

# LTspice Model

## Photocoupler

### LITE-ON JAPAN LTD.

### LTV-816-D

#### Model Information

**Model** A macro model  
**Call Name** MDC\_LTV-816-D\_LT  
**Pin Assign** 1:Anode 2:Cathode 3:Emitter 4:Collector  
**File List** Model Library MDC\_LTV-816-D\_LT01.lib  
 Model Report MDC\_LTV-816-D\_LT.pdf(this file)  
**Verified Simulator Version** LTspiceXVII

#### Note

#### References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version Effective Date:08/09/2017 Revision: K
- Product name LTV-816-D
- Company name LITE-ON JAPAN LTD.

[Characteristics listed]

- Characteristics
  - $I_F - V_F$
  - $C_t$
  - $I_C - V_{CE}$
  - $V_{CE(SAT)} - I_F$
  - CTR
  - Response Time

#### Simulation Condition

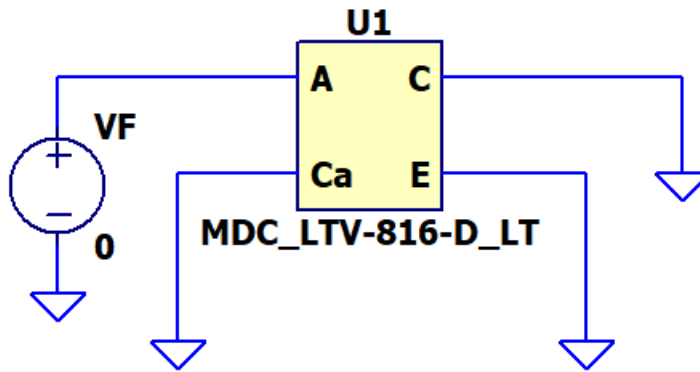
This table shows the range of evaluated simulation range that was not occurs any convergence problems in this area.

Item	Condition	Unit
Temperature	25	deg C

**Model Functions Table**

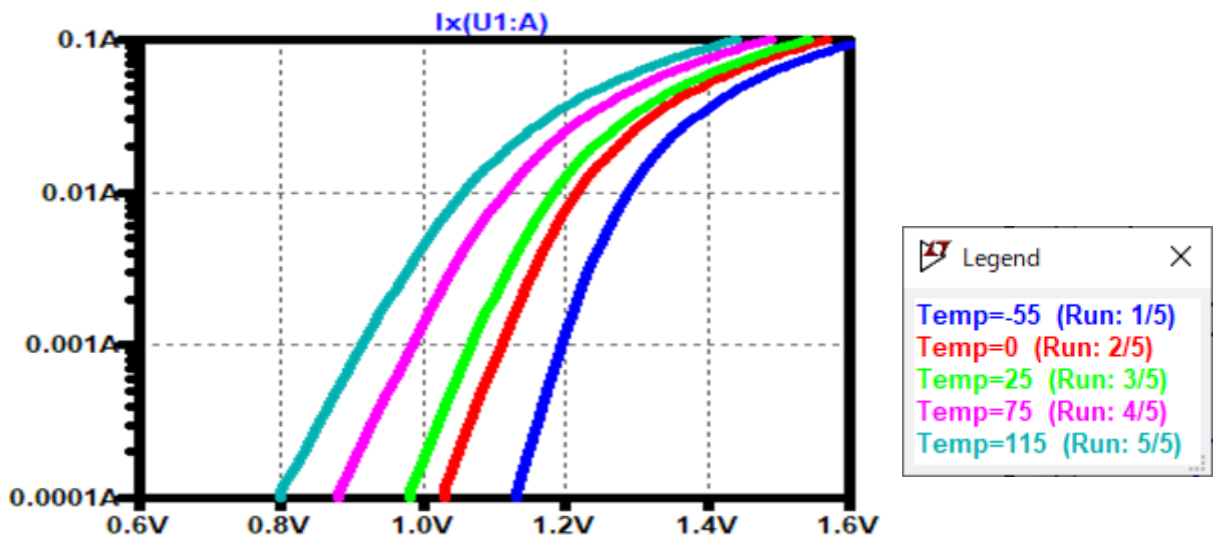
Functions	Implemented
$I_F - V_F$	<input type="radio"/>
$C_t$	<input type="radio"/>
$I_C - V_{CE}$	<input type="radio"/>
$V_{CE(SAT)} - I_F$	<input type="radio"/>
CTR	<input type="radio"/>
Response Time	<input type="radio"/>

**I<sub>F</sub> - V<sub>F</sub> TestBench**  
 Referred to Data Sheet

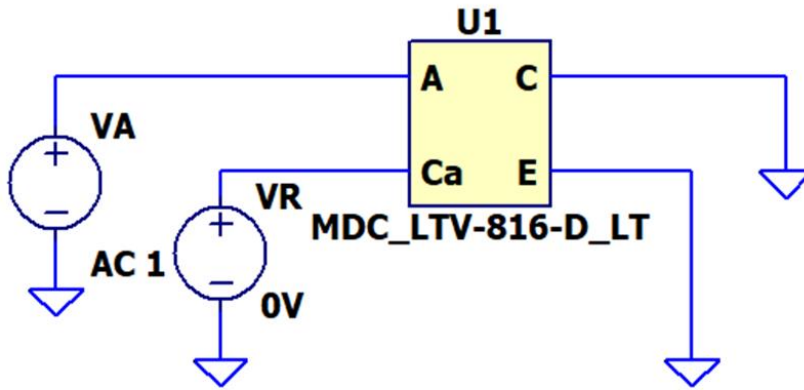


```
.option TNOM=25
.temp 25
.dc VF 0.6 1.6 0.01
.step temp list -55 0 25 75 115
.lib MDC_LTV-816-D_LT.lib
```

Simulation results are following.  
 Explanatory notes — : simulated

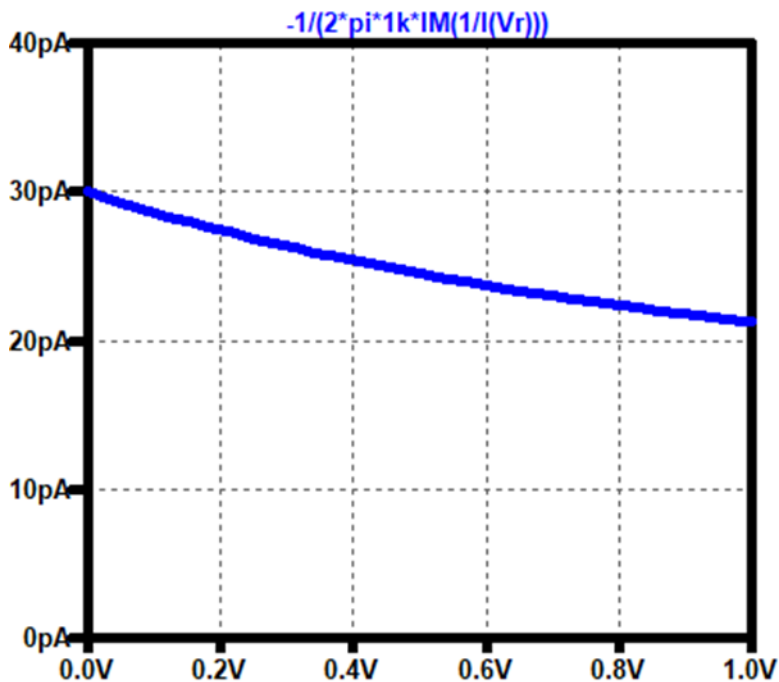


C<sub>t</sub> TestBench  
 Referred to Data Sheet

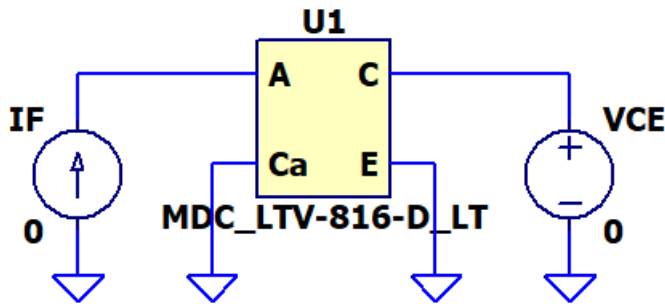


```
.option TNOM=25
.temp 25
.ac dec 1 1k 1k
.STEP LIN VR 0 1 0.01
.lib MDC_LTV-816-D_LT.lib
```

Simulation results are following.  
 Explanatory notes — : simulated

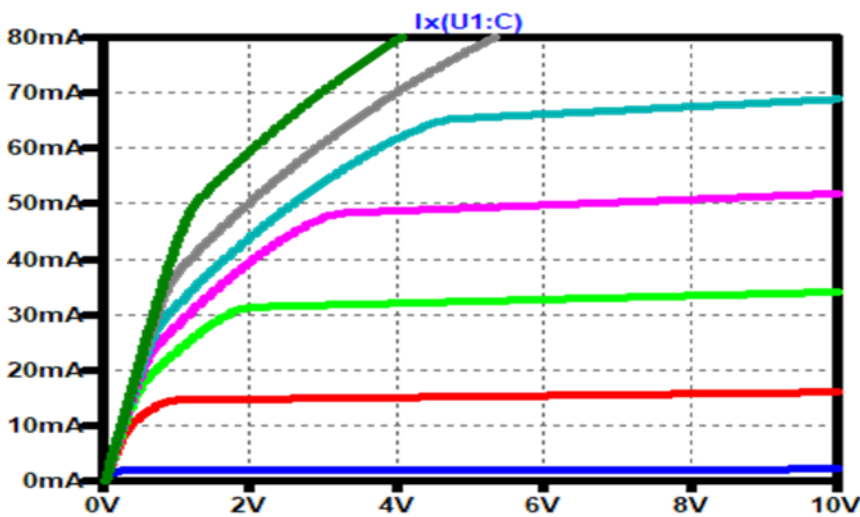


**$I_C - V_{CE}$  TestBench**  
 Referred to Data Sheet



```
.option TNOM=25
.temp 25
.dc VCE 0 10 0.01 IF list 1m 5m 10m 15m 20m 30m 50m
.lib MDC_LTV-816-D_LT.lib
```

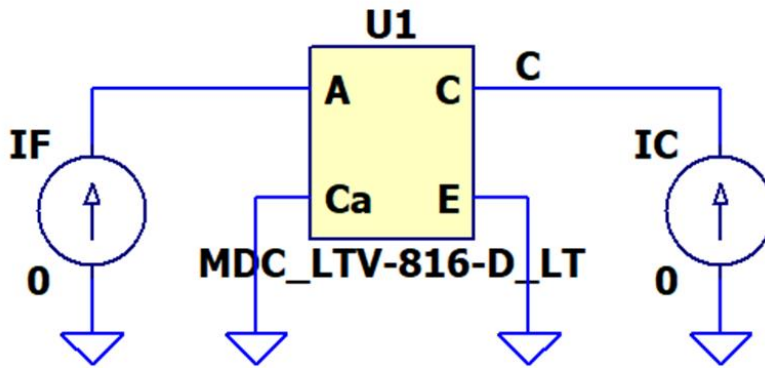
Simulation results are following.  
 Explanatory notes — : simulated



Legend

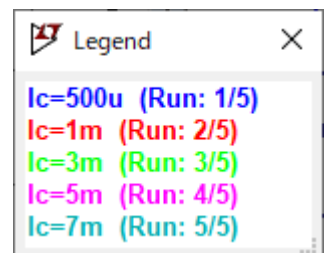
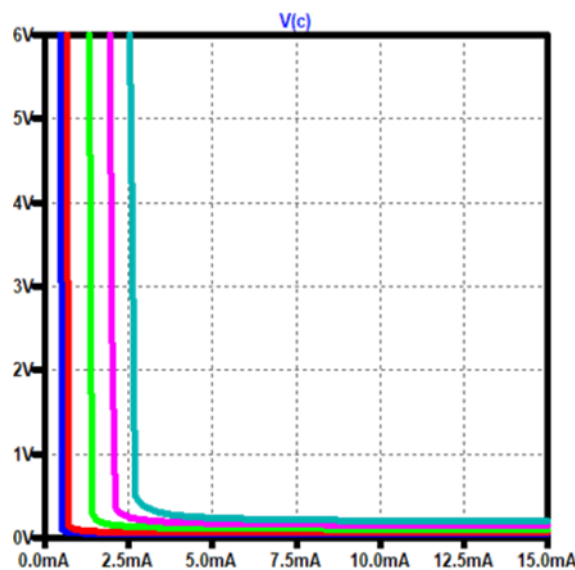
- If=1m (Run: 1/7)
- If=5m (Run: 2/7)
- If=10m (Run: 3/7)
- If=15m (Run: 4/7)
- If=20m (Run: 5/7)
- If=30m (Run: 6/7)
- If=50m (Run: 7/7)

$V_{CE(SAT)} - I_F$  TestBench  
 Referred to Data Sheet

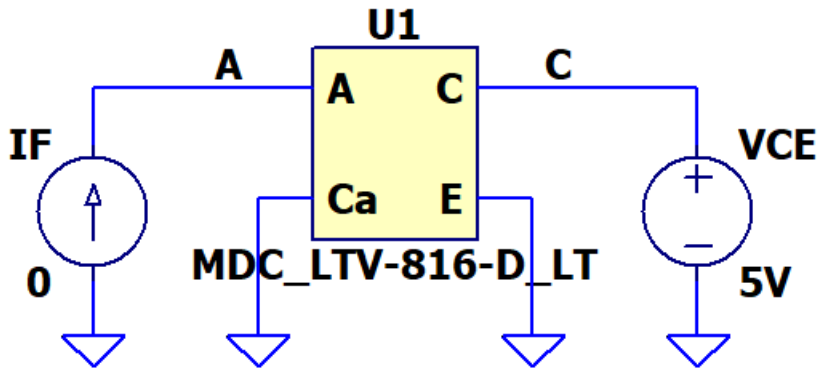


```
.option TNOM=25
.temp 25
.dc IF 0 15m 0.1m IC list 0.5m 1m 3m 5m 7m
.lib MDC_LTV-816-D_LT.lib
```

Simulation results are following.  
 Explanatory notes — : simulated

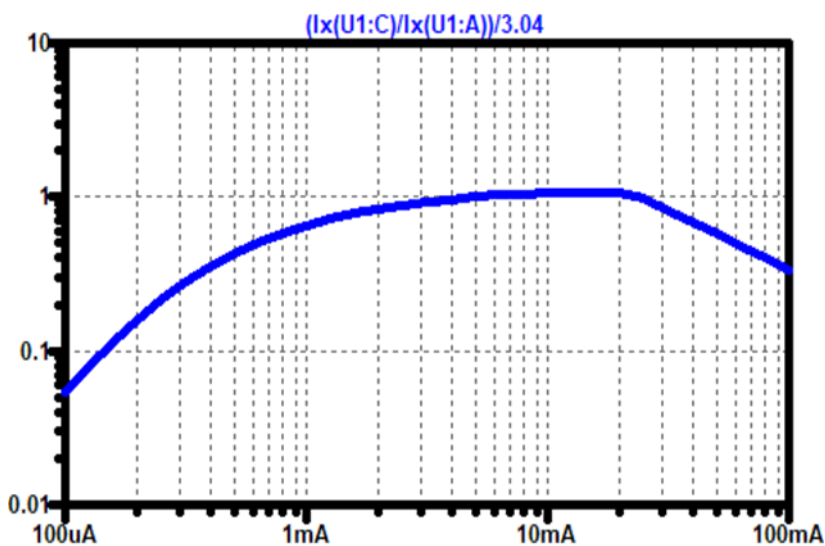


**CTR TestBench**  
 Referred to Data Sheet

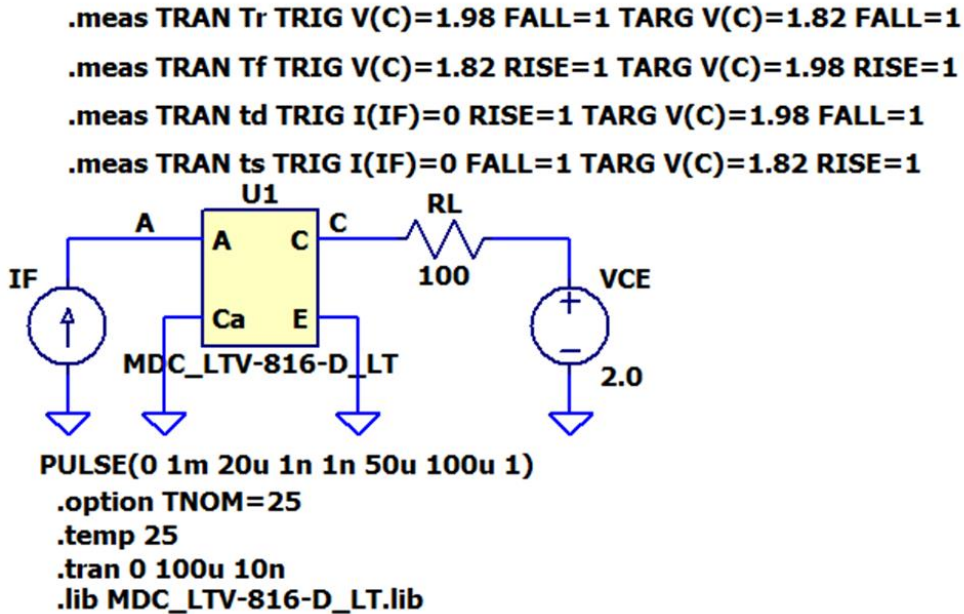


```
.option TNOM=25
.temp 25
.dc dec IF 0.1m 100m 10
.meas CTR FIND Ix(U1:C)/Ix(U1:A) AT 5mA
.lib MDC_LTV-816-D_LT.lib
```

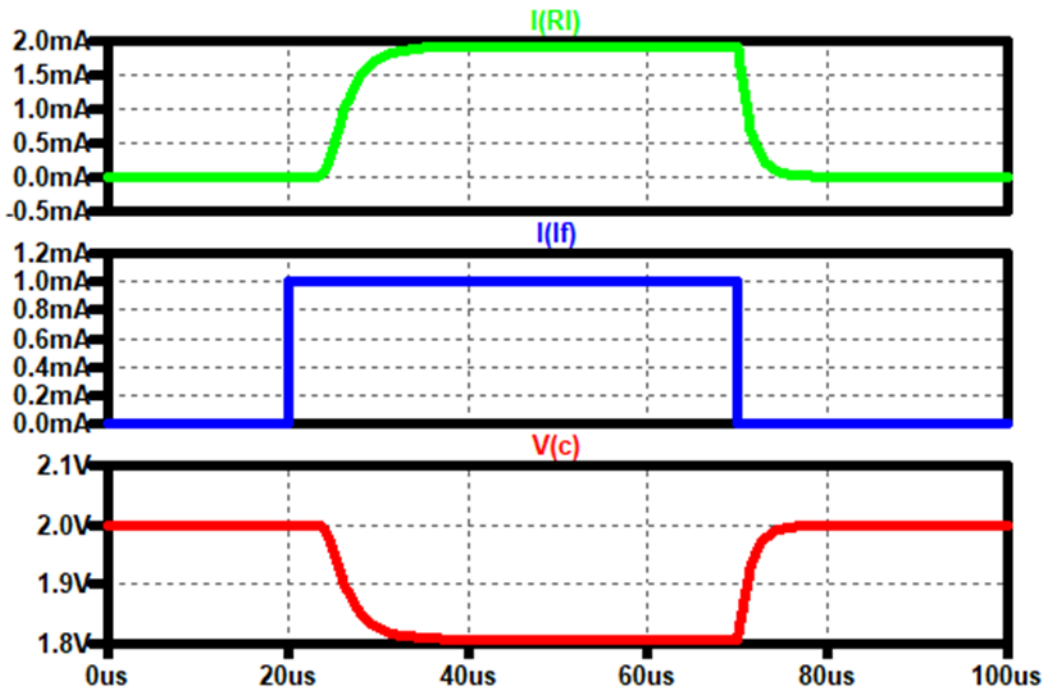
Simulation results are following.  
 Explanatory notes — : simulated



Response Time TestBench  
 Referred to Data Sheet



Simulation results are following.  
 Explanatory notes — : simulated





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