coefficient	1.185	
VAF	Foward early voltage	25.21	V
IKF	Corner for foward beta high current roll-off	4.486	A
ISE	B-E leakage saturation current	6.4×10^{-12}	A
NE	B-E leakage emission coefficient	3.399	
BR	Ideal maximum reverse beta	4.418	
NR	Reverse current emission coefficient	1.284	
VAR	Reverse early voltage	4.41	V
IKR	Corner for reverse beta high current roll-off	4.381	A
ISC	B-C leakage saturation current	3.9×10^{-13}	A
NC	B-C leakage emission coefficient	3.99	
RB	Zero bias base resistance	5.37	Ω
IRB	Current where base resistance falls halfway to its min value	0.1067	A
RBM	Minimum base resistance at high currents	0.1005	Ω
RE	Emitter resistance	9.79×10^{-4}	Ω
RC	Collector resistance	0.1021	Ω
XTB	Forward and reverse beta temperature exponent	0.1	
XTI	Temperature exponent for effect on IS	1	
EG	Energy gap for temperature effect on IS	1.113	eV
CJE	B-E zero-bias depletion capacitance	1×10^{-11}	F
VJE	B-E built-in potential	0.75	V
MJE	B-E junction exponential factor	0.33	
TF	Ideal forward transit time	1×10^{-9}	Sec
XTF	Coefficient for bias dependence of TF	1	
VTF	Voltage describing VBC dependence of TF	10	V
ITF	High-current parameter for effect on TF	0.01	A
CJC	B-C zero-bias depletion capacitance	1×10^{-11}	F
VJC	B-C built-in potential	0.75	V
MJC	B-C junction exponential factor	0.33	
XCJC	Fraction of B-C depletion capacitance connected to internal base node	0.9	
FC	Coefficient for forward-bias depletion capacitance formula	0.5	
CJS	C-S zero-bias depletion capacitance	0	F
VJS	Substrate junction built-in potential	0.75	V
MJS	Substrate junction exponential factor	0.5	
TR	Ideal reverse transit time	1×10^{-7}	Sec
PTF	Excess phase at Freq=1.0/(TF*2PI)Hz	0	deg
KF	Flicker-noise coefficient	0	
AF	Flicker-noise exponent	1	