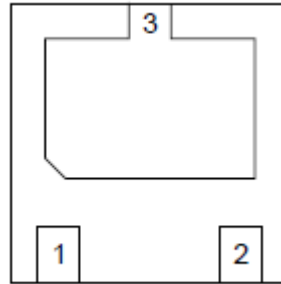


# LTspice Model

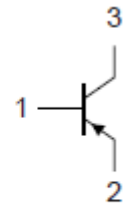
## PNP

### Nexperia

### BC51PA



Transparent top view



sym013

### Model Information

**Model** Gummel-Poon model  
**Call Name** MDC\_BC51PA\_LT  
**Pin Assign** 1:B 2:E 3:C  
**File List** Model Library MDC\_BC51PA\_LT01.lib  
 Model Report MDC\_BC51PA\_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 Rev. 9 - 13 October 2011
- Product name BC51PA
- Company name Nexperia B.V.
- Characteristics  $h_{FE}(I_c[Temp], I_c V_{ce}[ib], V_{belc}[Temp], V_{ce}(sat)I_c[Temp], Cob V_{cb}, f_{Tl}(V_{ce})$

### 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	-45	V
Collector current (DC)	0	to	-1	A
Temperature	-65	to	150	deg C

**BJT**

○ : Implemented  
 × : Not Implemented  
 — : Not applicable

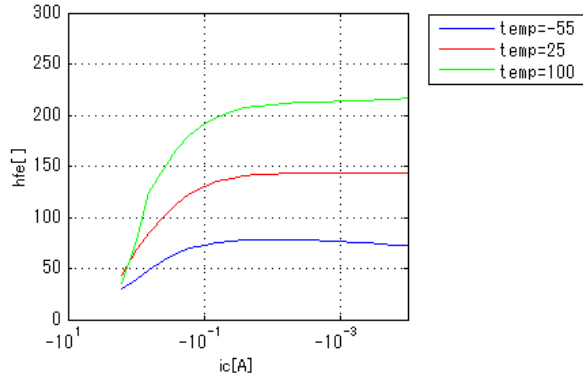
**Model Functions Table**
**RANK=1**

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

Simulation results are following.  
 Explanatory notes — : simulated

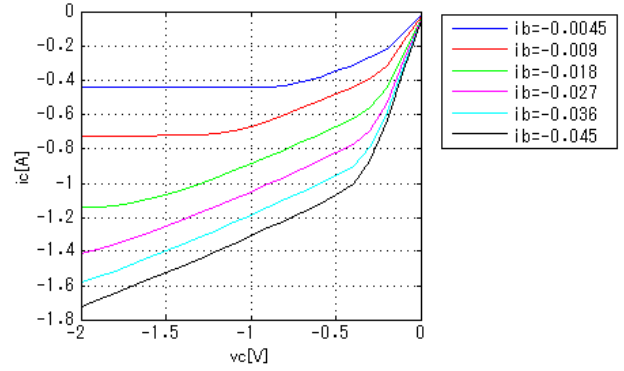
**hFEIc[Temp]**

Vce = -2V



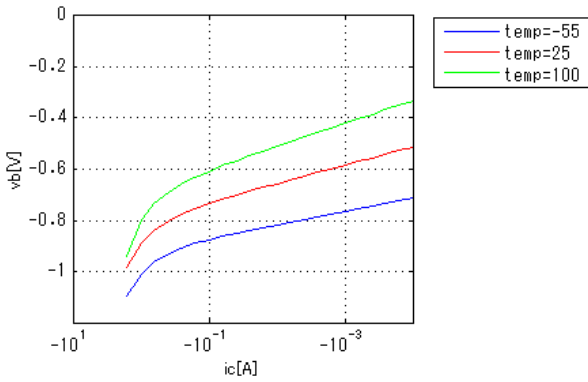
**IcVce[ib]**

Temp = 25degC



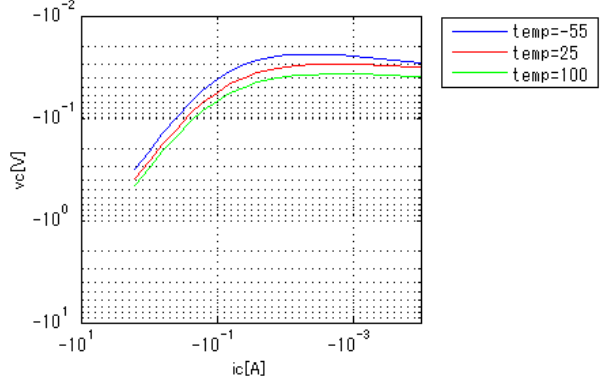
**Vbelc[Temp]**

Vce = -2V



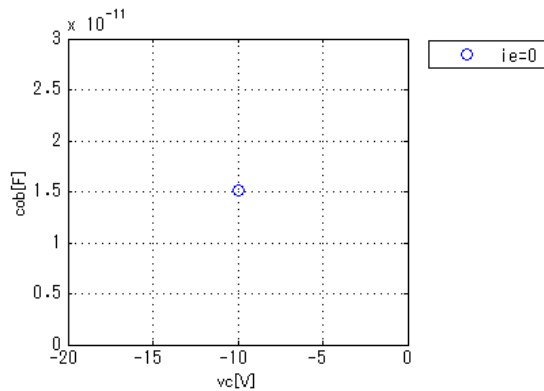
**Vce(sat)Ic[Temp]**

IC/IB = 10



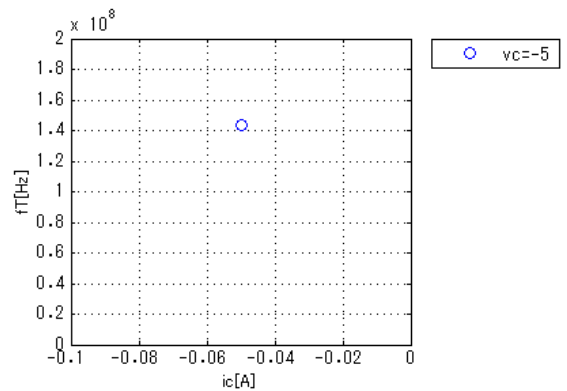
**CobVcb**

Freq = 1000000Hz



**fTic[Vce]**

Freq = 100000000Hz



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