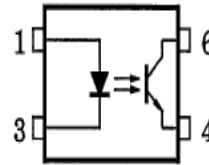


PSpice Model

Photocoupler Tr. Output

TOSHIBA

TLP185



1: アノード
3: カソード
4: エミッタ
6: コレクタ

Model Information

Model An original macro model
Call Name MDC_TLP185_PS
Pin Assign 1:Anode 2:Cathode 4:Emitter 6:Collector
File List Model Library MDC_TLP185_PS03.lib
 Model Report MDC_TLP185_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 2014/9/1
- Product name TLP185
- Company name Toshiba Corporation
- Characteristics $I_f[V_f(Temp)], \Delta I_f, I_c[V_{ce}(I_f), I_c(I_f[V_{ce}], I_c(Temp[V_{ce}], CTR(I_f[V_{ce}], V_{cesat}(Temp[I_f], V_{cesat}(Temp[I_f]2, I_c(Temp[I_f], SwitchingRL(Tname), SwitchingTemp(Tname), C_jVr, C_{ce}(V_{ce}, SwitchingWaveform$

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 | 80 | V |
| Temperature | -55 | to | 125 | deg C |

Photo Coupler

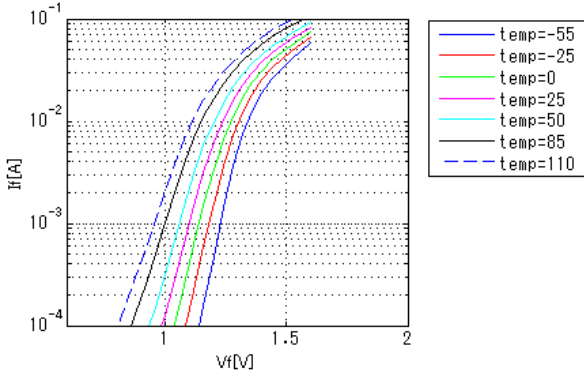
○ : Implemented
 × : Not Implemented
 — : Not applicable

Model Functions Table
RANK=1

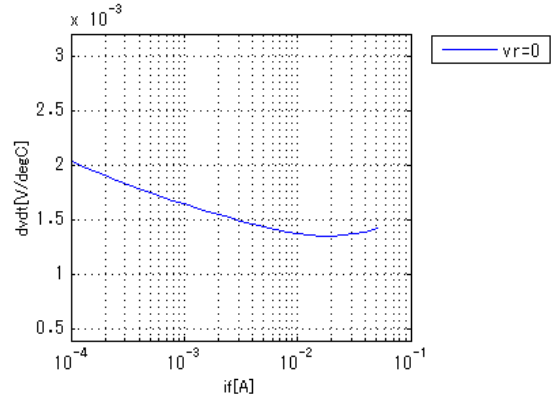
| Functions | RANK | Implemented |
|-------------------|------|-------------|
| IF-VF(Temp) | 1 | ○ |
| IC-VCE-IF(Temp) | 1 | ○ |
| Idark-Temp(Vce) | 1 | ○ |
| VCE(sat)-Temp(IF) | 1 | ○ |
| IC-IF(VCE) | 1 | ○ |
| CTR-IF(VCE) | 1 | ○ |
| IC-Temp(IF) | 1 | ○ |
| Switching | 1 | ○ |
| Capacitance | 1 | ○ |

Simulation results are following.
 Explanatory notes — : simulated

IfVf[Temp]

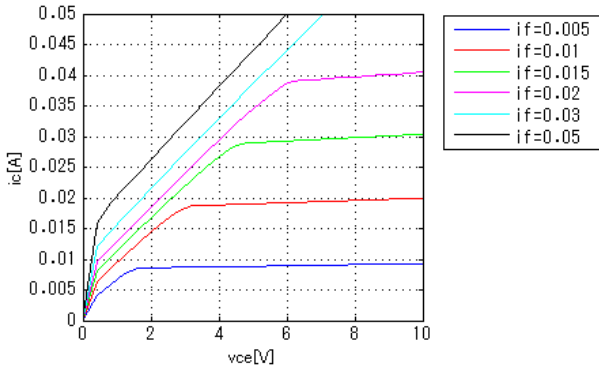


DeltavIf



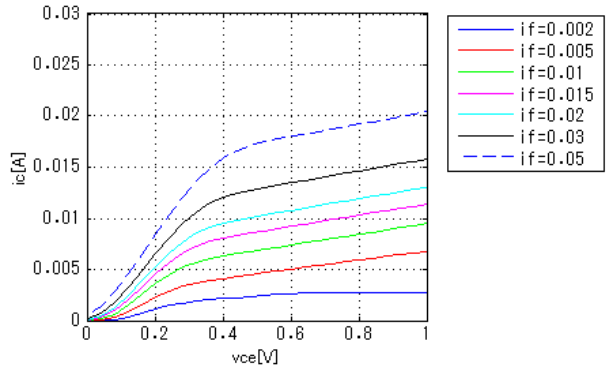
IcVce[If]

temp = 25degC



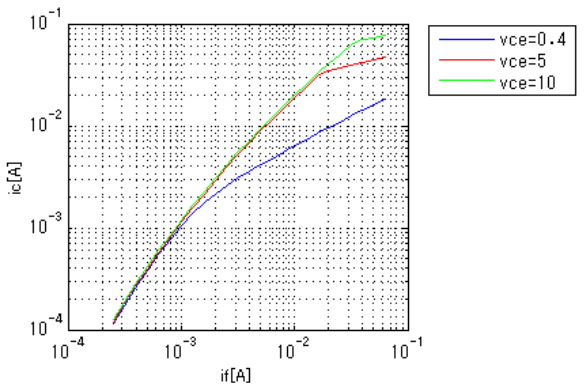
IcVce[If]

temp = 25degC



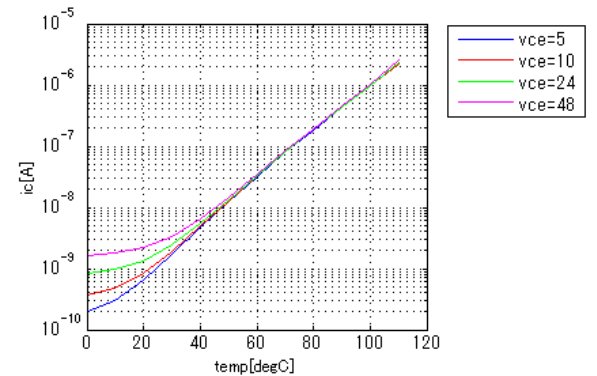
IcIf[Vce]

Temp = 25degC



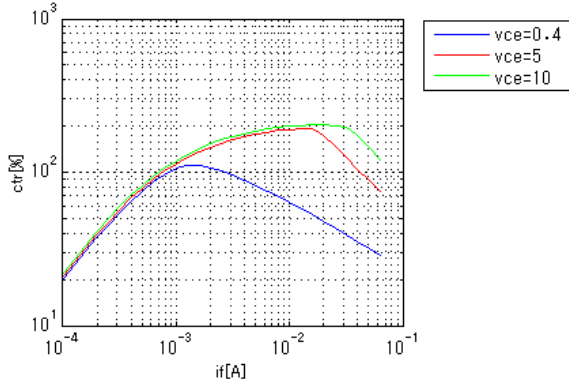
IcTemp[Vce]

If = 0A



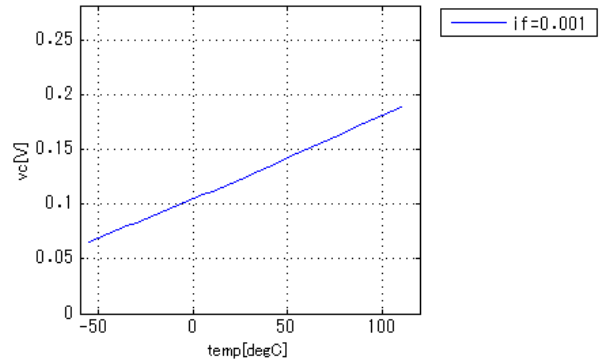
Simulation results are following.
 Explanatory notes — : simulated

CTRif[Vce]



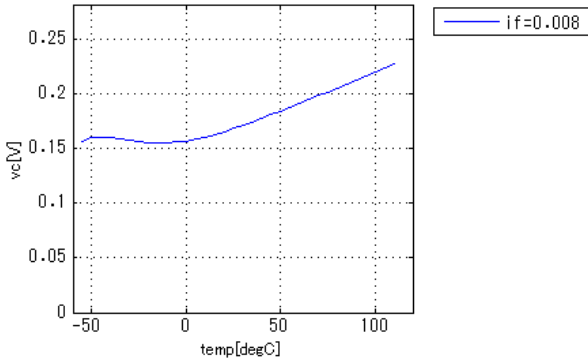
VcesatTemp[If]

Ic = 0.0002A



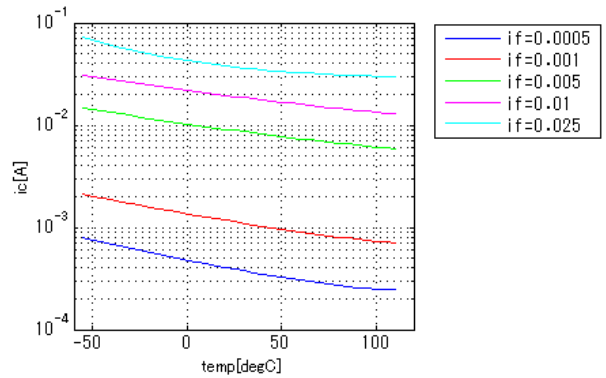
VcesatTemp[If]2

Ic = 0.0024A



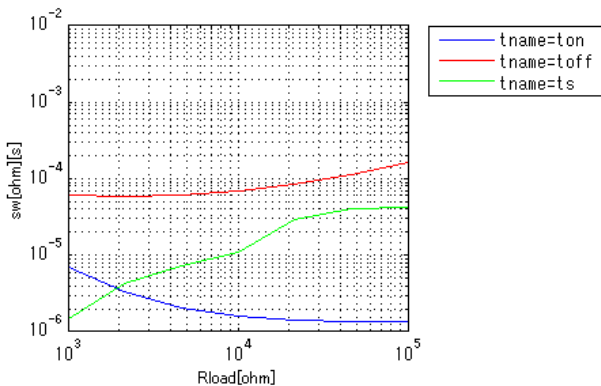
IcTemp[If]

Vce = 5V



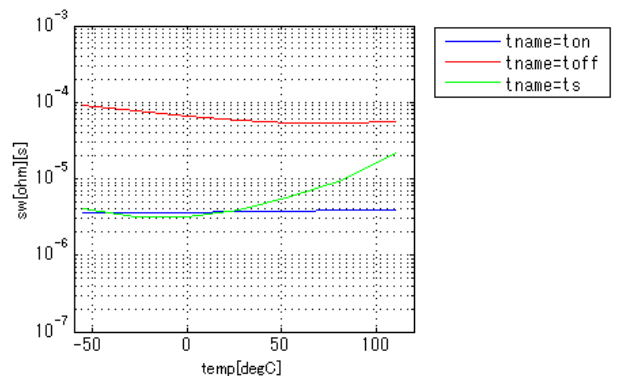
SwitchingRL[Tname]

if = 0.016A, vcc = 5V, temp = 25degC



SwitchingTemp[Tname]

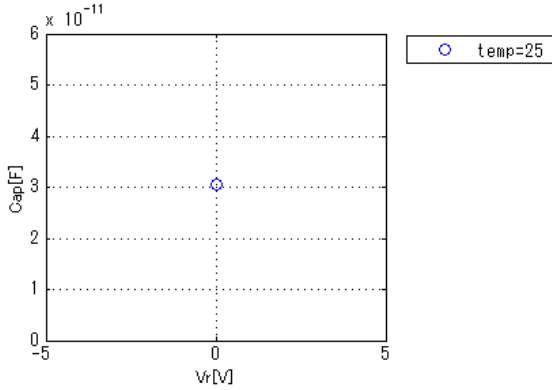
if = 0.016A, vcc = 5V, RL = 1900ohm



Simulation results are following.
 Explanatory notes — : simulated

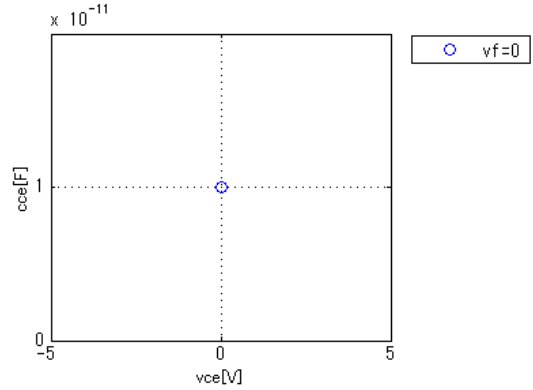
CjVr

freq = 1000000Hz, temp = 25degC



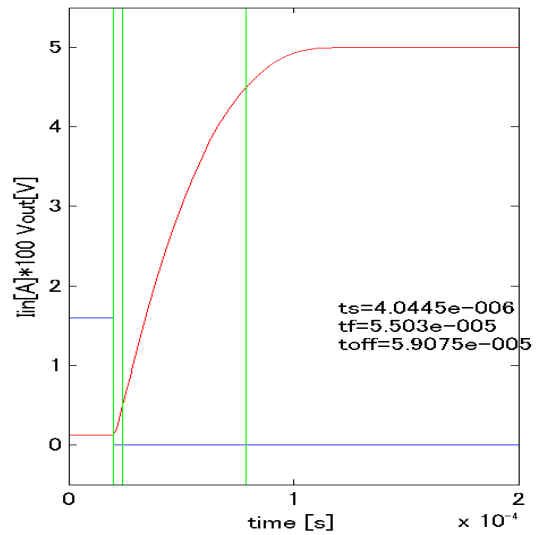
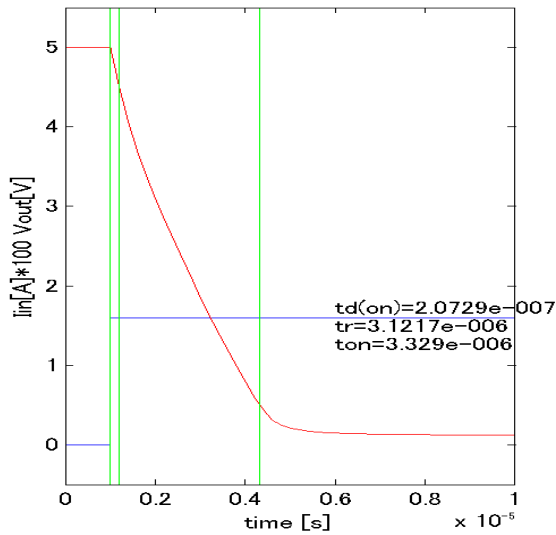
CceVce

freq = 1000000Hz, temp = 25degC



Switching Waveform (Blue : INPUT Red : OUTPUT)

vcc = 5V, if = 0.016A, Temp = 25degC, RL = 2154ohm



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