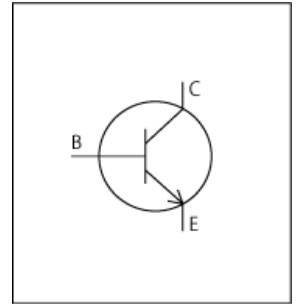


# LTspice Model

## NPN

## RENESAS

## 2SD2402



### Model Information

**Model** Mextram model  
**Call Name** MDC\_2SD2402\_LT  
**Pin Assign** 1:C 2:B 3:E  
**File List** Model Library MDC\_2SD2402\_LT01.lib  
 Model Report MDC\_2SD2402\_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 November 1994
- Product name 2SD2402
- Company name Renesas Electronics Corporation
- Characteristics  $I_c[V_{ce}[ib], I_c[V_{be}[Temp], hFE I_c[Temp], V_{ce}(sat) I_c[Temp], V_{be}(sat) I_c[hFE], fT I_c[V_{ce}], C_{ob}$

### Simulation Range

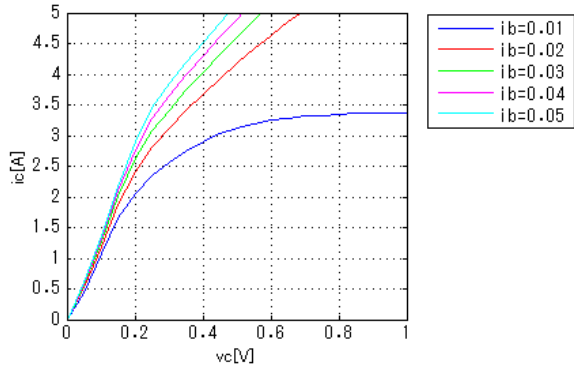
This table shows the range of evaluated simulation range that was not occurs any convergence problems in this area.

Item	Range			Unit
	Min.		Max.	
Collector-emitter voltage (DC)	0	to	30	V
Base current (DC)	0	to	0.2	A
Temperature	-55	to	150	deg C

Simulation results are following.  
 Explanatory notes — : simulated

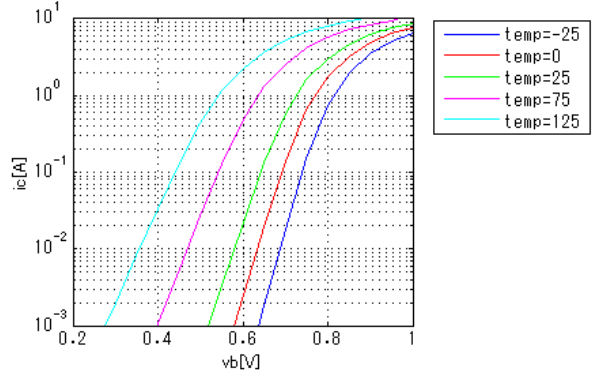
**IcVce[ib]**

Temp. = 25deg C



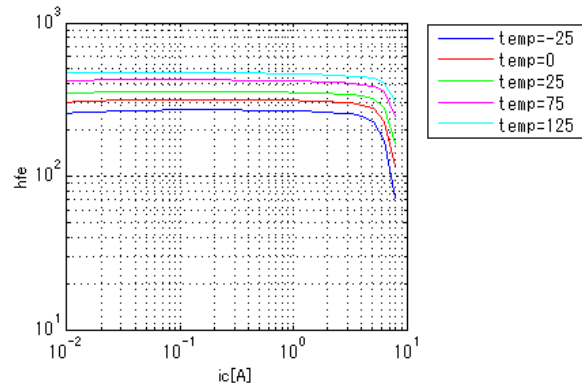
**IcVbe[Temp]**

Vce = 1V



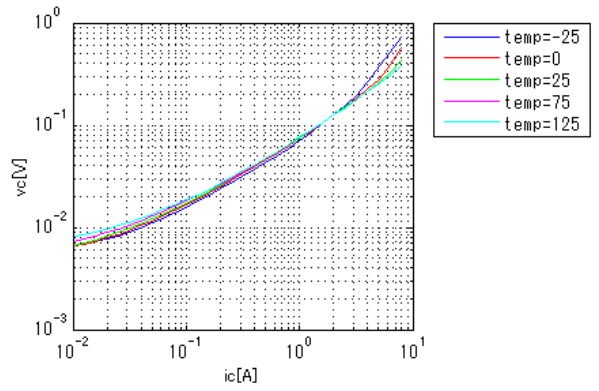
**hFEIc[Temp]**

Vce = 1V

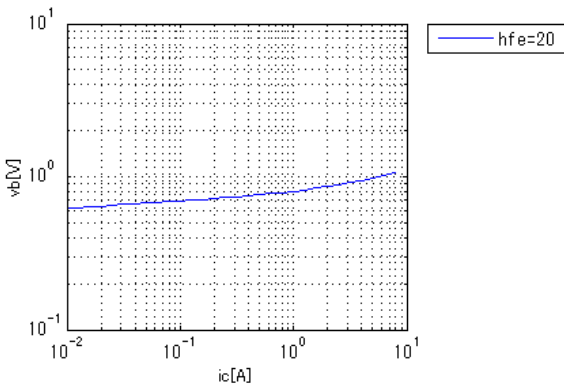


**Vce(sat)Ic[Temp]**

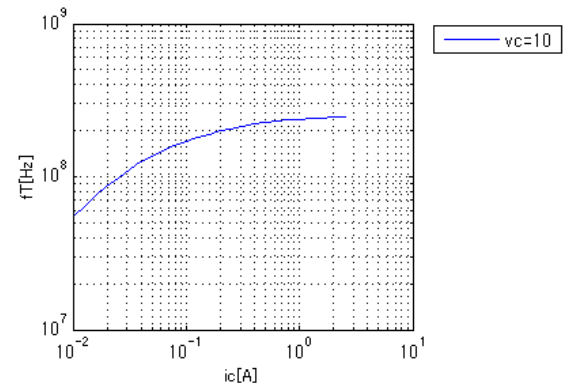
IC/IB = 20



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



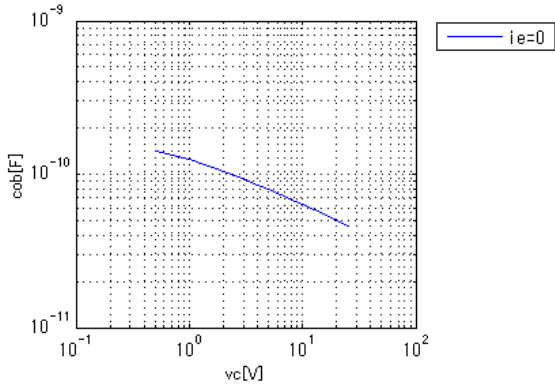
**fT Ic[Vce]**



Simulation results are following.  
Explanatory notes — : simulated

**Cob**

Freq. = 1MHz



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