LTspice Model Photocoupler Tr. Output TOSHIBA TLP385

6 4
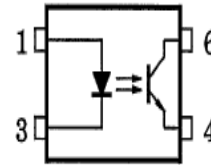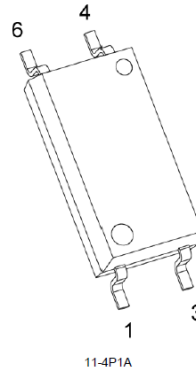
1: アノード
3: カソード
4: エミッタ
6: コレクタ

1

3

11-4P1A

Model Information

Model   An original macro model
Call Name MDC_TLP385_LT
Pin Assign 1:Anode 2:Cathode 3:Emitter 4:Collector
File List Model Library   MDC_TLP385_LT03.lib
               Model Report   MDC_TLP385_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   2016-03-16 Rev.5.0
- ●Product name   TLP385
- ●Company name   Toshiba Corporation
- ●Characteristics   IfVf[Temp],DeltavfIf,IcVce[If],IcTemp[Vce],VcesatTemp[If],VcesatTemp[If]2,IcIf[Vce],CTRIf[Vce],IcTemp[If],SwitchingRL[Tname],SwitchingTemp[Tname],CceVce,CinoutVinout,SwitchingWaveform

Simulation Range

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

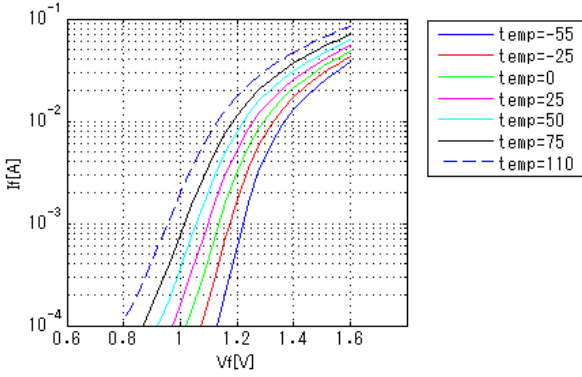| Item	Range			Unit
	Min.		Max.	
Collector-emitter voltage (DC)	0	to	80	V
Temperature	-55	to	125	deg C

Photo Coupler

Model Functions Table

Functions	RANK=1	
	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.
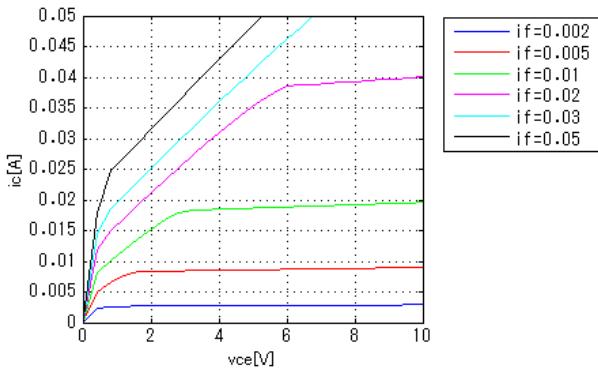Explanatory notes　　— : simulated

IfVf[Temp]

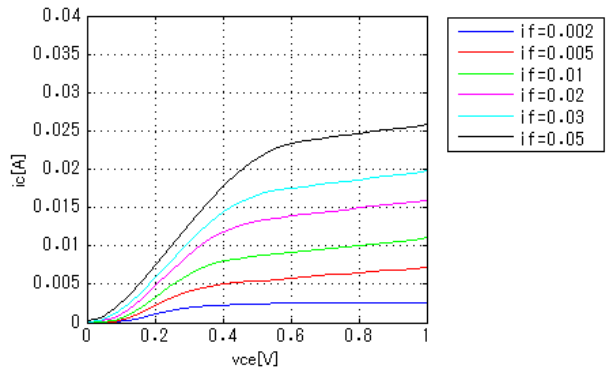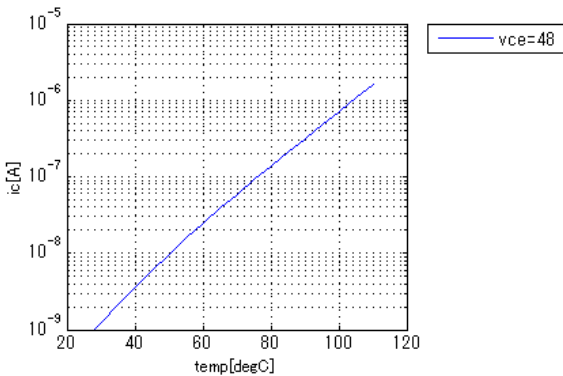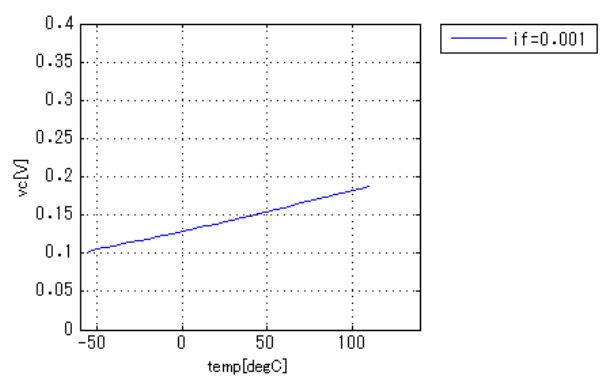
DeltavfIf
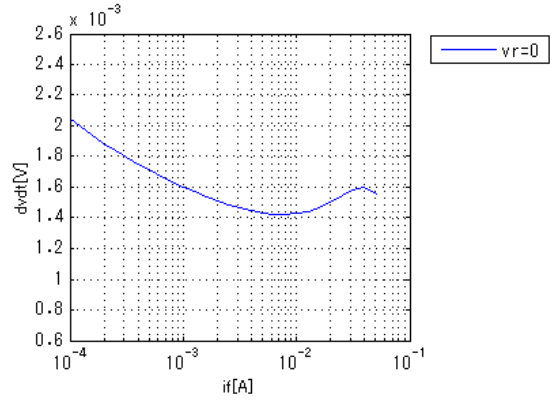
IcVce[If]

temp = 25degC

IcVce[If]

temp = 25degC

IcTemp[Vce]

If = 0A

VcesatTemp[If]

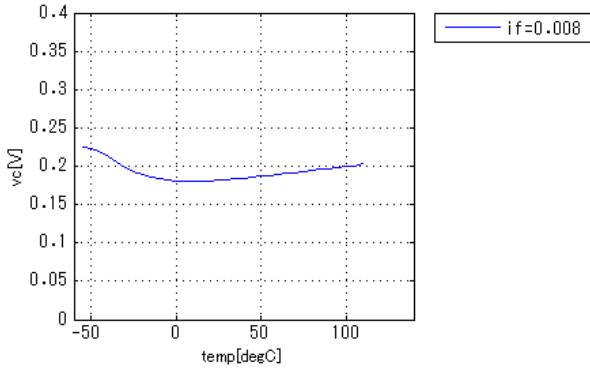Ic = 0.0002A

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Simulation results are following.
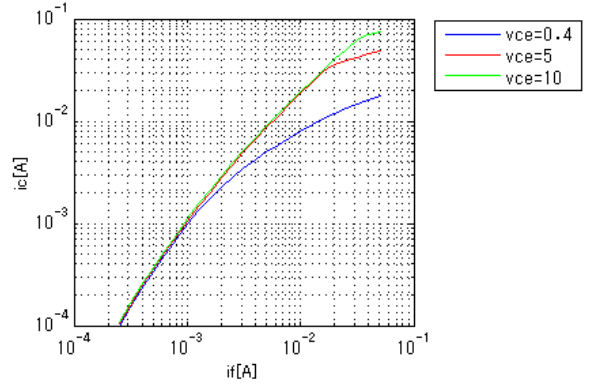Explanatory notes　　— : simulated
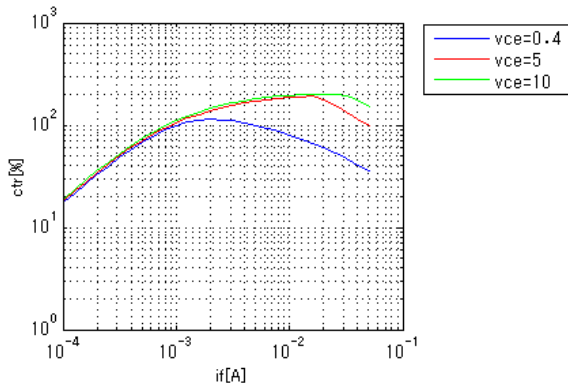
VcesatTemp[If]2

Ic = 0.0024A

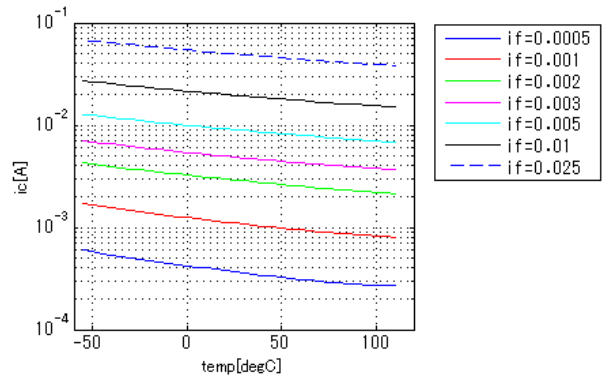### IcIf[Vce]

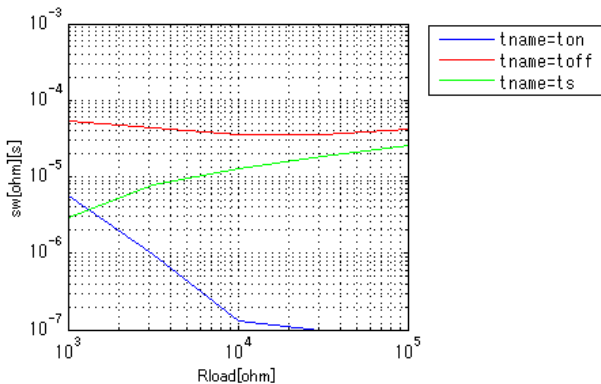Temp = 25degC

CTRIf[Vce]

IcTemp[If]

Vce = 10V

SwitchingRL[Tname]

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

SwitchingTemp[Tname]

if = 0.016A, vcc = 5V, RL = 1900ohm
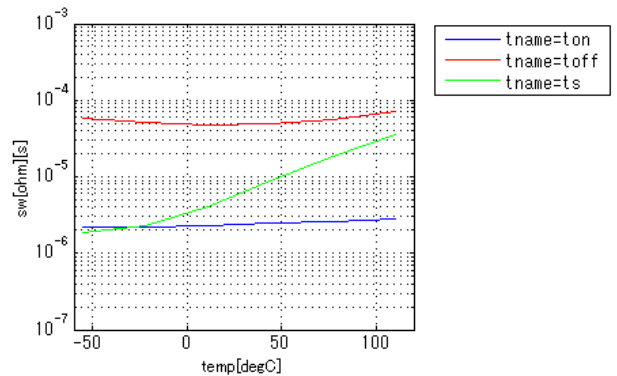
Simulation results are following.
Explanatory notes 　 — : simulated

CceVce

freq = 1000000Hz, temp = 25degC

CinoutVinout

freq = 1000000Hz, temp = 25degC

Switching Waveform (Blue : INPUT　Red : OUTPUT)

ig = 0.016A, vcc = 5V, RL = 3162ohm, Temp = 25degC

td(on)=9.5221e-009
tr=9.6616e-007
ton=9.7568e-007

ts=7.8809e-006
tf=3.4914e-005
toff=4.2795e-005

DISCLAIMER

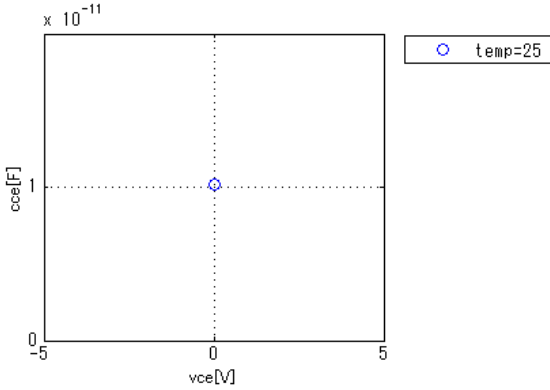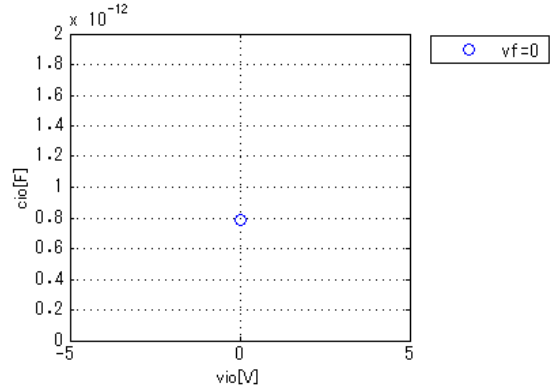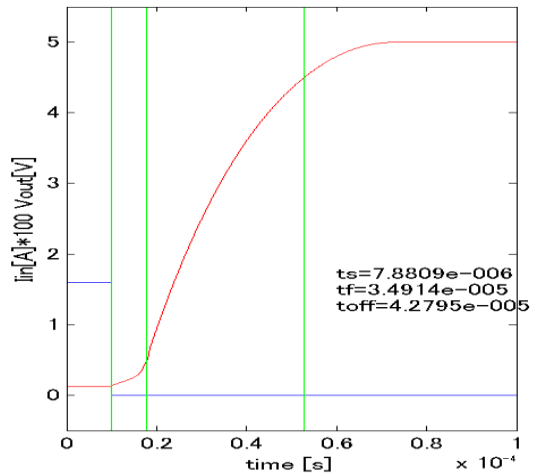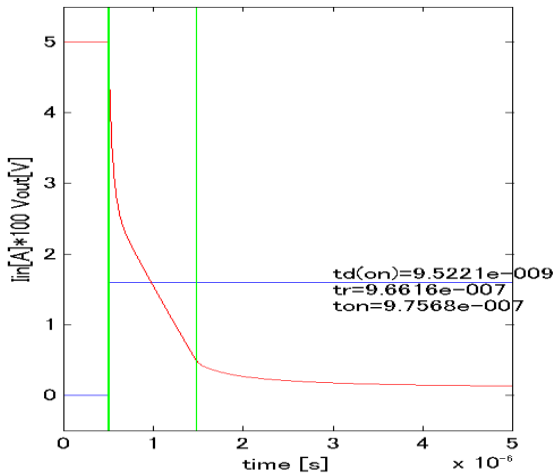1. This SPICE (Simulation Program with Integrated Circuit Emphasis) model and its content (the "Contents") are copyright of MoDeCH Inc. All rights reserved. Any redistribution or reproduction of any or all part of the Contents in any form is prohibited without express written permission made by MoDeCH Inc.

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Modeling Design Technology

MoDeCH Inc.

Head Office
Location: 5-15 Yokoyama-cho, Hachioji-Shi, Tokyo 192-0081, Japan
Tel:+81-42-656-3360
E-Mail:model-on-support@modech.co.jp
URL:http://www.modech.com/en/

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