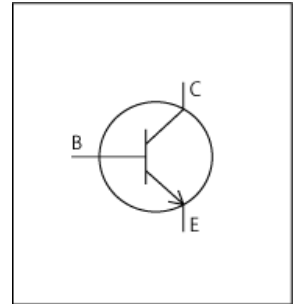


# LTspice Model

## NPN

### Isahaya

### 2SC5209-T111-1J



### Model Information

**Model** Gummel-Poon model  
**Call Name** MDC\_2SC5209-T111-1J\_LT  
**Pin Assign** 1:E 2:C 3:B  
**File List** Model Library MDC\_2SC5209-T111-1J\_LT01.lib  
 Model Report MDC\_2SC5209-T111-1J\_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 2011.06
- Product name 2SC5209-T111-1J
- Company name Isahaya Electronics Corporation
- Characteristics  $I_{cV_{ce}[ib]}$ ,  $I_{cV_{be}[Temp]}$ ,  $h_{FEIc}[Temp]$ ,  $V_{ceIb}[Ic]$ ,  $f_{Tle}[V_{ce}]$ ,  $C_{ob}$ ,  $V_{ce(sat)Ic}[Temp]$

### 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	50	V
Collector current (DC)	0	to	1	A
Temperature	-55	to	150	deg C

**BJT**

○ : Implemented  
 × : Not Implemented  
 — : Not applicable

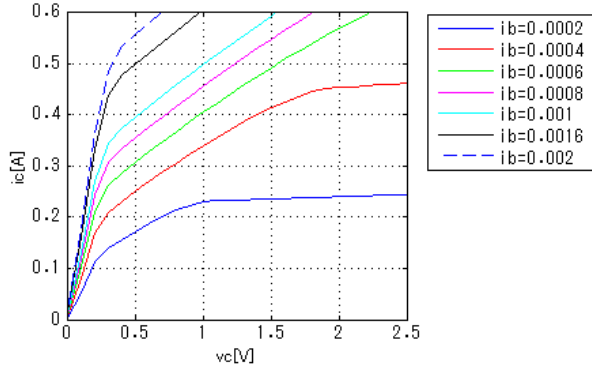
**Model Functions Table**
**RANK=1**

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

Simulation results are following.  
 Explanatory notes — : simulated

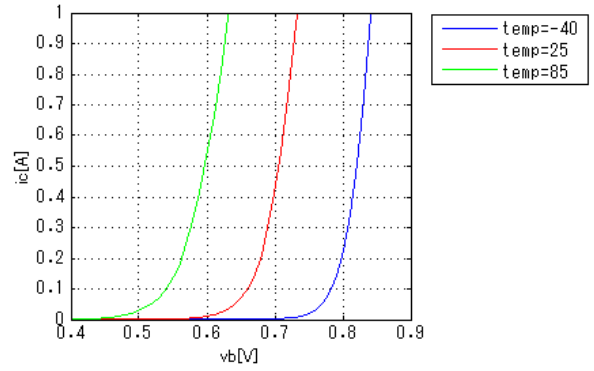
**IcVce[ib]**

Temp = 25degC



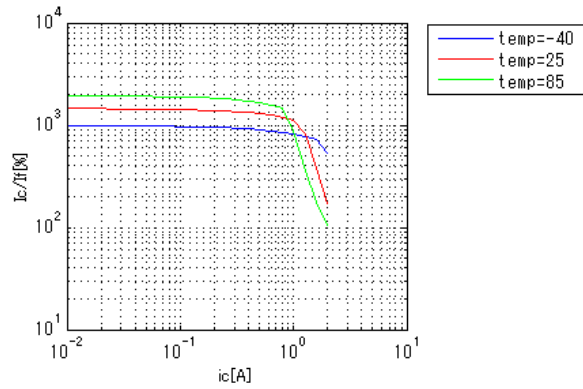
**IcVbe[Temp]**

Vce = 6V

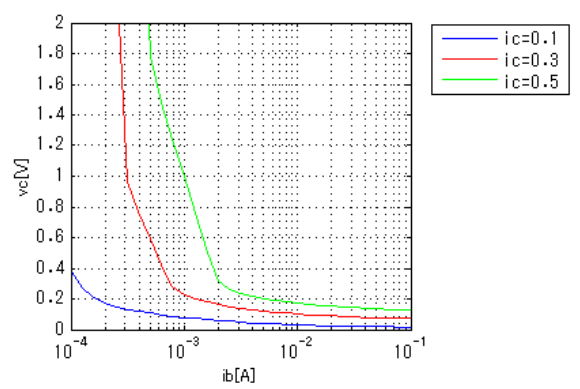


**hFEIc[Temp]**

Vce = 6V

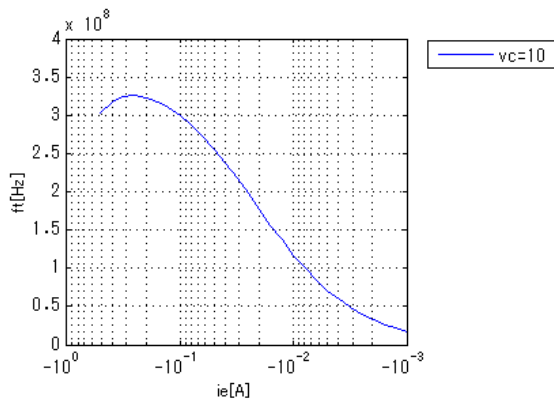


**VceIb[Ic]**



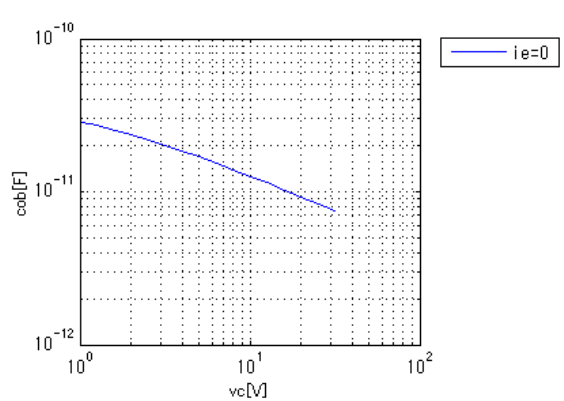
**fTle[Vce]**

Freq = 50000000Hz



**Cob**

Freq = 1000000Hz

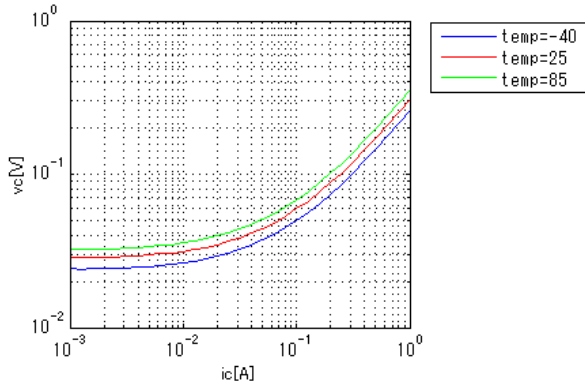


Simulation results are following.

Explanatory notes — : simulated

### Vce(sat)Ic[Temp]

IC/IB = 50



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