

# LTspice Model

## PNP

### Isahaya

### ISA1602AM1



#### Model Information

**Model** Gummel-Poon model  
**Call Name** MDC\_ISA1602AM1\_LT  
**Pin Assign** 1:B 2:E 3:C  
**File List** Model Library MDC\_ISA1602AM1\_LT01.lib  
 Model Report MDC\_ISA1602AM1\_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 none
- Product name ISA1602AM1
- Company name Isahaya Electronics Corporation
- Characteristics  $I_c V_{ce}[I_b], hFE I_c[Temp], V_{ce}(sat) I_c[Temp], V_{be}(sat) I_c[Temp], I_b V_{be}[Temp], I_c V_{be}[Temp], C_{ib}, C_{ob}, f_T I_c[V_{ce}]$

#### Simulation Range

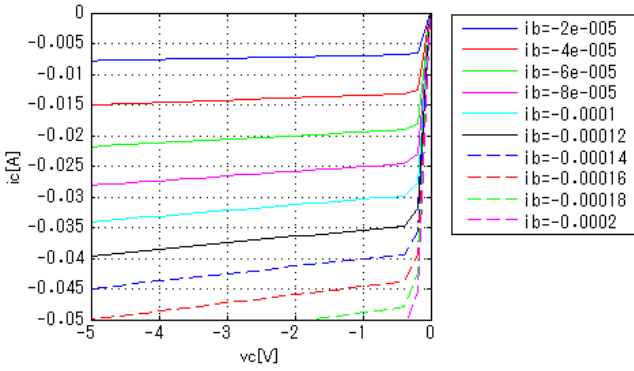
This table shows the range of evaluated simulation range that was not occurs any convergence problems in this area.

Item	Range			Unit
	Min.		Max.	
Collector-emitter voltage (DC)	0	to	-60	V
Base current (DC)	0	to	-20	A
Temperature	-55	to	150	deg C

Simulation results are following.  
 Explanatory notes — : simulated

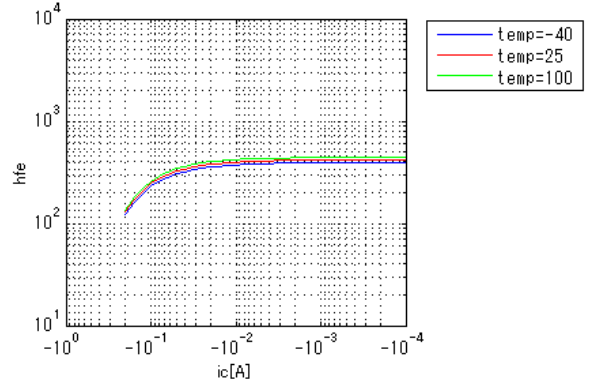
**IcVce[ib]**

Temp. = 25deg C



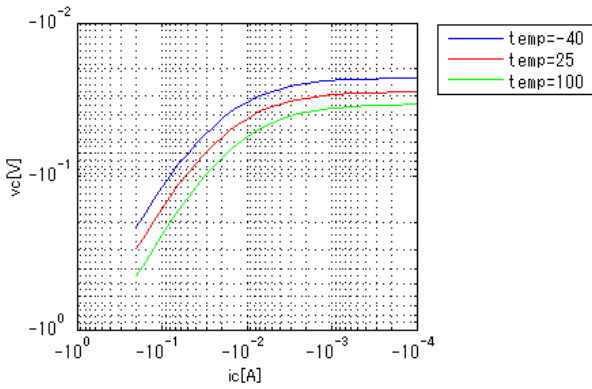
**hFEIc[Temp]**

Vce = -6V



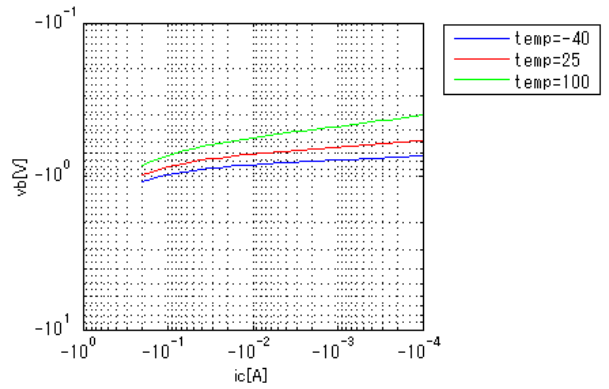
**Vce(sat)Ic[Temp]**

IC/IB = 10



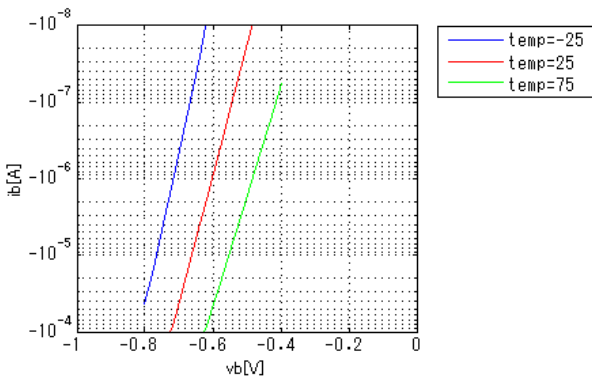
**Vbe(sat)Ic[Temp]**

IC/IB = 10



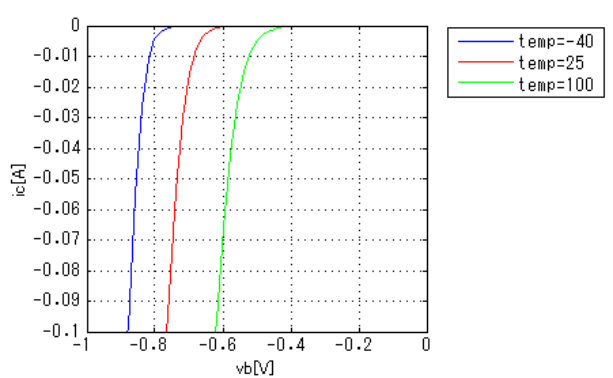
**IbVbe[Temp]**

Vce = -6V



**IcVbe[Temp]**

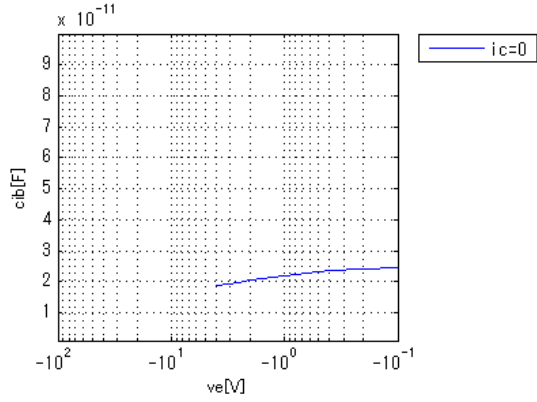
Vce = -6V



Simulation results are following.  
 Explanatory notes — : simulated

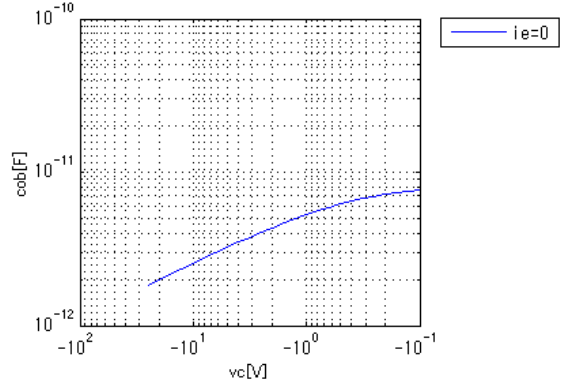
**Cib**

Freq. = 1MHz

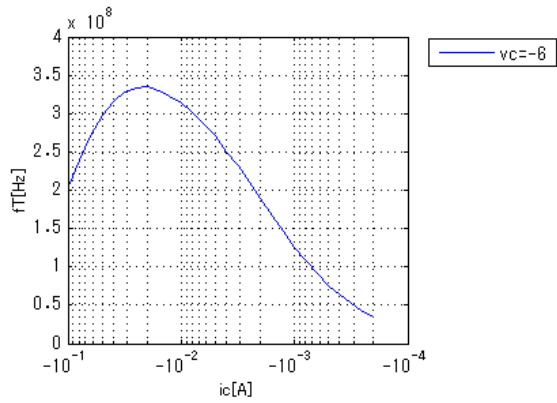


**Cob**

Freq. = 1MHz



**fTic[Vce]**



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