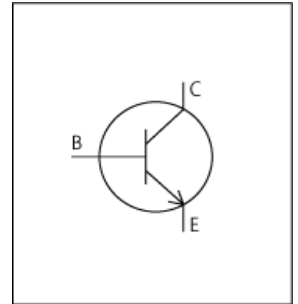


LTspice Model

NPN

ON

SMMBT2222AWT1G



Model Information

Model Gummel-Poon model
Call Name MDC_SMMBT2222AWT1G_LT
Pin Assign 1:B 2:E 3:C
File List Model Library MDC_SMMBT2222AWT1G_LT01.lib
 Model Report MDC_SMMBT2222AWT1G_LT.pdf (this file)

Verified Simulator Version LTspice version XVII
Note

References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version July, 2018 - Rev. 8
- Product name SMMBT2222AWT1G
- Company name ON Semiconductor.
- Characteristics hFEIc[Temp],hFEIc[Temp]2,Vcelb[Ic],SwitchingIcc[Tname],SwitchingIcc[Tname]2,Cib,Cob,ftIc[Vce],Vce(sat)Ic[Temp],Vbe(sat)Ic[Temp],Vbelc[Temp],SwitchingWaveform

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.	
Collector-emitter voltage (DC)	0	to	40	V
Emitter-base voltage (DC)	0	to	6	V
Temperature	-55	to	150	deg C

BJT

○ : Implemented
 × : Not Implemented
 — : Not applicable

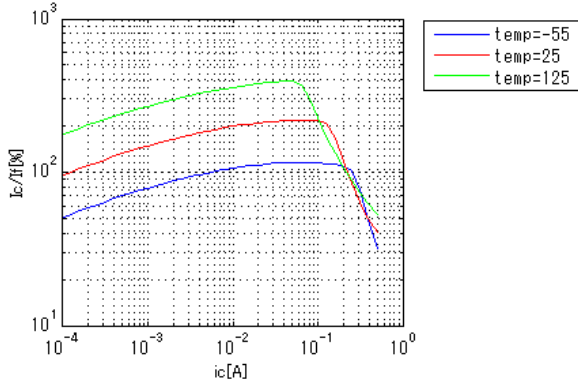
Model Functions Table
RANK=1

Functions	RANK	Implemented
IC-VBE(Temp)	1	○
IC-VCE-IB(Temp)	1	—
IC-hFE(Temp)	1	○
VCE(sat)-IC	1	○
VBE(sat)-IB	1	○
Capacitance	1	○
Transition Frequency	1	○
Switching	1	○

Simulation results are following.
 Explanatory notes — : simulated

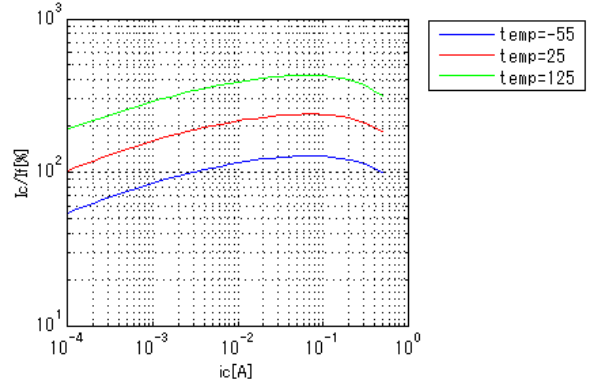
hFEIc[Temp]

Vce = 1V

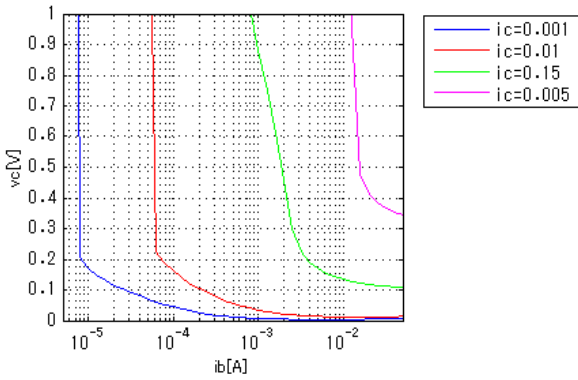


hFEIc[Temp]2

Vce = 10V

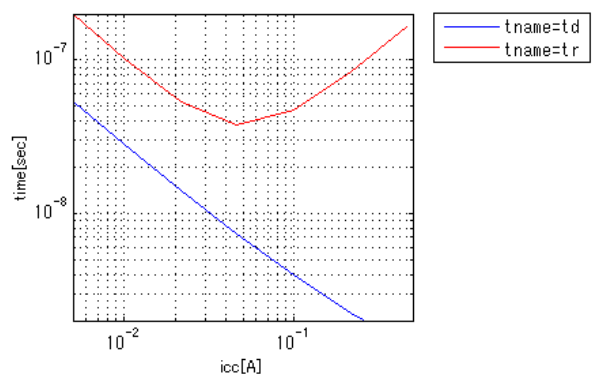


VceIb[ic]



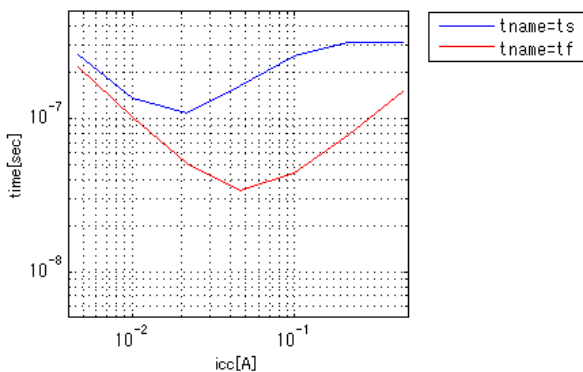
SwitchingIcc[Tname]

Ic/Ib = 10, vcc = 30V, Temp = 25degC



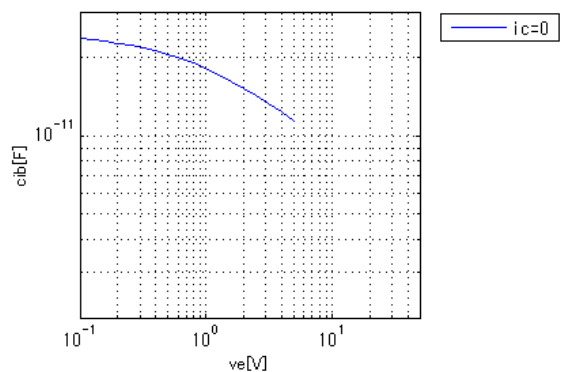
SwitchingIcc[Tname]2

Ic/Ib = 10, Ib1 = Ib2, vcc = 30V, Temp = 25degC



Cib

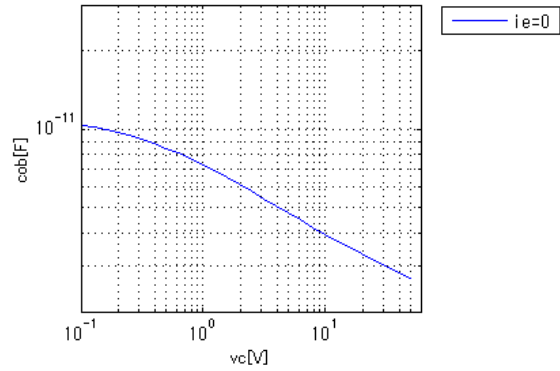
Freq = 1MHz



Simulation results are following.
 Explanatory notes — : simulated

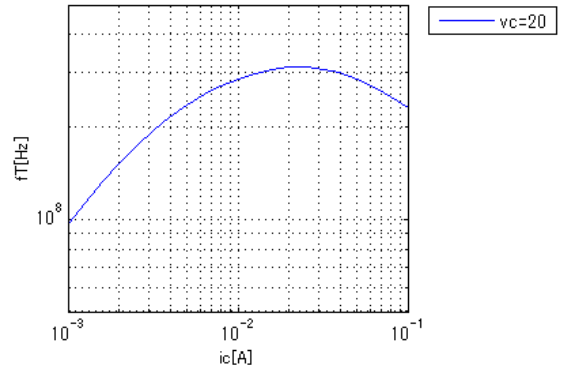
Cob

Freq = 1MHz



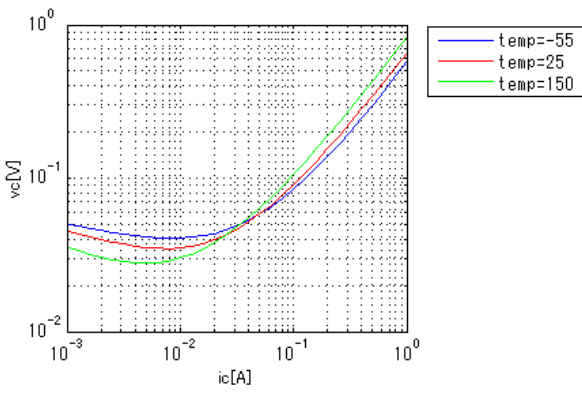
fTlc[Vce]

fo = 100MHz



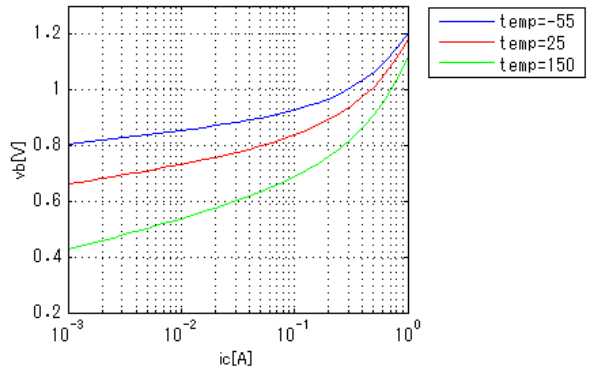
Vce(sat)Ic[Temp]

IC/IB = 10



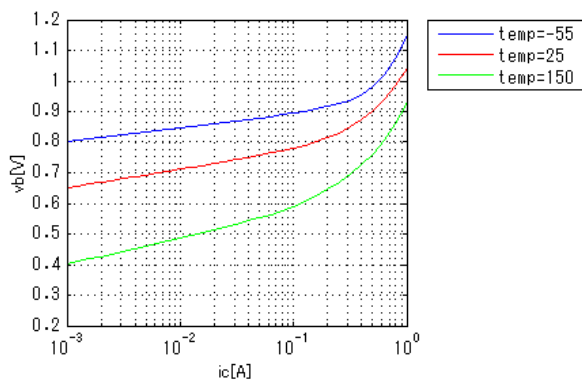
Vbe(sat)Ic[Temp]

IC/IB = 10



Vbelc[Temp]

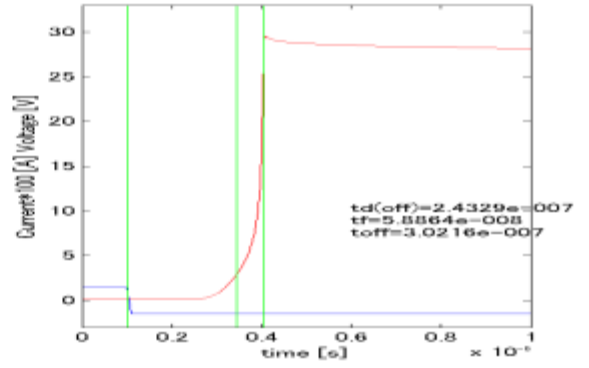
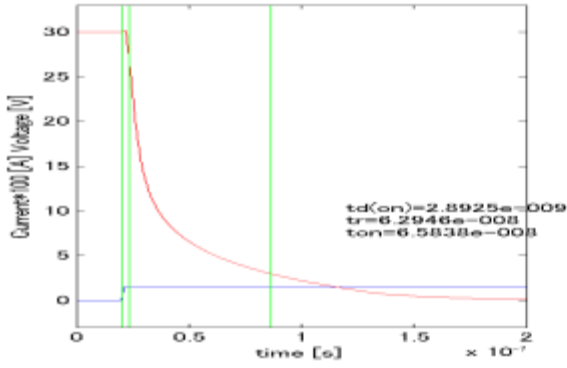
Vce = 1V



Simulation results are following.
Explanatory notes — : simulated

Switching Waveform (Blue : INPUT Red : OUTPUT)

ic/ib = 10, vcc = 30V, Temp = 25degC icc = 150mA, turn off ib1 = ib2



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