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}
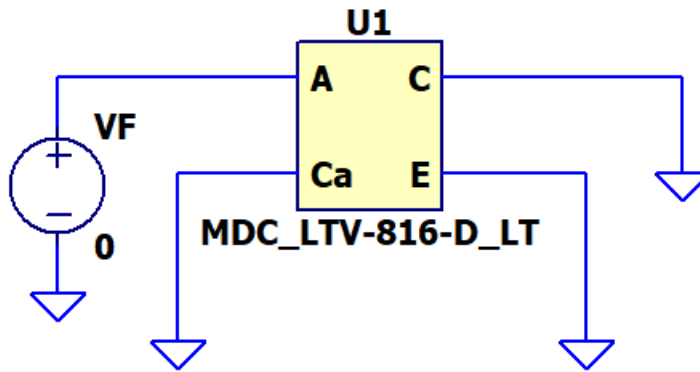 $V_{CE(SAT)}$ - I_F
  CTR
  Response Time

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

I$_F$ - V$_F$ TestBench
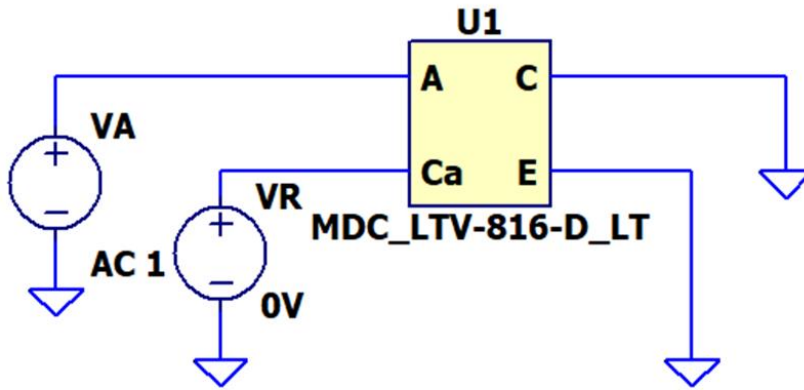## Referred to Data Sheet

```
.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.
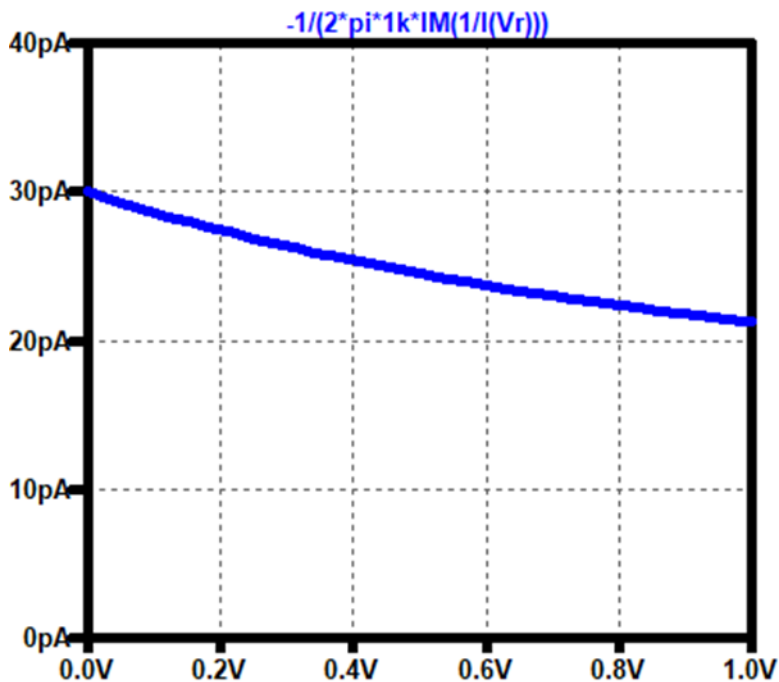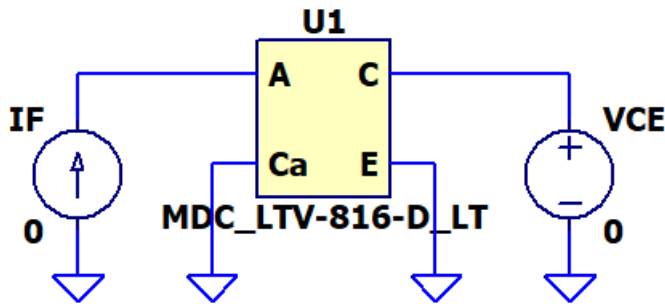Explanatory notes   — : simulated

Ix(U1:A)

Legend	×
Temp=-55 (Run: 1/5)	
Temp=0 (Run: 2/5)	
Temp=25 (Run: 3/5)	
Temp=75 (Run: 4/5)	
Temp=115 (Run: 5/5)	
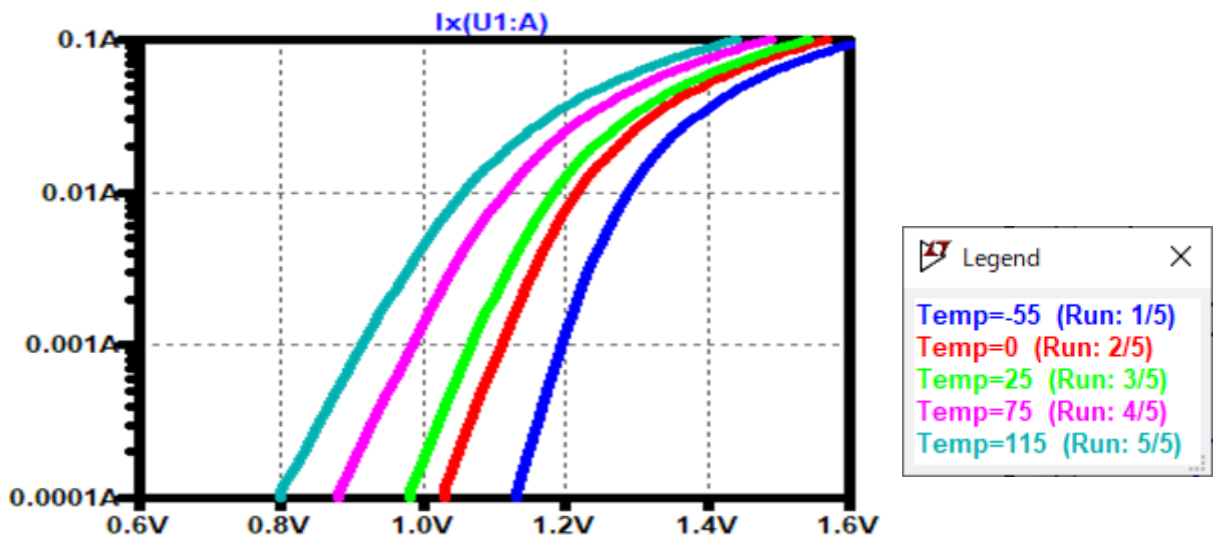
C$_t$ TestBench
Referred to Data Sheet


```
.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
```
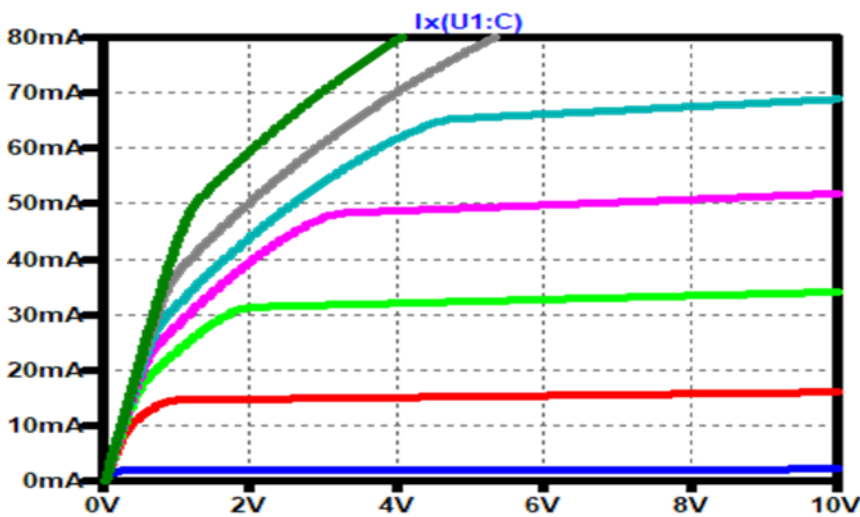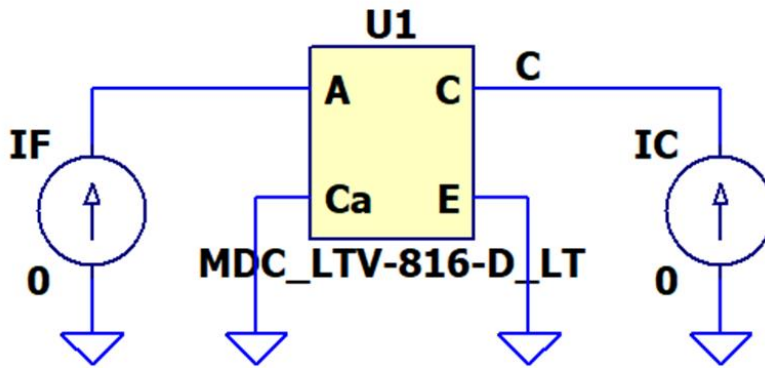
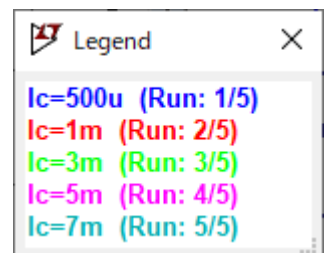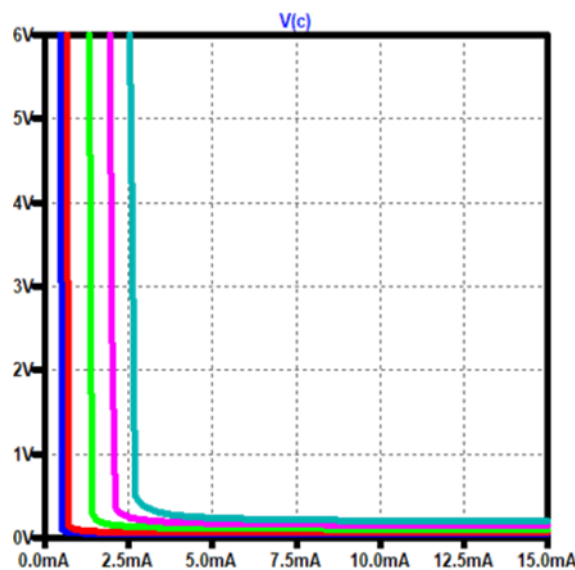Simulation results are following.
Explanatory notes   — : simulated

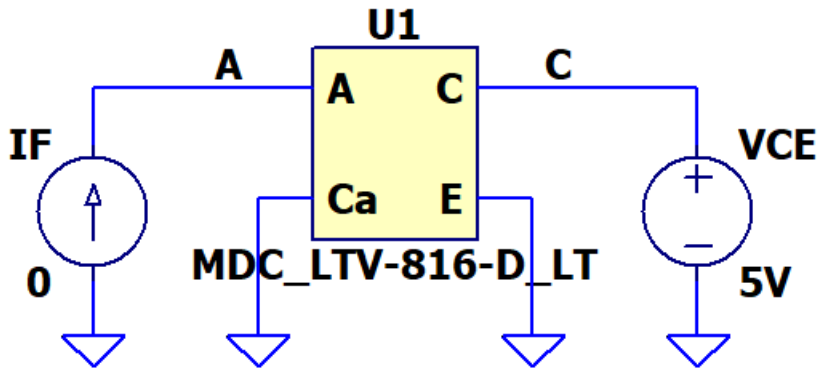# V$_{CE(SAT)}$ - I$_F$ TestBench
Referred to Data Sheet


```
.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.
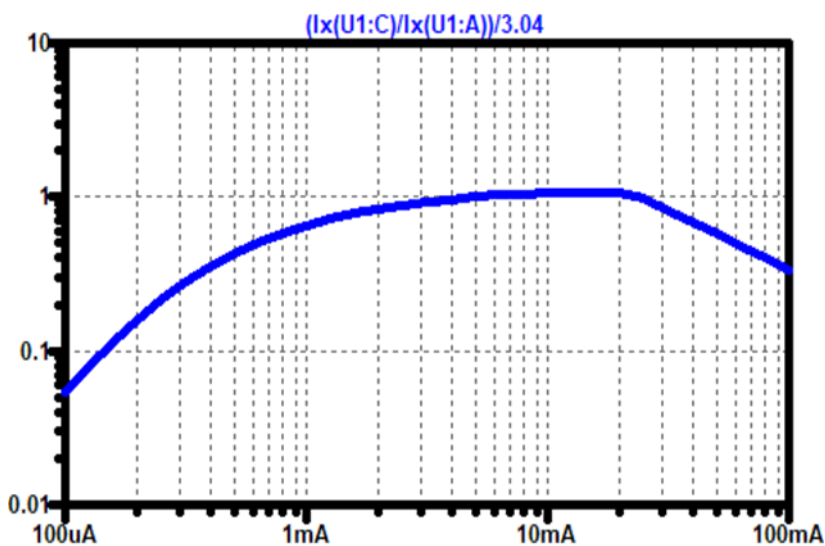Explanatory notes　　─ : simulated
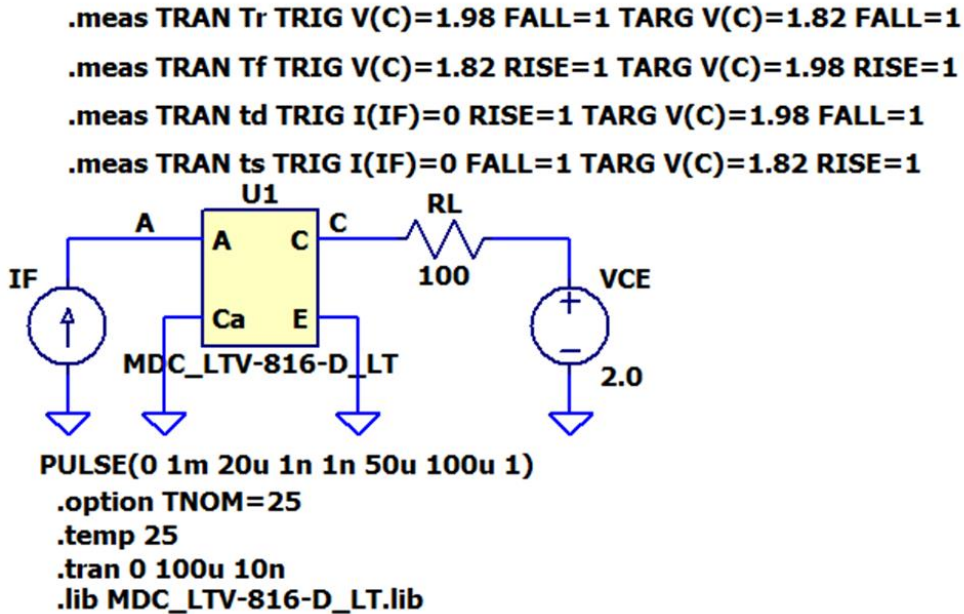
CTR TestBench
Referred to Data Sheet


```
.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
```
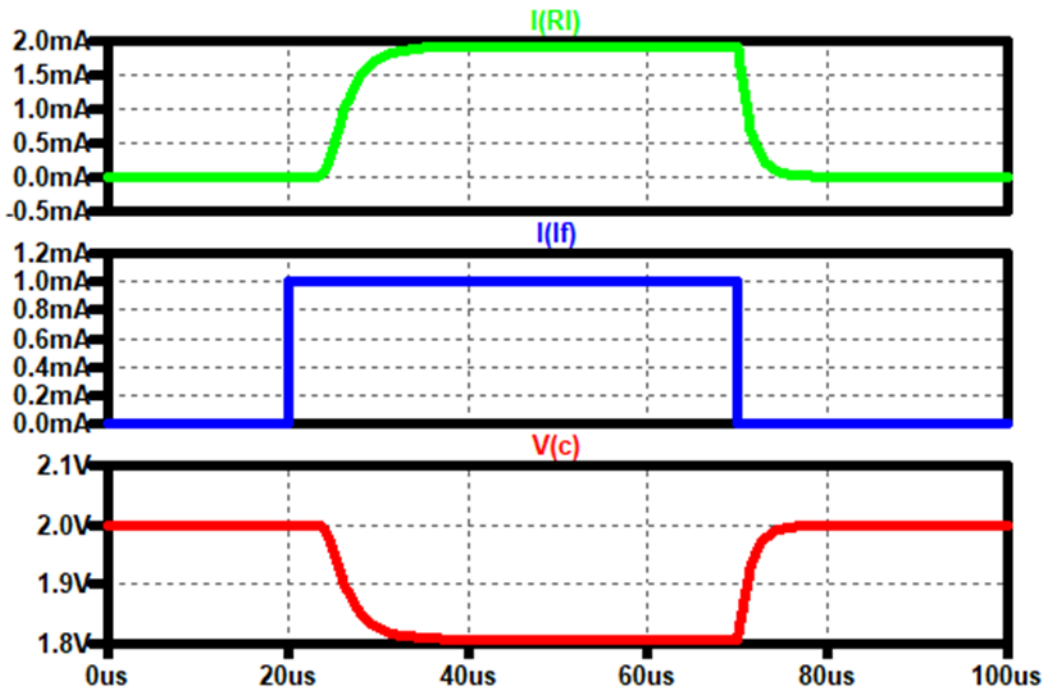
Simulation results are following.
Explanatory notes — : simulated

Response Time TestBench
Referred to Data Sheet

```
.meas TRAN Tr TRIG V(C)=1.98 FALL=1 TARG V(C)=1.82 FALL=1
.meas TRAN Tf TRIG V(C)=1.82 RISE=1 TARG V(C)=1.98 RISE=1
.meas TRAN td TRIG I(IF)=0 RISE=1 TARG V(C)=1.98 FALL=1
.meas TRAN ts TRIG I(IF)=0 FALL=1 TARG V(C)=1.82 RISE=1
```



```
PULSE(0 1m 20u 1n 1n 50u 100u 1)
.option TNOM=25
.temp 25
.tran 0 100u 10n
.lib MDC_LTV-816-D_LT.lib
```

Simulation results are following.
Explanatory notes   — : simulated

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