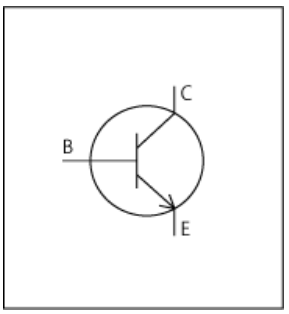
PSpice Model
NPN
ON
SMMBT2222AWT1G



Model Information

Model Gummel-Poon model
Call Name MDC_SMMBT2222AWT1G_PS
Pin Assign 1:B 2:E 3:C
File List Model Library MDC_SMMBT2222AWT1G_PS01.lib
Model Report MDC_SMMBT2222AWT1G_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, 2018 - Rev. 8
- ●Product name SMMBT2222AWT1G
- ●Company name ON Semiconductor.
- ●Characteristics hFEIc[Temp],hFEIc[Temp]2,VceIb[Ic],SwitchingIcc[Tname],SwitchingIcc[Tname]2,Cib,Cob,fTIc[Vce],Vce(sat)Ic[Temp],Vbe(sat)Ic[Temp],VbeIc[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

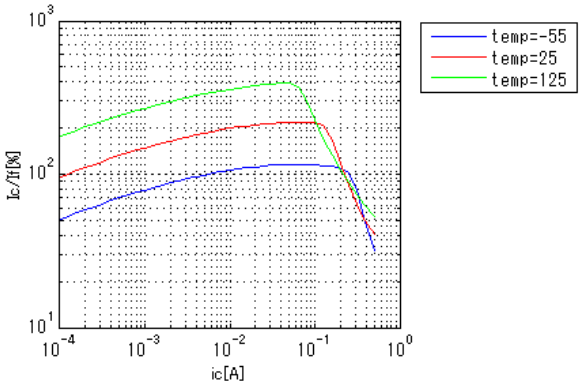
RANK=1

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

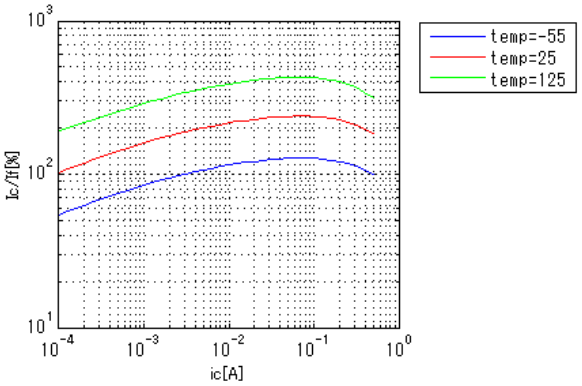
hFEIc[Temp]

Vce = 1V

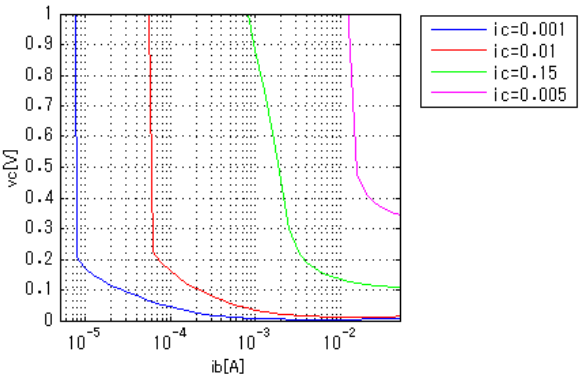


hFEIc[Temp]2

Vce = 10V

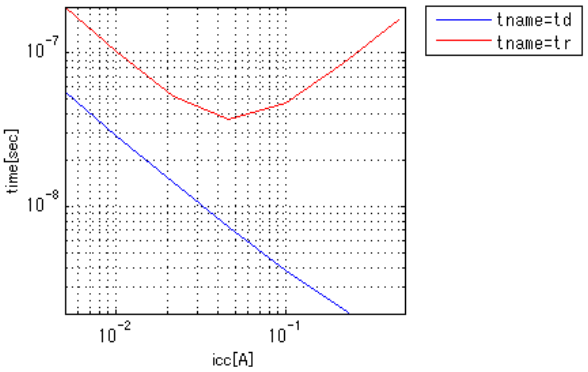


VceIb[Ic]



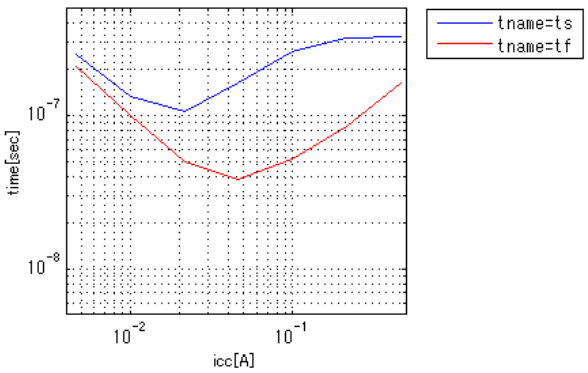
SwitchingIcc[Tname]

ic/ib = 10, vcc = 30V, Temp = 25degC



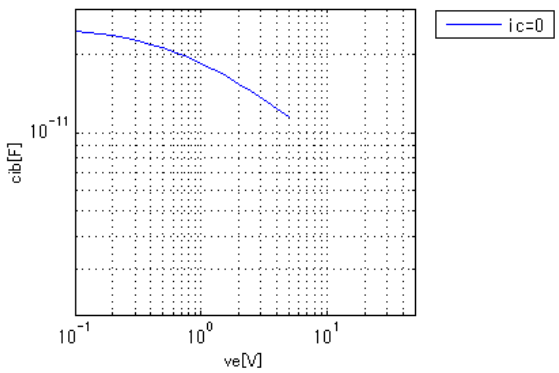
SwitchingIcc[Tname]2

ic/ib = 10A, ib1 = ib2, vcc = 30V, Temp = 25degC



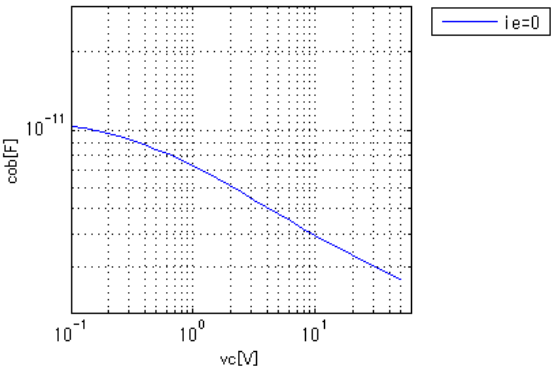
Cib

Freq = 1MHz

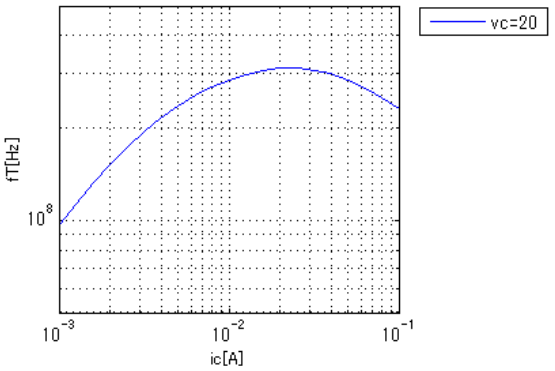


Simulation results are following.
Explanatory notes — : simulated

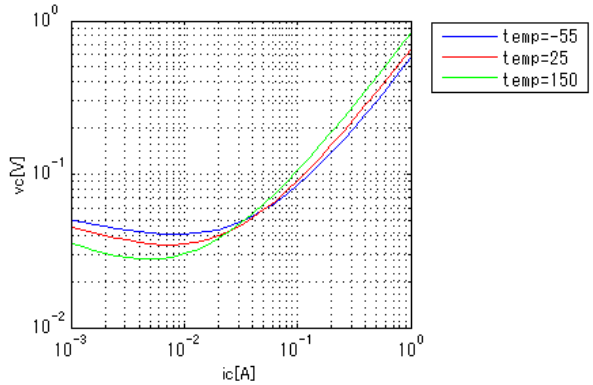
Cob
Freq = 1MHz



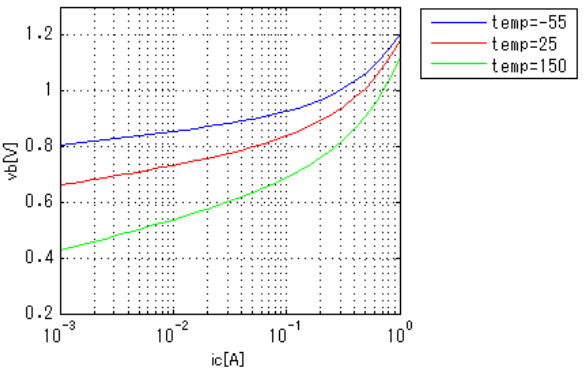
fTIc[Vce]
fo = 100MHz



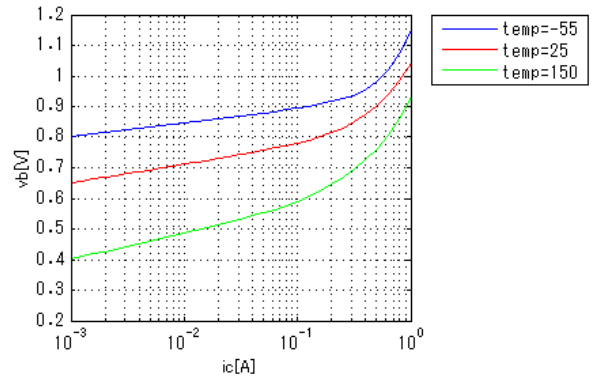
Vce(sat)Ic[Temp]
IC/IB = 10



Vbe(sat)Ic[Temp]
IC/IB = 10



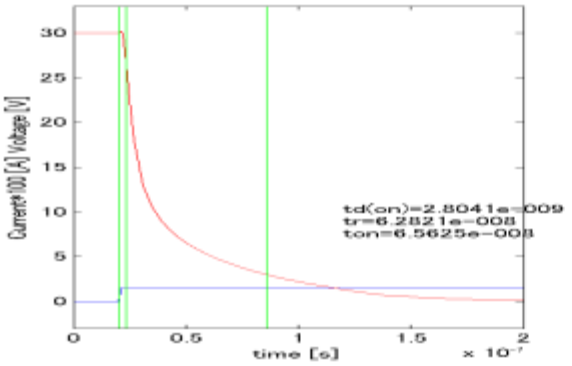
VbeIc[Temp]
Vce = 1V

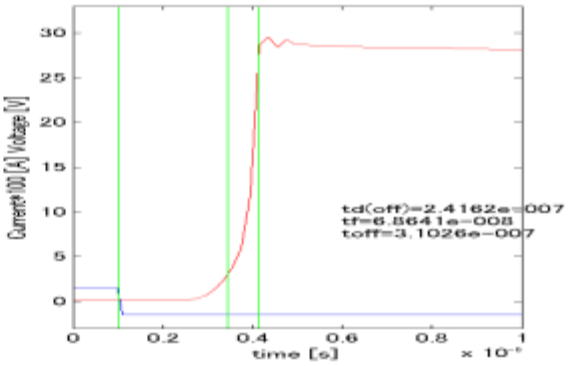


Simulation results are following.
Explanatory notes — : simulated

Switching Waveform (Blue : INPUT Red : OUTPUT)

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





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Modeling Design Technology

MoDeCH Inc.

Head Office
Location: Taiju-Seimei-Hachioji Bldg., 5-15 Yokoyama-cho, Hachioji-Shi, Tokyo 192-0081, Japan
Tel:+81-42-656-3360
E-Mail:model-on-support@modech.co.jp
URL:http://www.modech.com/en/