

# LTspice Model

## Photo Coupler

### Toshiba

### TLP155E

#### Model Information

**Model** A macro model  
**Call Name** MDC\_TLP155E\_LT  
**Pin Assign** 1:Anode 3:Cathode 4:GND 5:Vo 6:Vcc  
**File List** Model Library MDC\_TLP155E\_LT.lib  
 Model Report MDC\_TLP155E\_LT.pdf(this file)  
**Verified Simulator Version** LTspice v24

#### Note

#### References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version 2019-05-27
- Product name TLP155E
- Company name Toshiba Electronic Devices & Storage Corporation

[Characteristics listed]

- Characteristics  
 IF-VF(Temp)  
 (VOH - VCC) - IOPH  
 VOL - IOPL  
 tpLH, tpHL, |tpHL - tpLH| - IF  
 tpLH, tpHL, |tpHL - tpLH| - VCC

#### 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

○ : Implemented  
 × : Not Implemented  
 – : Not applicable

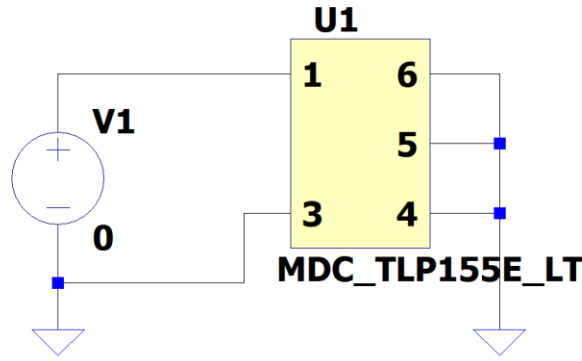
**Model Functions Table**
**RANK=1**

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

IF-VF(Temp) Testbench

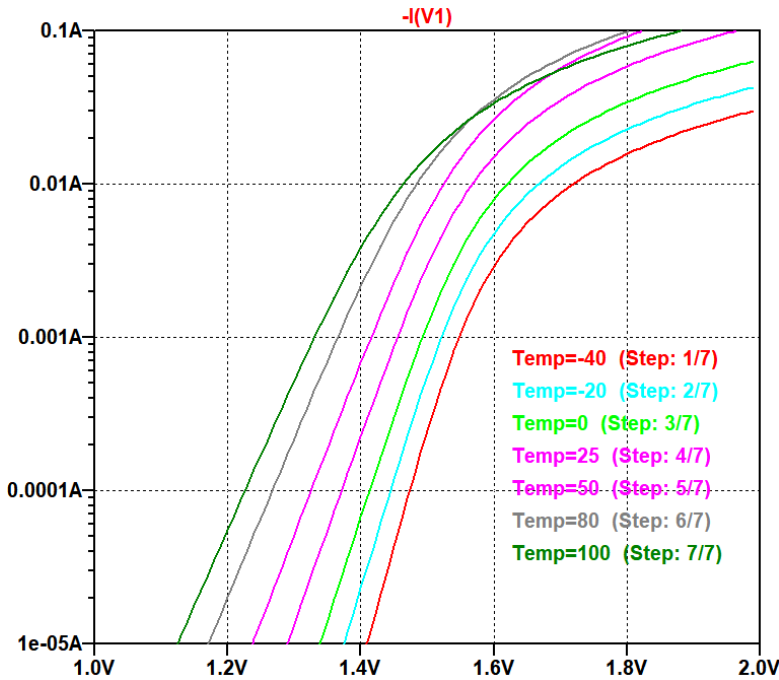
Referred to Data Sheet

```
.OPTION TNOM=25
.TEMP -40 -20 0 25 50 80 100
.dc V1 1 2 0.01
```



Simulation results are following.  
 Explanatory notes — : simulated

IF-VF (Temp)



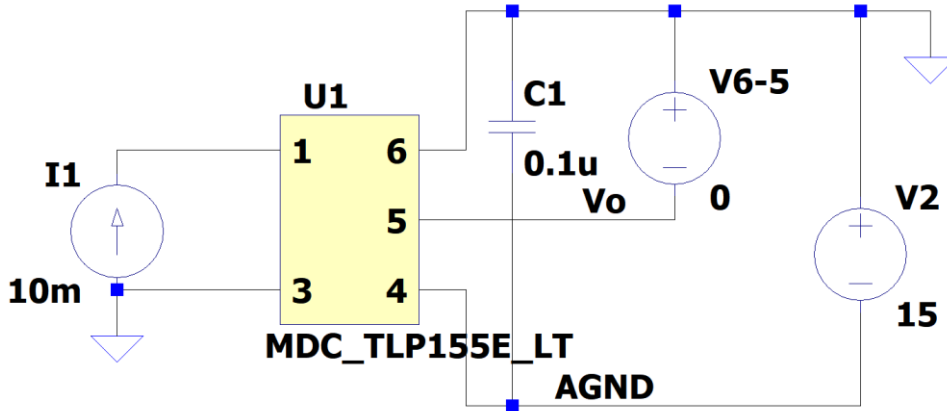
(VOH - VCC) - IOPH Testbench

Referred to Data Sheet

.OPTION TNOM=25

.TEMP 25

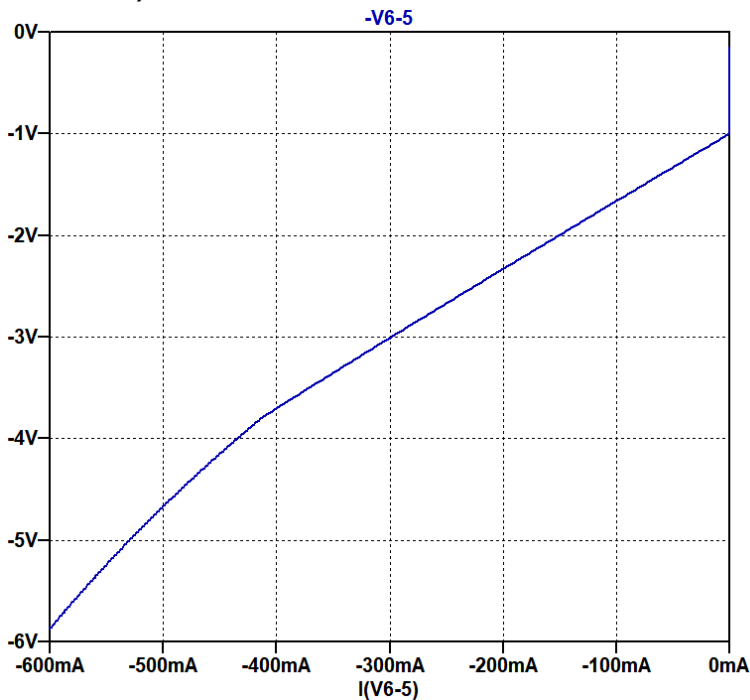
.dc V6-5 0 6 0.001



Simulation results are following.

Explanatory notes — : simulated

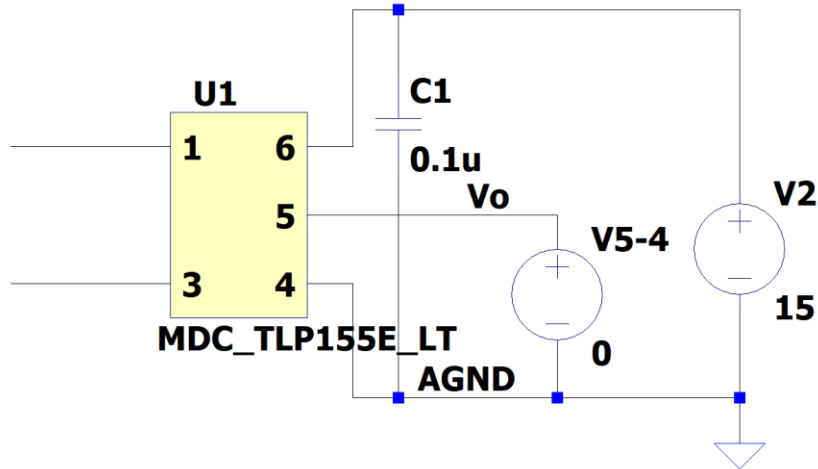
(VOH - VCC) - IOPH



VOL - IOPL Testbench

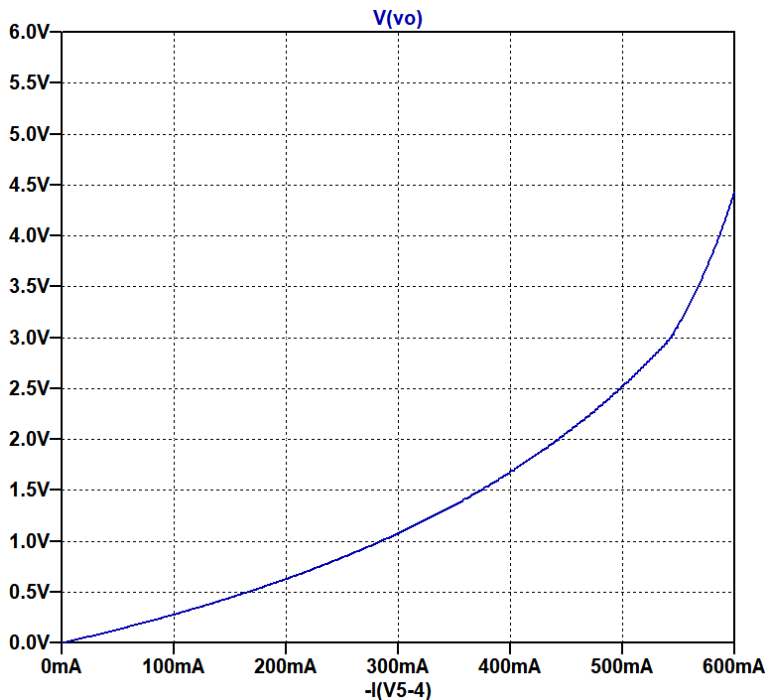
Referred to Data Sheet

```
.OPTION TNOM=25
.TEMP 25
.dc V5-4 0 6 0.001
```



Simulation results are following.  
 Explanatory notes — : simulated

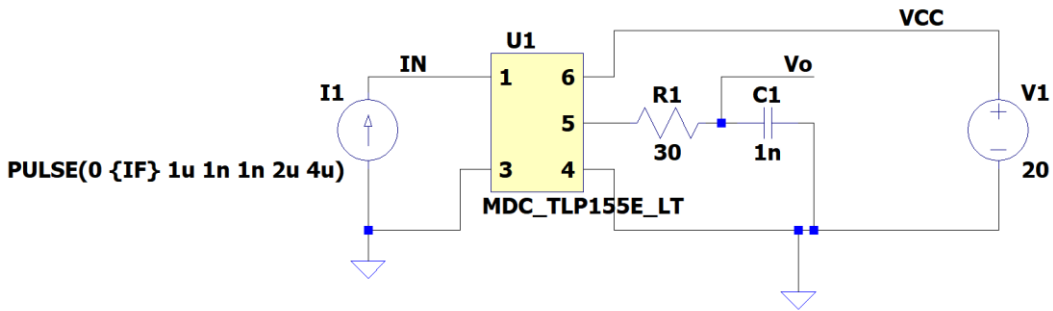
VOL - IOPL



tpLH, tpHL, |tpHL - tpLH| - IF Testbench

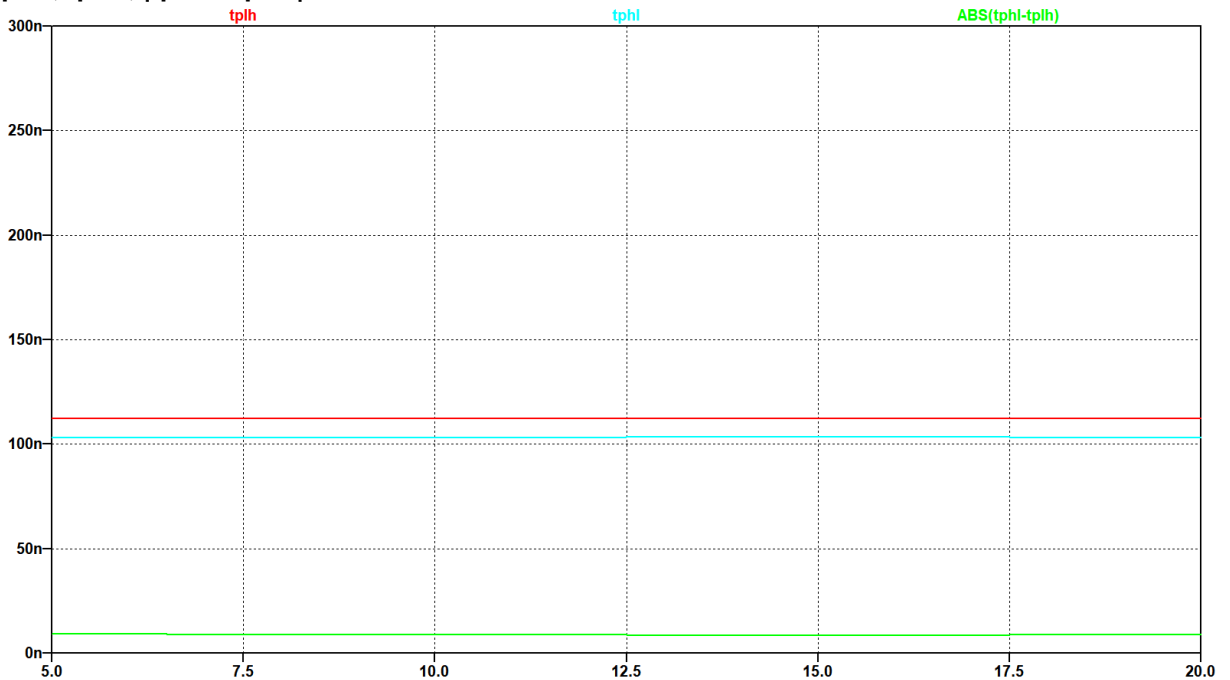
Referred to Data Sheet

```
.tran 0 20u 0 1n
.OPTION TNOM=25
.TEMP 25
.step param IF 5 20 5
```



Simulation results are following.  
 Explanatory notes — : simulated

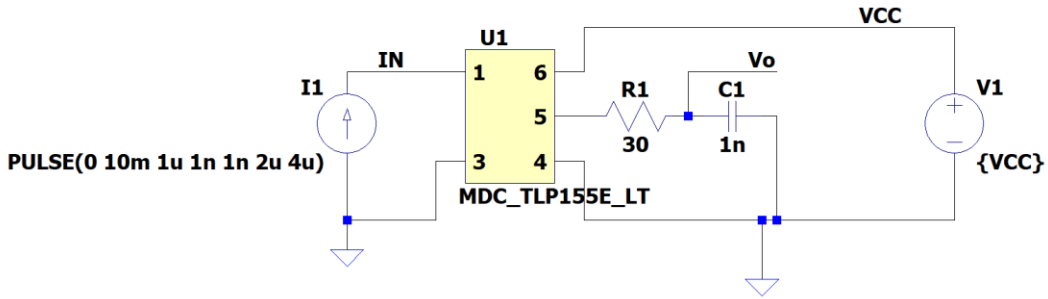
tpLH, tpHL, |tpHL - tpLH| - IF



tpLH, tpHL, |tpHL - tpLH| - VCC Testbench

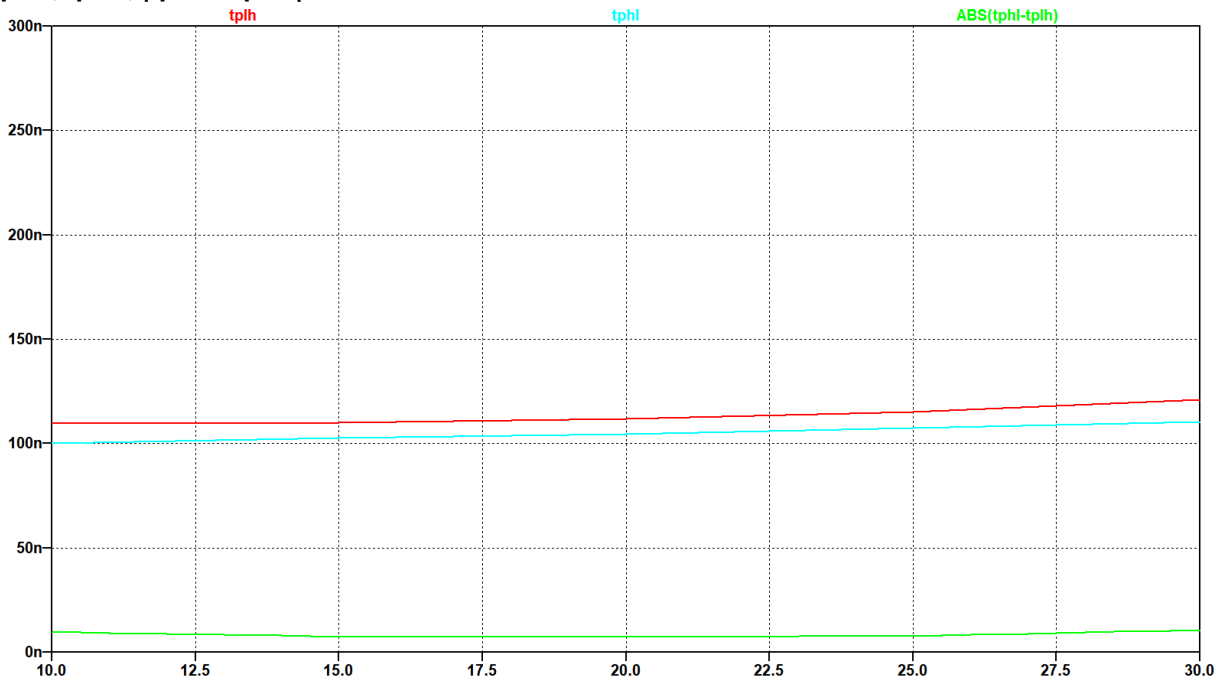
Referred to Data Sheet

```
.tran 0 20u 0 1n
.OPTION TNOM=25
.TEMP 25
.step param VCC 10 30 5
```



Simulation results are following.  
 Explanatory notes — : simulated

tpLH, tpHL, |tpHL - tpLH| - VCC



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