

# LTspice Model

## Photo Coupler

### Renesas

## PS2501L-1-F3-A

### Model Information

**Model** A macro model  
**Call Name** MDC\_PS2501L-1-F3-A\_LT  
**Pin Assign** 1:Anode 2:Cathde 3:Emitter 4:Collector  
**File List** Model Library MDC\_PS2501L-1-F3-A\_LT.lib  
 Model Report MDC\_PS2501L-1-F3-A\_LT.pdf(this file)  
**Verified Simulator Version** LTspice v24.0.12

### Note

### References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version Dec 25, 2020 / Rev.1.00
- Product name PS2501L-1-F3-A
- Company name Renesas Electronics Corporation

[Characteristics listed]

- Characteristics IF-VF  
IC-VCE-IF  
VTR-IF  
Switching Time vs. LOAD RESISTANCE

### Simulation Condition

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

Item	Condition	Unit
Temperature	25	deg C

**Photo coupler**

○ : Implemented  
 × : Not Implemented  
 — : Not applicable

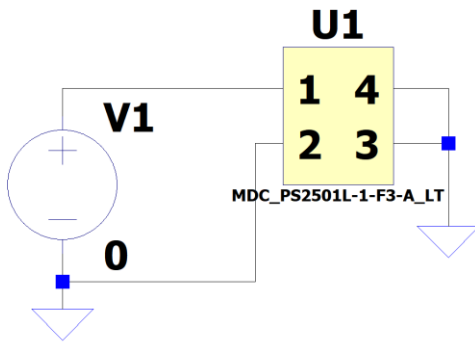
**Model Functions Table**
**RANK=1**

Functions	RANK	Implemented
IF-VF-Temp	1	○
Iout-Vout-IF	1	○
Iout-IF	1	—
Iout/IF-IF(CTR-IF)	1	○
CJ-VR	1	—
Propagation delay	1	—
Switching (Typ.)	1	○

IF-VF Testbench

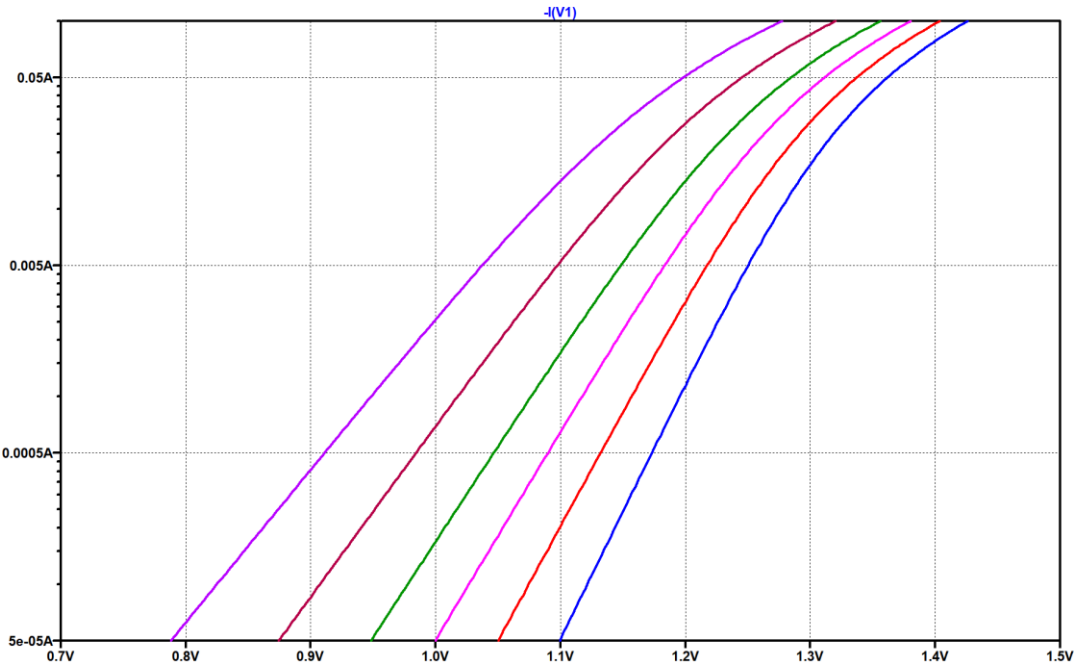
Referred to Data Sheet

```
.OPTION TNOM=25  
.TEMP -50 -25 0 25 60 100  
.dc V1 0.7 1.5 0.01
```



Simulation results are following.  
Explanatory notes — : simulated

IF-VF

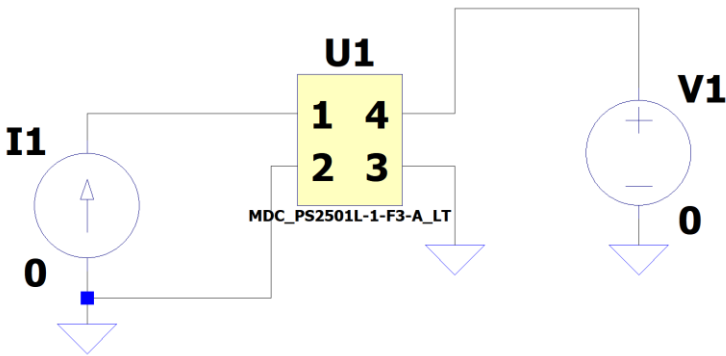


IC-VCE Testbench

Referred to Data Sheet

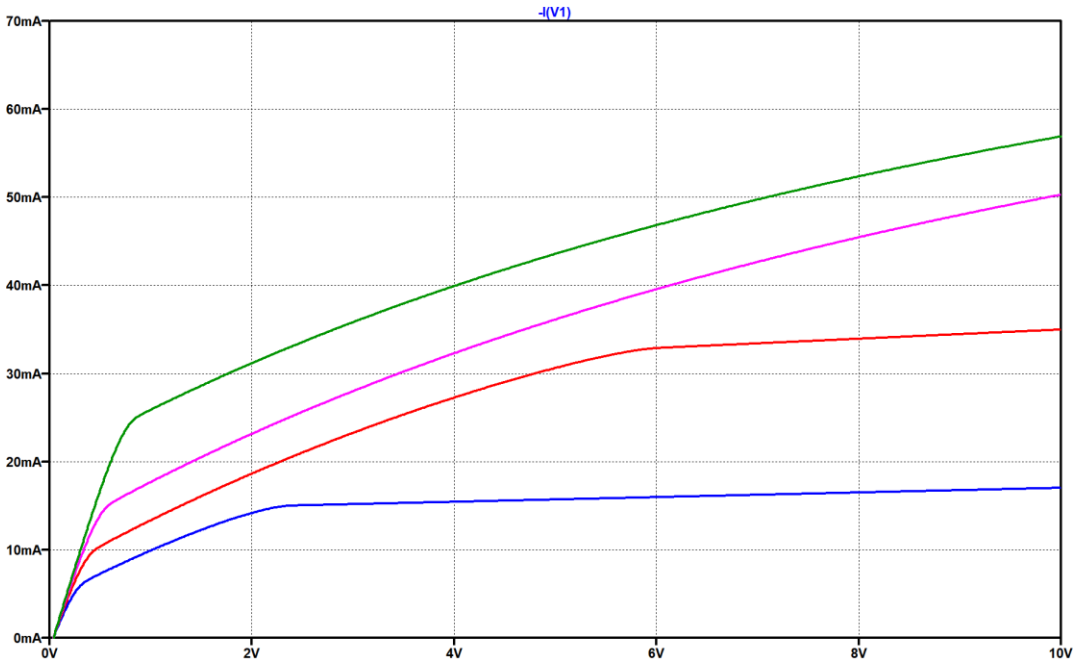
```
.OPTION TNOM=25  
.TEMP 25
```

```
.dc V1 0 10 0.01 I1 list 5m 10m 20m 50m
```



Simulation results are following.  
Explanatory notes — : simulated

IC-VCE



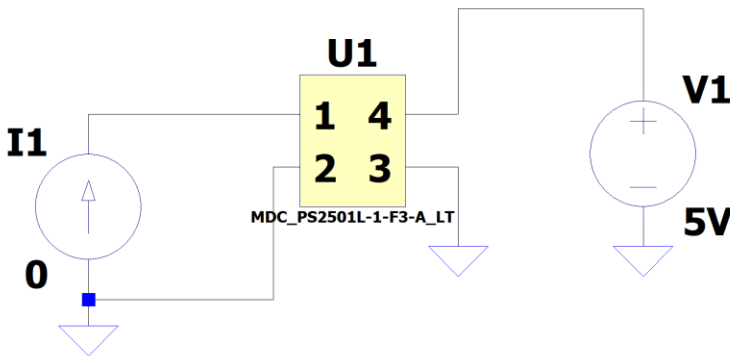
CTR-IF Testbench

Referred to Data Sheet

**.OPTION TNOM=25**

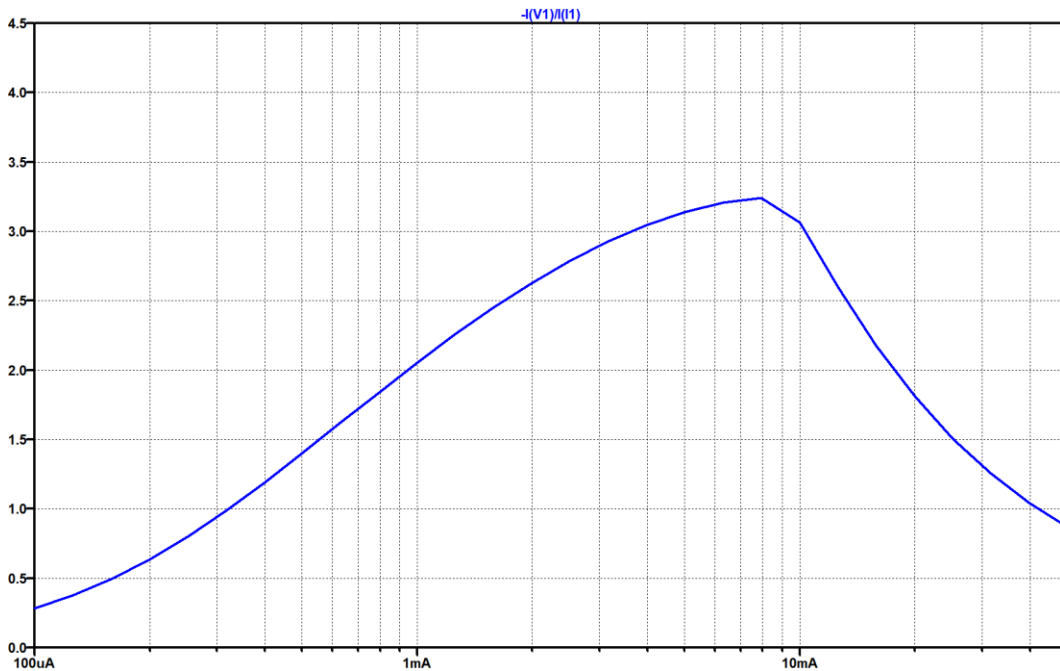
**.TEMP 25**

**.dc dec I1 0.1m 50m 10**



Simulation results are following.  
 Explanatory notes — : simulated

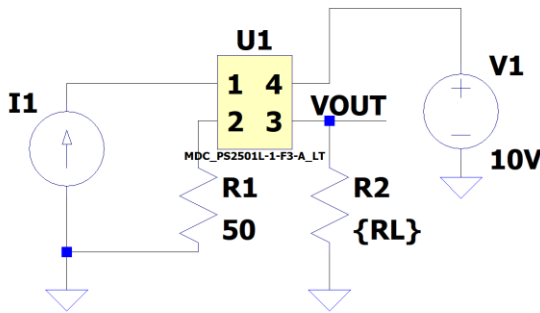
**CTR-IF**



Switching Time vs. LOAD RESISTANCE Testbench

Referred to Data Sheet

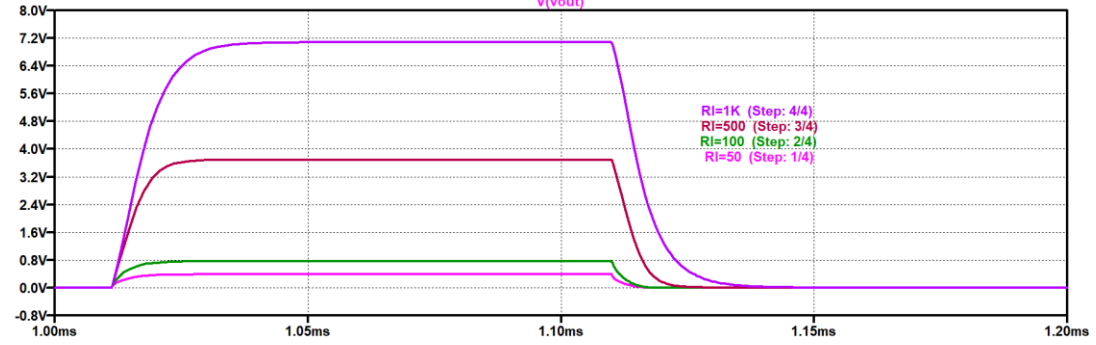
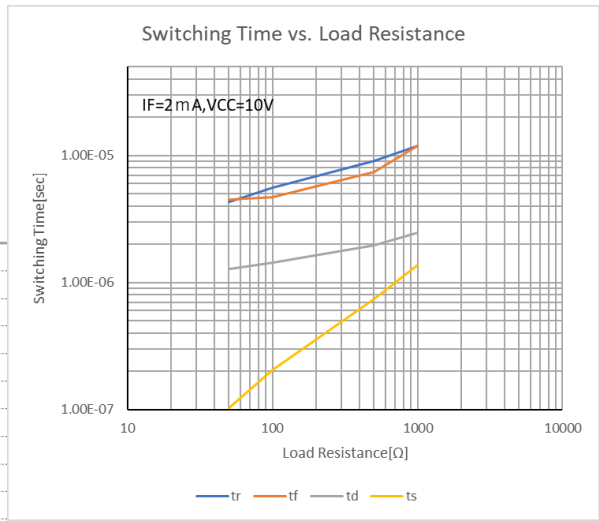
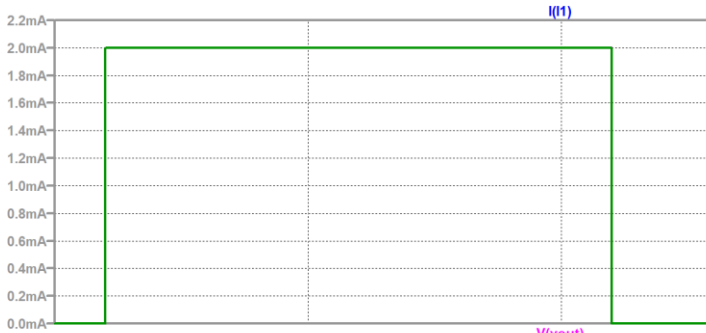
```
.step param RL list 50 100 500 1k
.OPTION TNOM=25
.TEMP 25
.tran 1.5m
```



```
PULSE(0 2m 10u 10n 10n 100u 1m)
```

Simulation results are following.  
Explanatory notes — : simulated

Switching Time vs. LOAD RESISTANCE



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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](mailto:model-on-support@modech.co.jp)

URL:<http://www.modech.com/en/>