

LTspice Model

LDO

Texas Instruments Inc.

TPS7A8801RTJR

Model Information

Model A macro model
Call Name MDC_TPS7A8801RTJR_LT
Pin Assign 1:IN1 2:IN2 3:GND 4:IN2 5:IN2 6:EN2 7:NR/SS2 8:SS_CTRL2 9:PG2 10:FB2 11:OUT2
 12:OUT2 13:GND 14:OUT1 15:OUT1 16:FB1 17:PG1 18:SS_CTRL1 19:NR/SS1 20:EN1
File List Model Library MDC_TPS7A8801RTJR_LT01.lib
 Model Report MDC_TPS7A8801RTJR_LT_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 REVISED NOVEMBER 2015
 ● Product name TPS7A8801RTJR
 ● Company name Texas Instruments Inc.

[Characteristics listed]
 ● Characteristics $V_{OUT}, V_{DO}, I_{LIM}, V_{UVLO}, V_{EN}$
 Line Transient Response
 Load Transient Response
 Start-Up

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

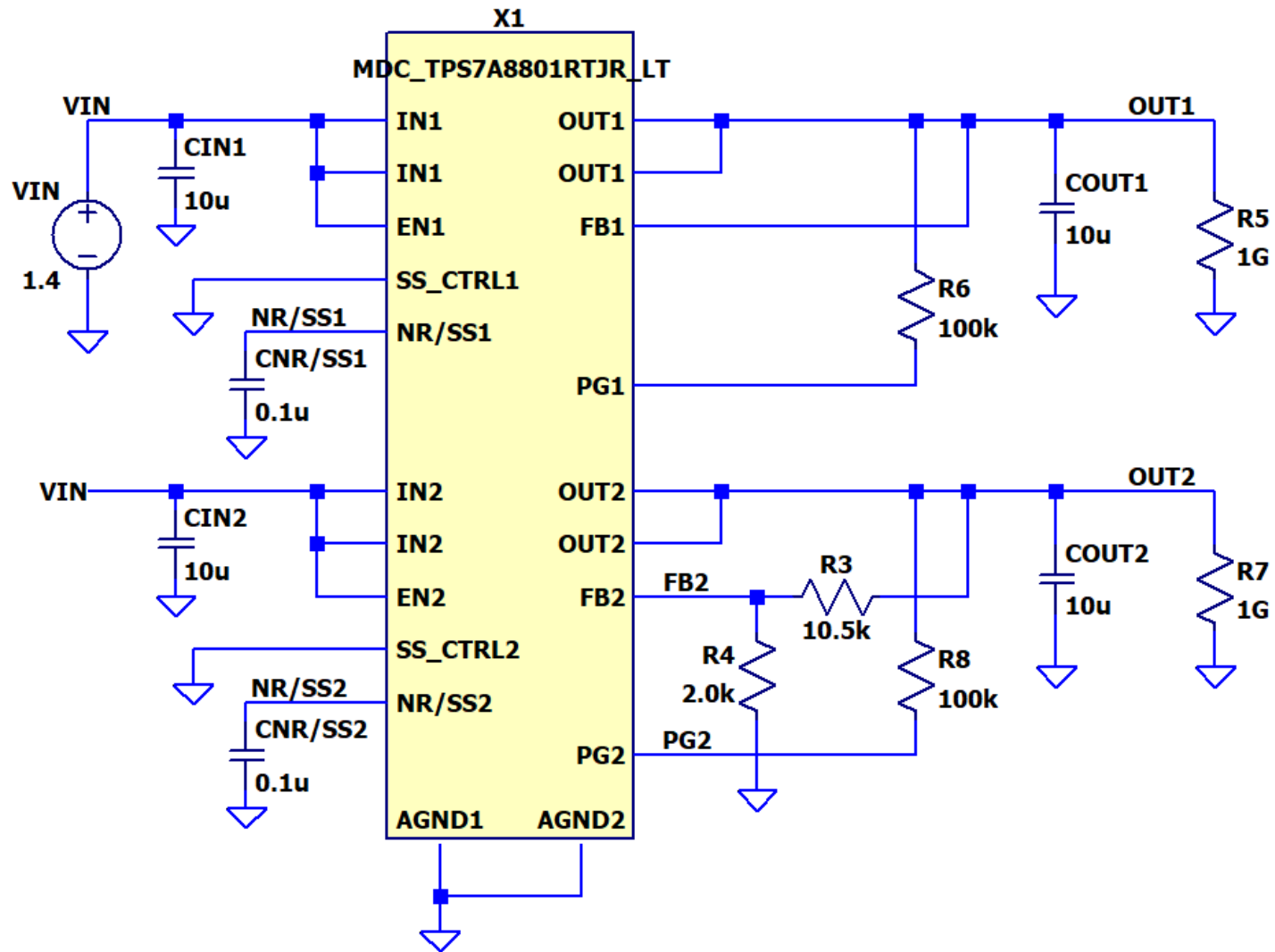
Model Functions Table

Functions	Implemented
V_{OUT}	<input type="radio"/>
V_{DO}	<input type="radio"/>
I_{LIM}	<input type="radio"/>
V_{UVLO}	<input type="radio"/>
V_{EN}	<input type="radio"/>
Line Transient Response	<input type="radio"/>
Load Transient Response	<input type="radio"/>
Start-Up	<input type="radio"/>

V_{OUT} Testbench

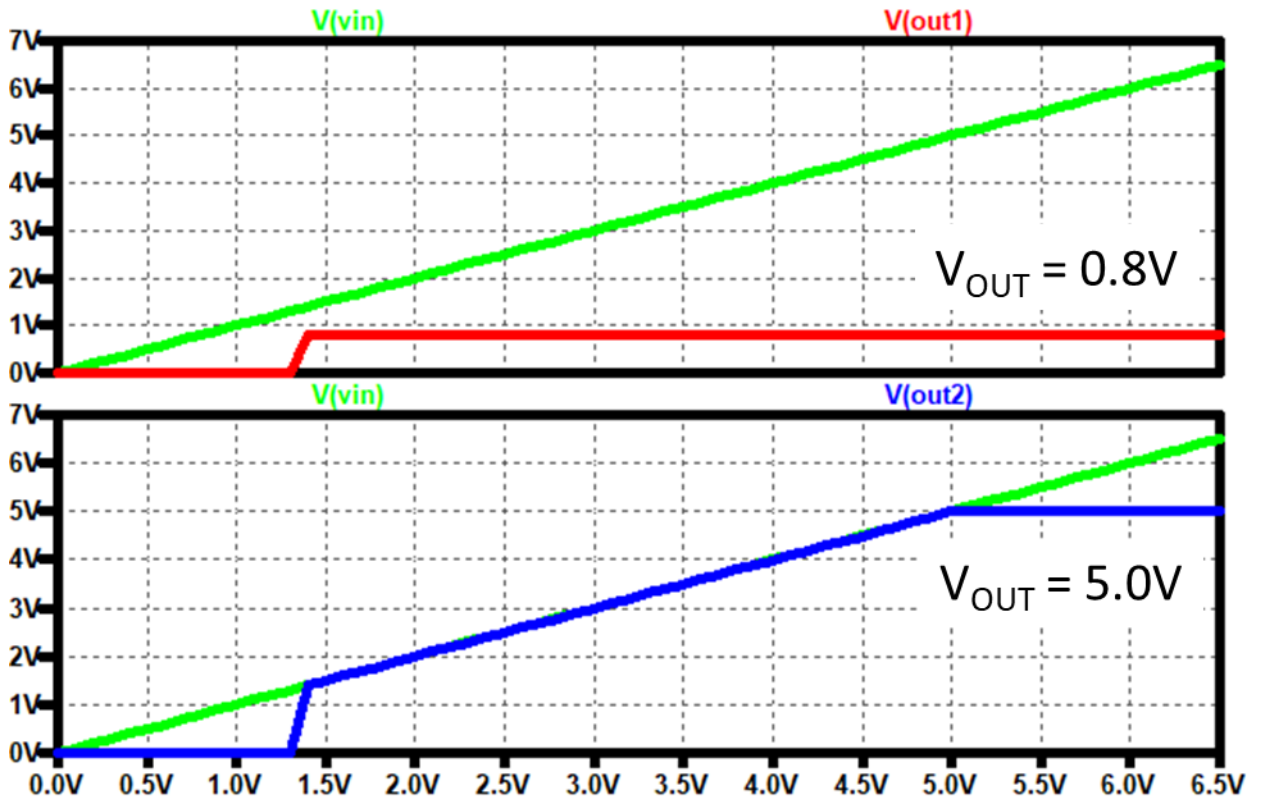
Referred to Data Sheet

```
.option TNOM=25
.temp 25
.dc VIN 0 6.5 0.1
.option MEASDGT = 8 .lib MDC_TPS7A8801RTJR_LT.lib
```



Simulation results are following.
Explanatory notes — : simulated

V_{OUT}

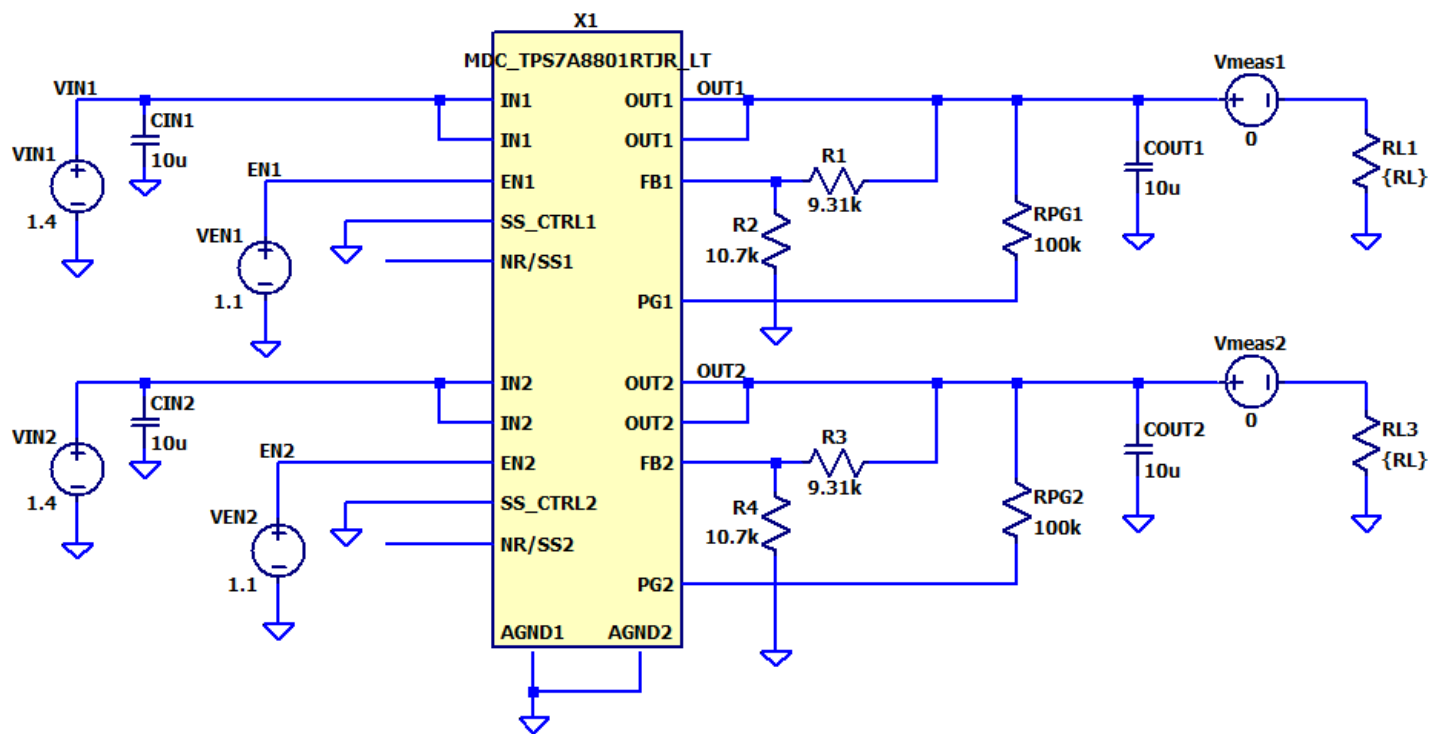


V_{DO} Testbench

Referred to Data Sheet

```

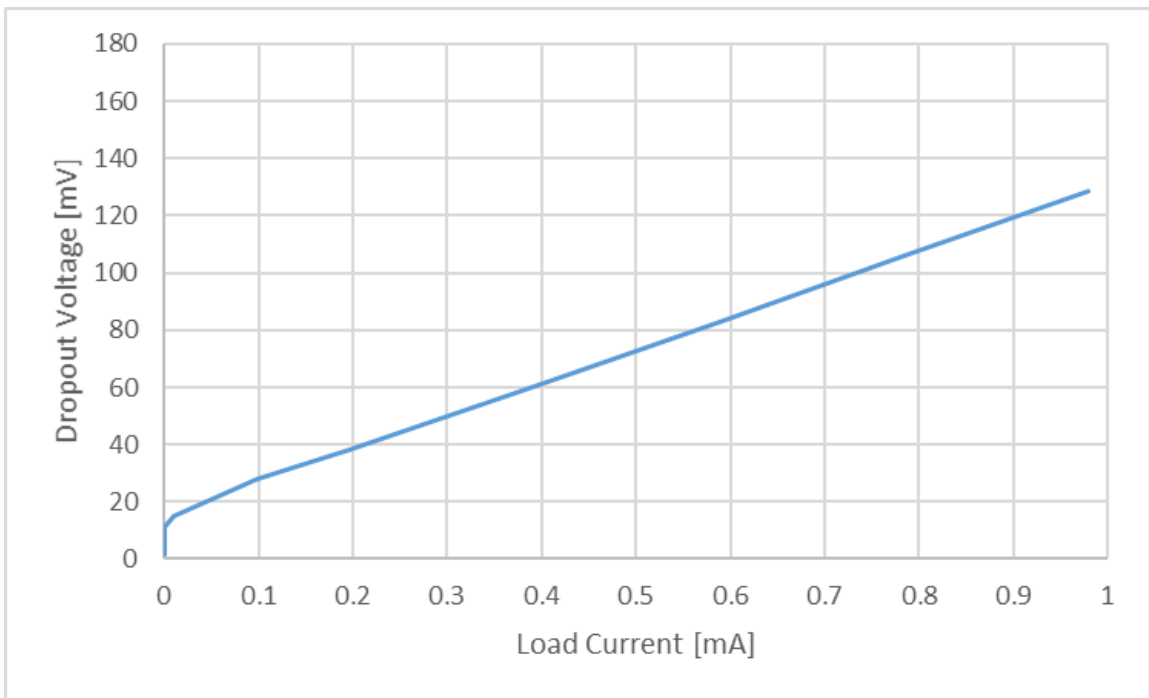
.option TNOM=25      .meas DC VDO FIND V(VIN1)-V(OUT1) WHEN V(OUT1)=1.5*0.98
.temp 25             .meas DC Iout FIND I(Vmeas1) WHEN V(OUT1)=1.5*0.98
.dc VIN1 1.4 2.0 0.01
.step param RL list 1G 1.5k 150 15 7.5 3.75 2.5 1.875 1.5      .lib MDC_TPS7A8801RTJR_LT.lib
    
```



Simulation results are following.

Explanatory notes — : simulated

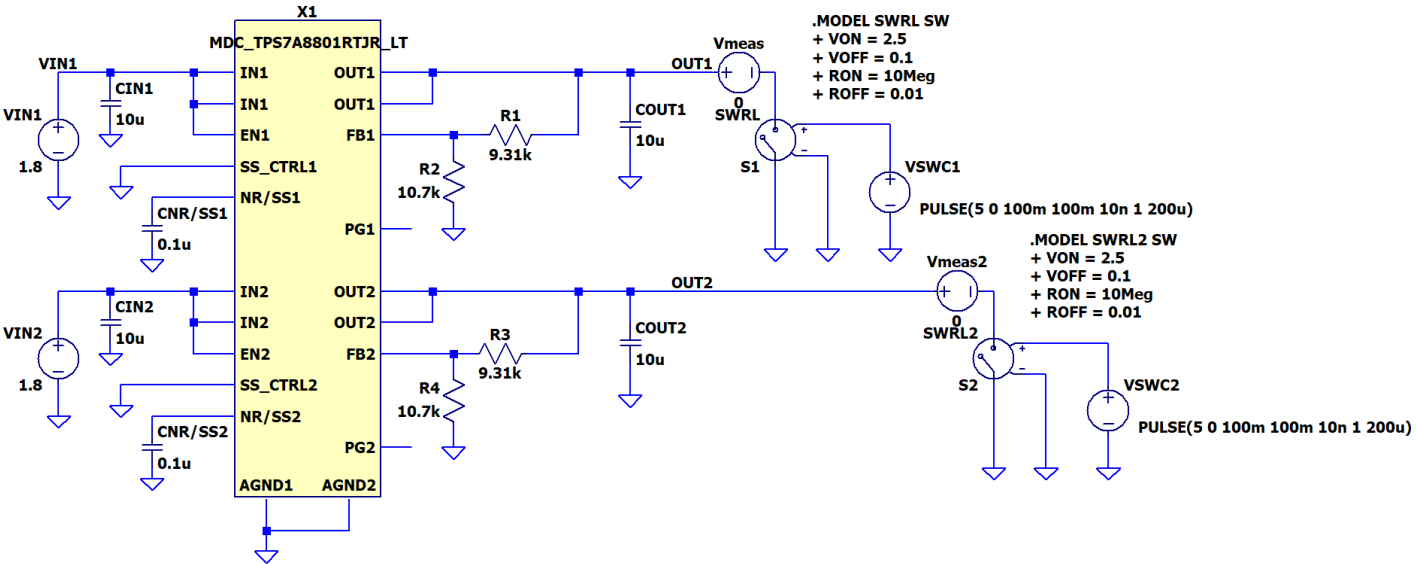
V_{DO}



I_{LIM} Testbench
Referred to Data Sheet

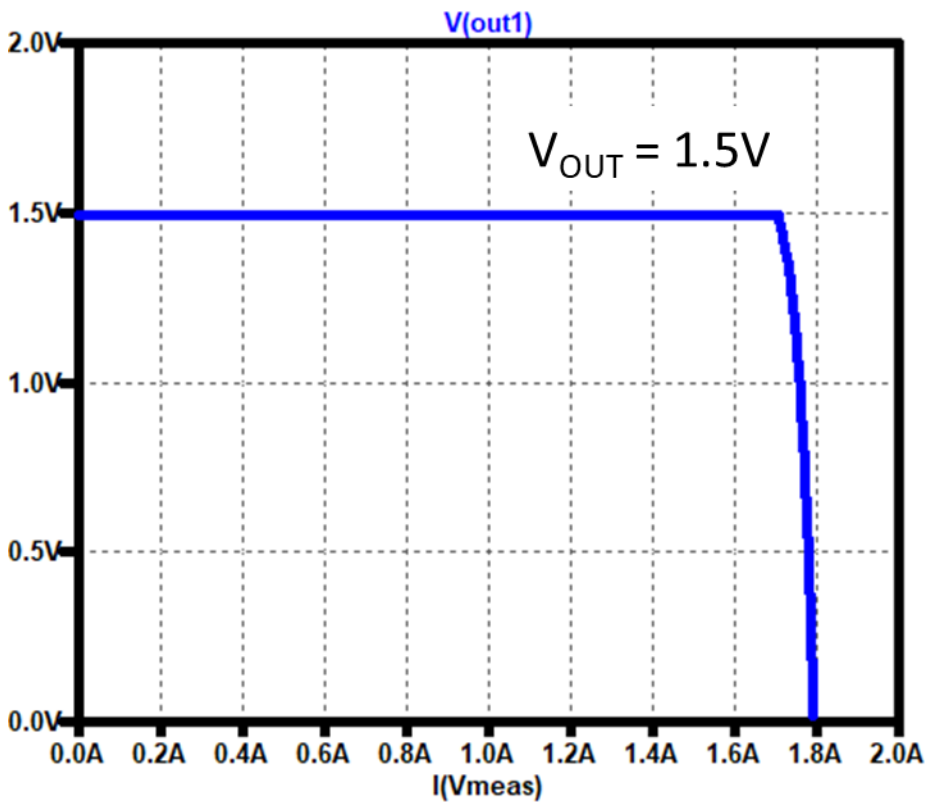
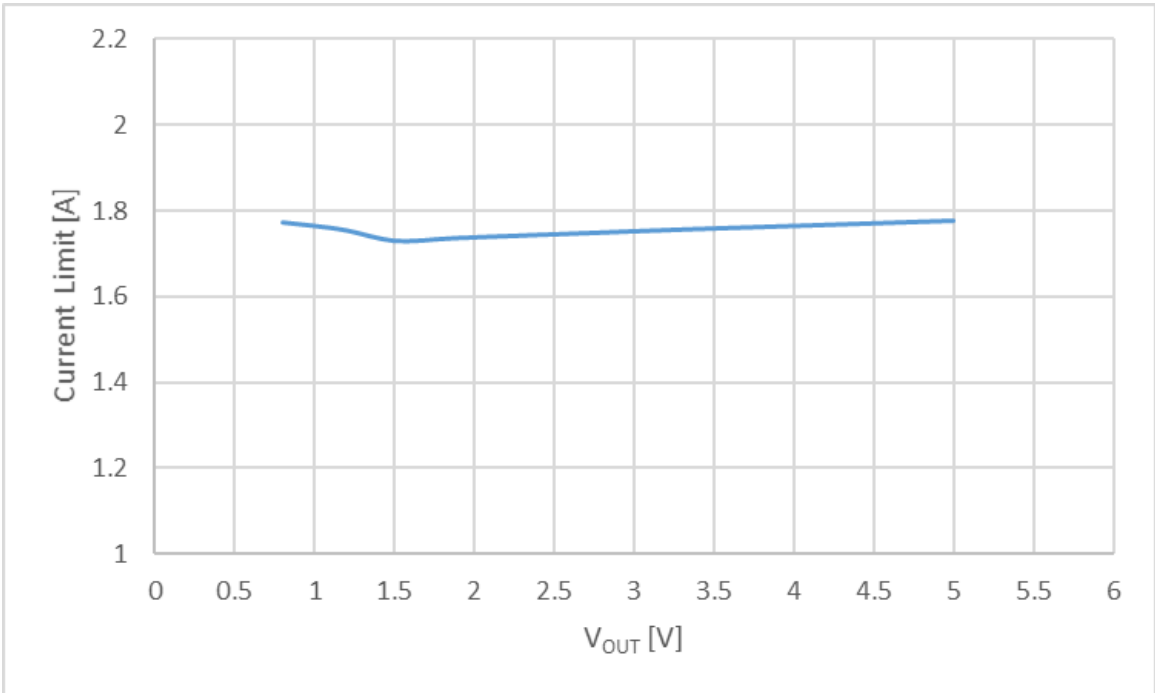
```
.option TNOM=25
.temp 25
.tran 0 1 0 100u

.meas TRAN Ilim FIND I(Vmeas) WHEN V(OUT1)=1.5*0.9
.lib MDC_TPS7A8801RTJR_LT.lib
```



Simulation results are following.
 Explanatory notes — : simulated

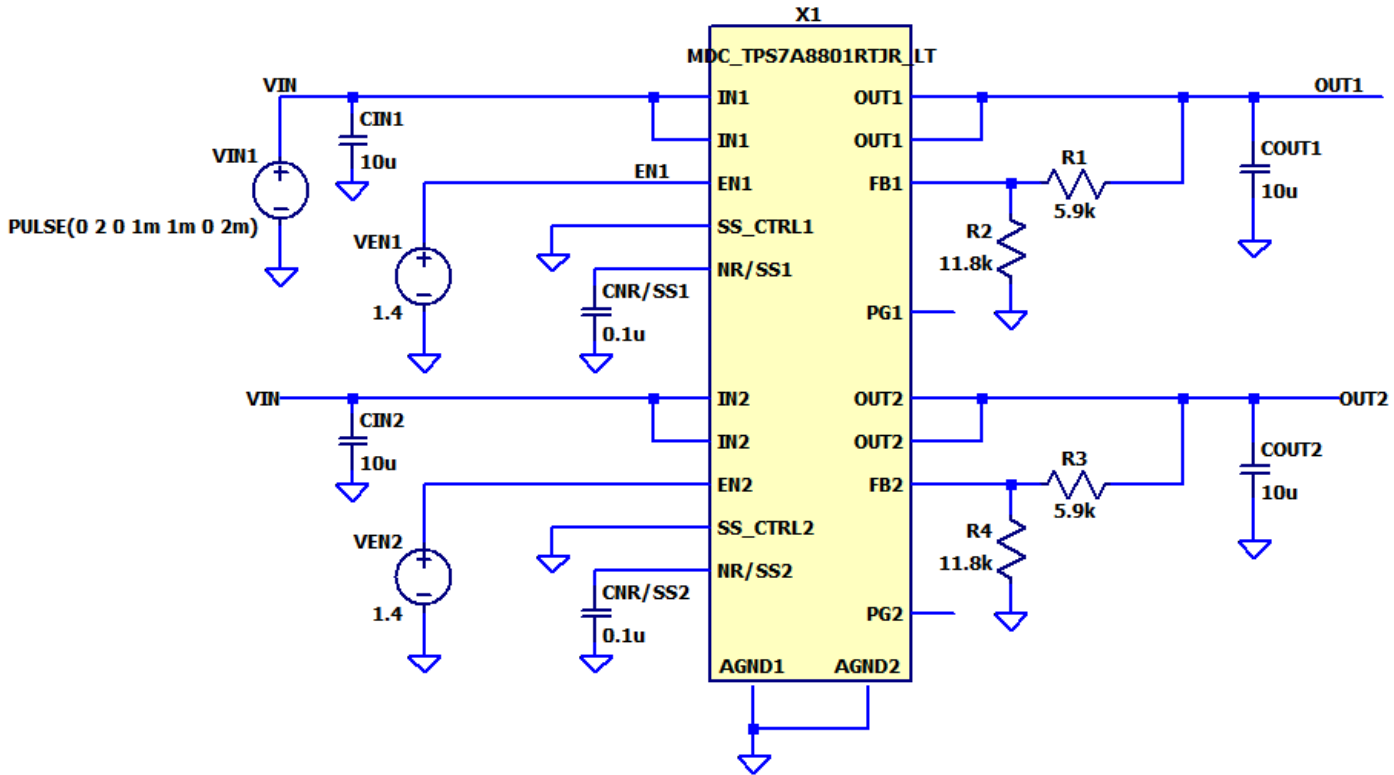
I_{LIM}



V_{UVLO} Testbench

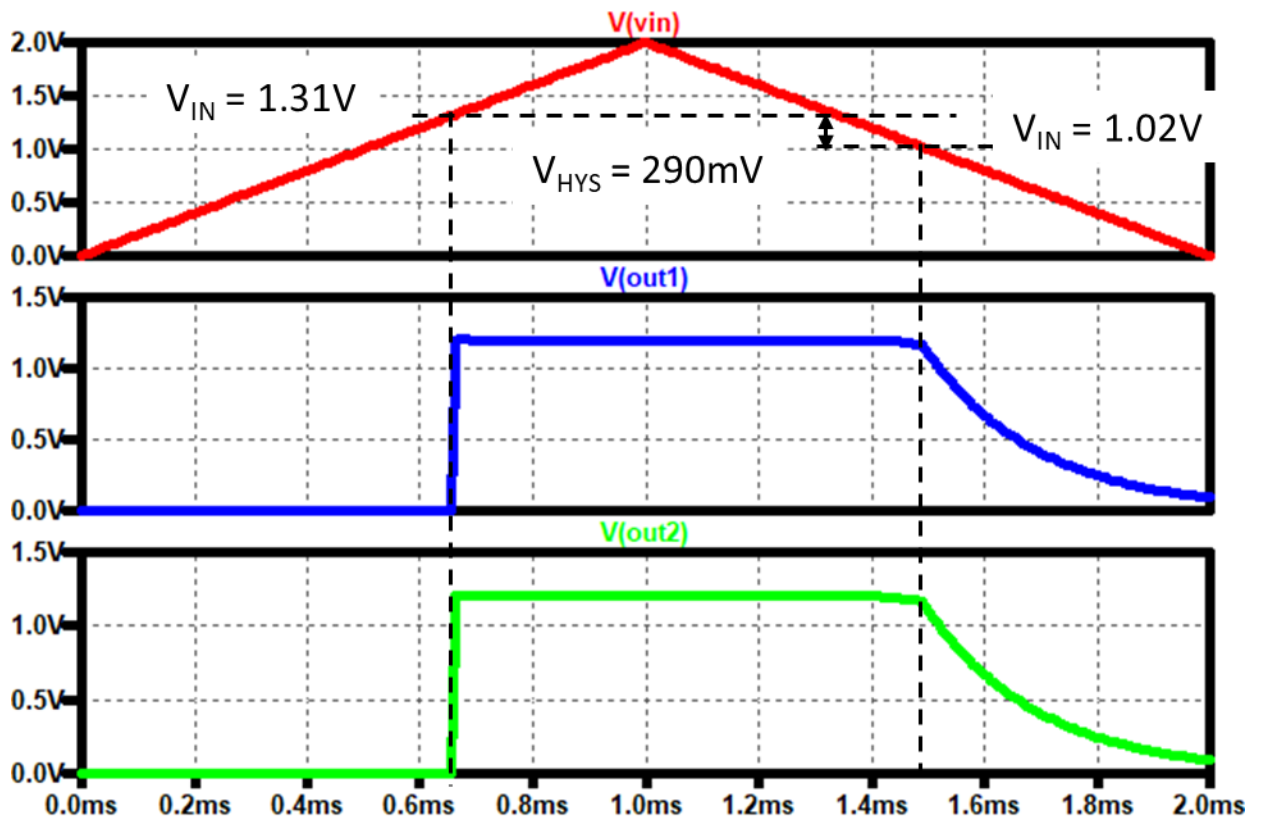
Referred to Data Sheet

```
.option TNOM=25
.temp 25
.tran 2m .lib MDC_TPS7A8801RTJR_LT.lib
```



Simulation results are following.
Explanatory notes — : simulated

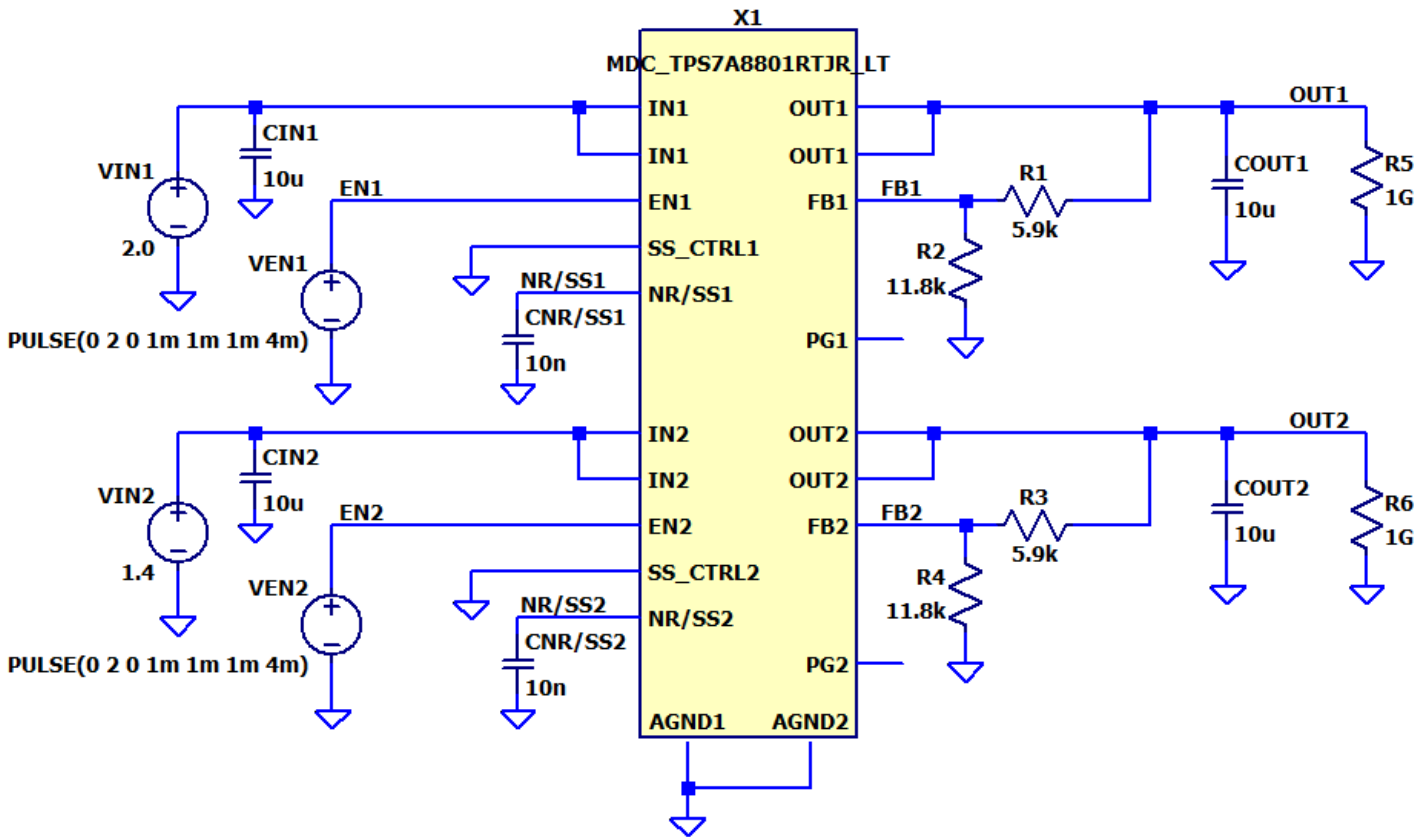
V_{UVLO}



V_{EN} Testbench

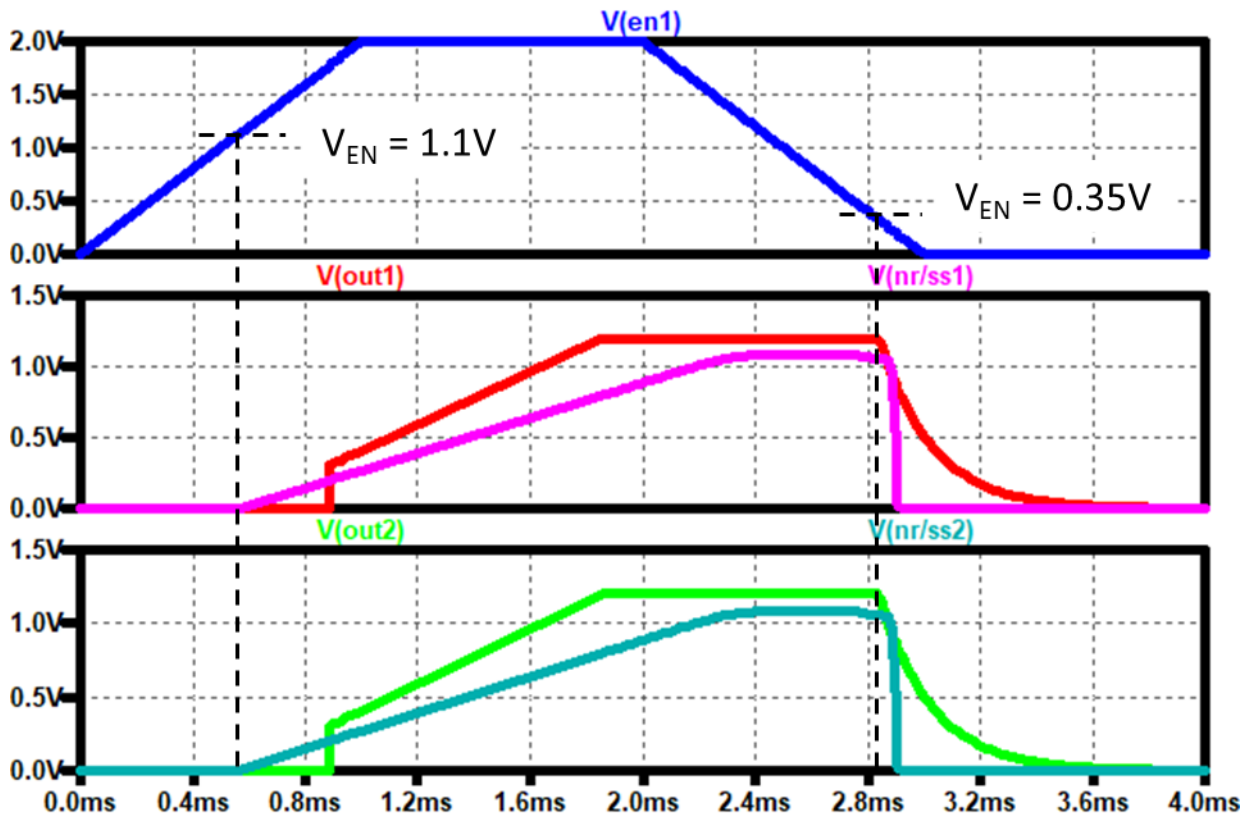
Referred to Data Sheet

```
.option TNOM=25
.temp 25
.tran 4m
.lib MDC_TPS7A8801RTJR_LT.lib
```



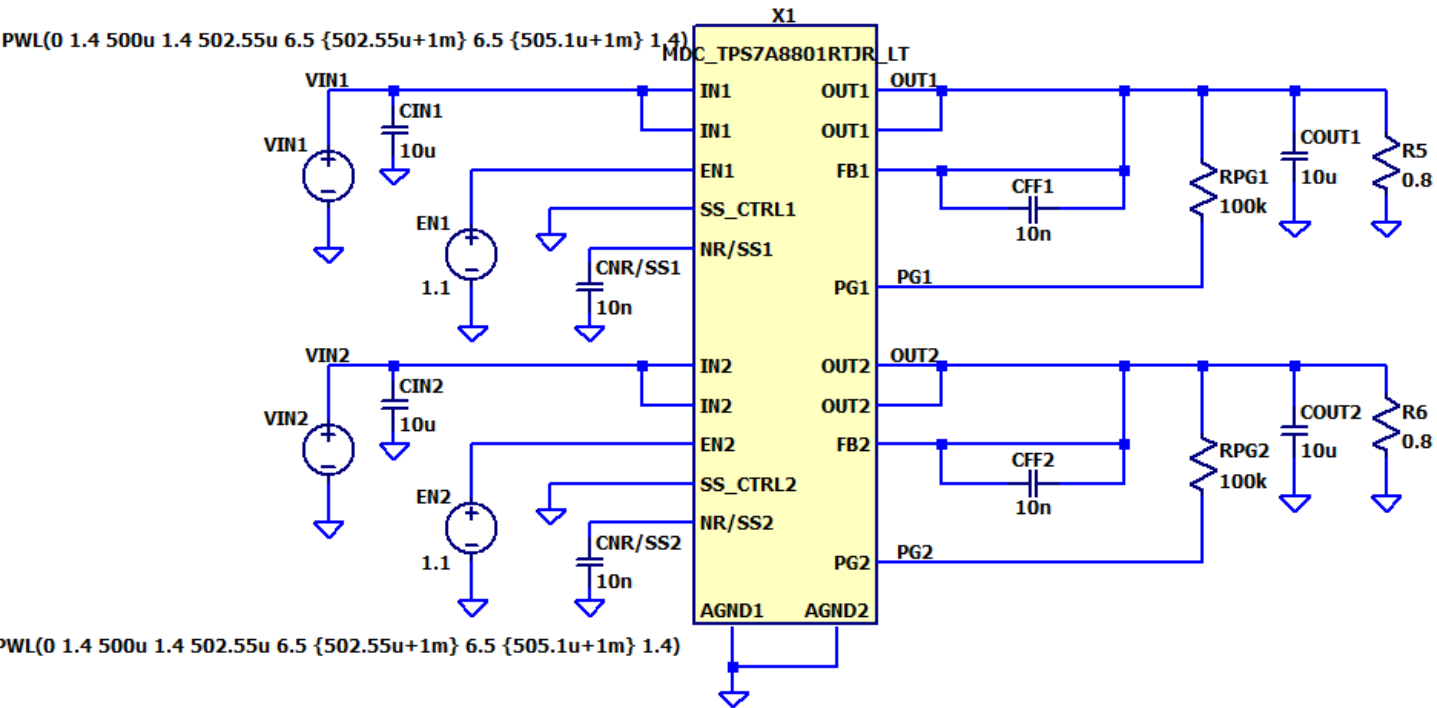
Simulation results are following.
Explanatory notes — : simulated

V_{EN}



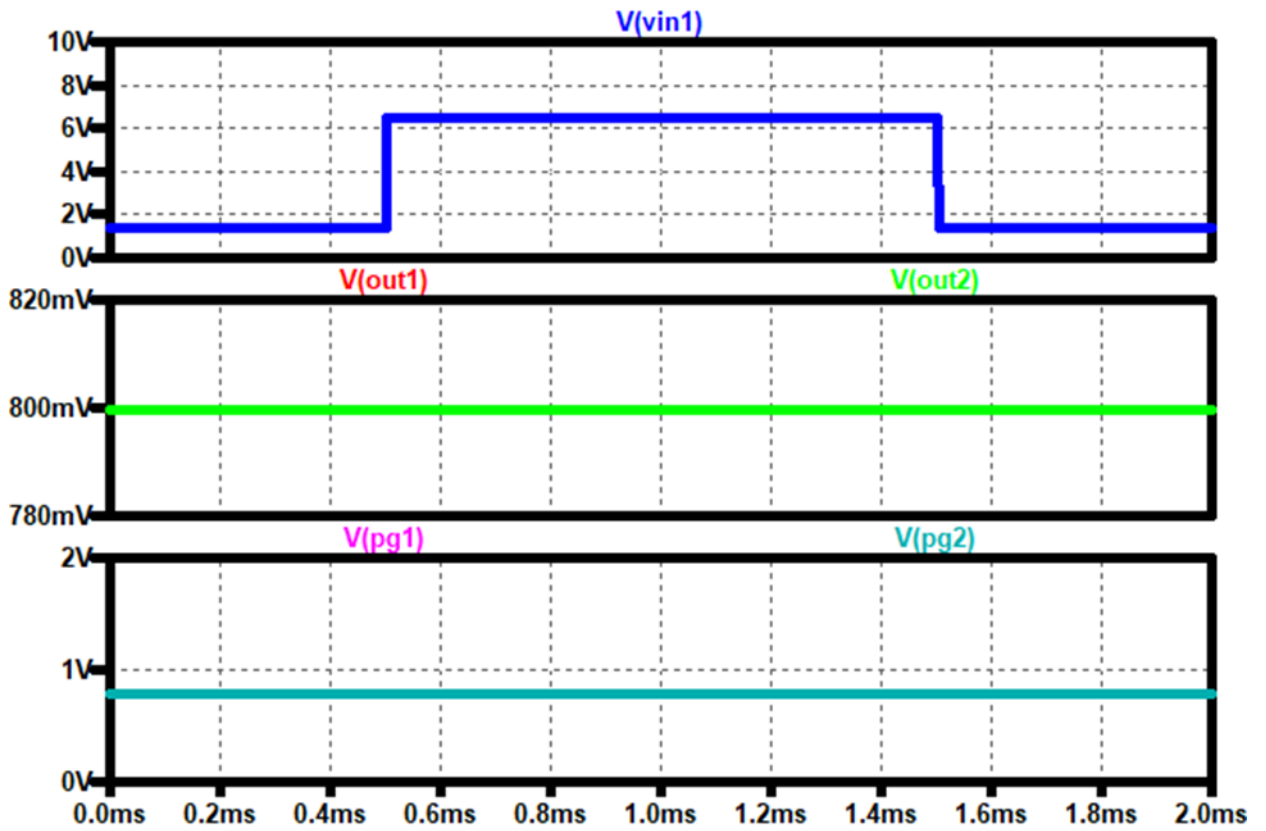
Line Transient Response Testbench
 Referred to Data Sheet

```
.option TNOM=25
.temp 25
.tran 0 2m 0 .lib MDC_TPS7A8801RTJR_LT.lib
```



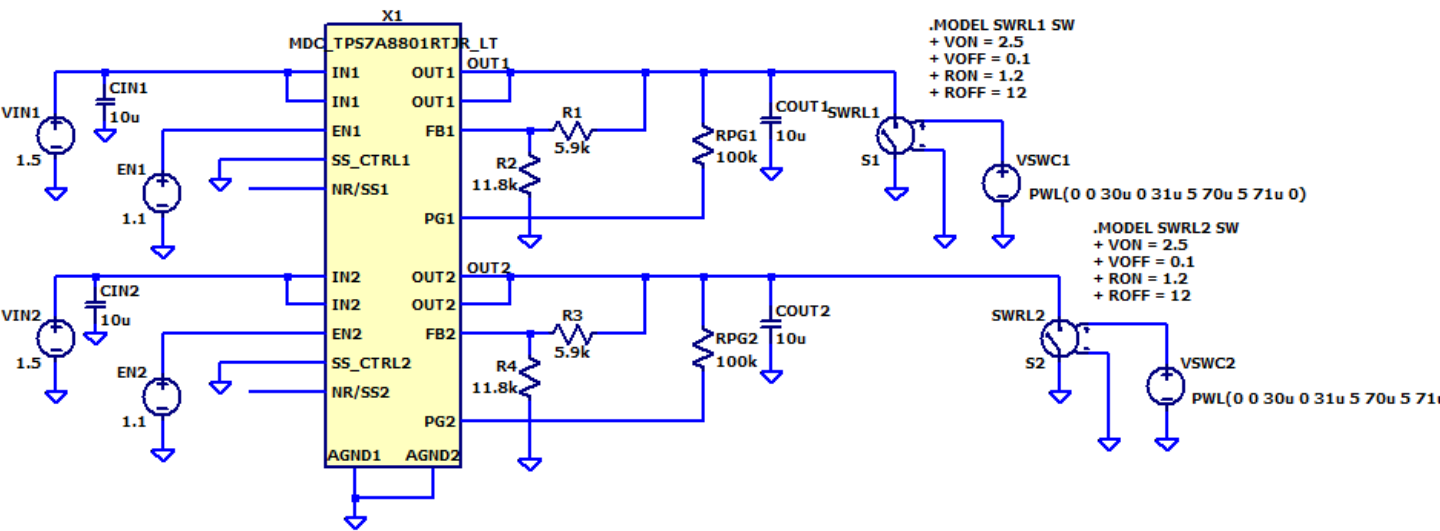
Simulation results are following.
Explanatory notes — : simulated

Line Transient Response



Load Transient Response Testbench
 Referred to Data Sheet

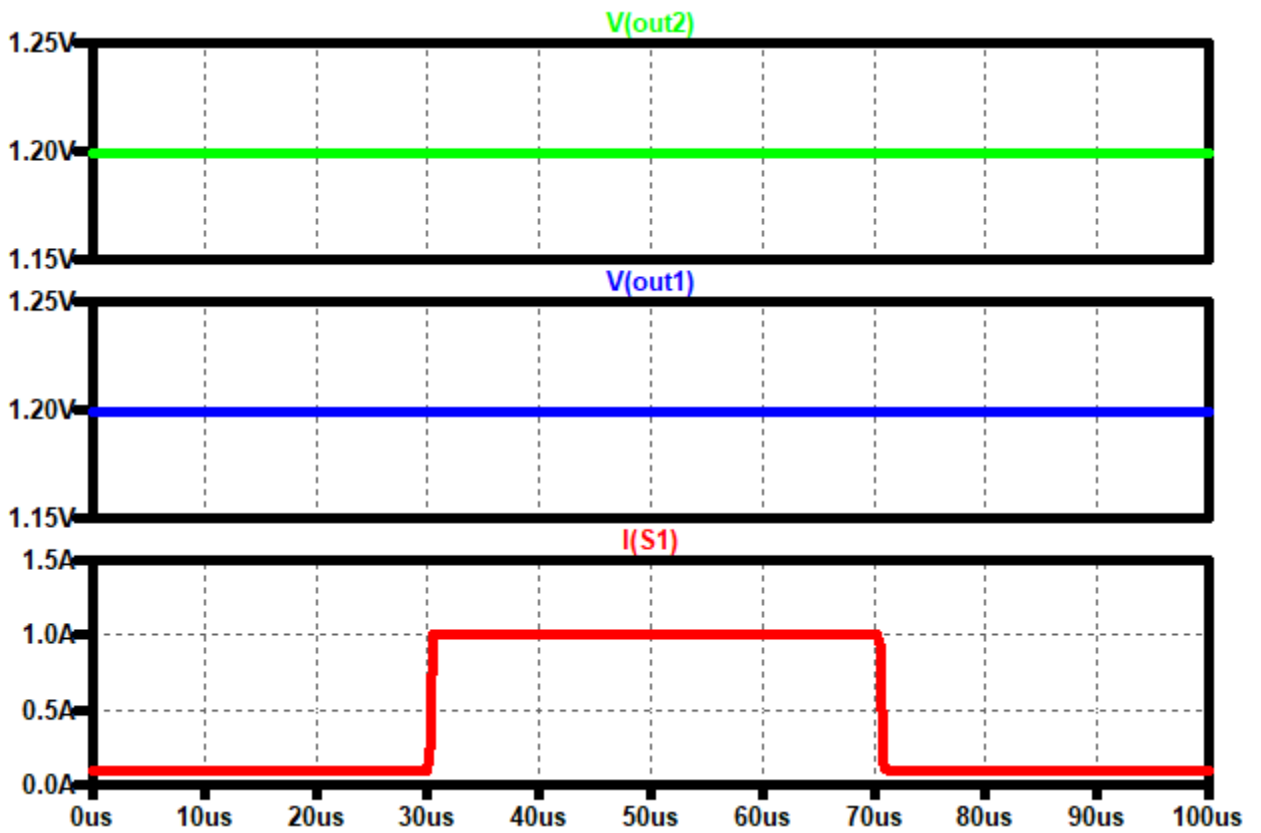
```
.option TNOM=25
.temp 25
.tran 0 100u 0 .lib MDC_TPS7A8801RTJR_LT.lib
```



Simulation results are following.
Explanatory notes — : simulated

Load Transient Response

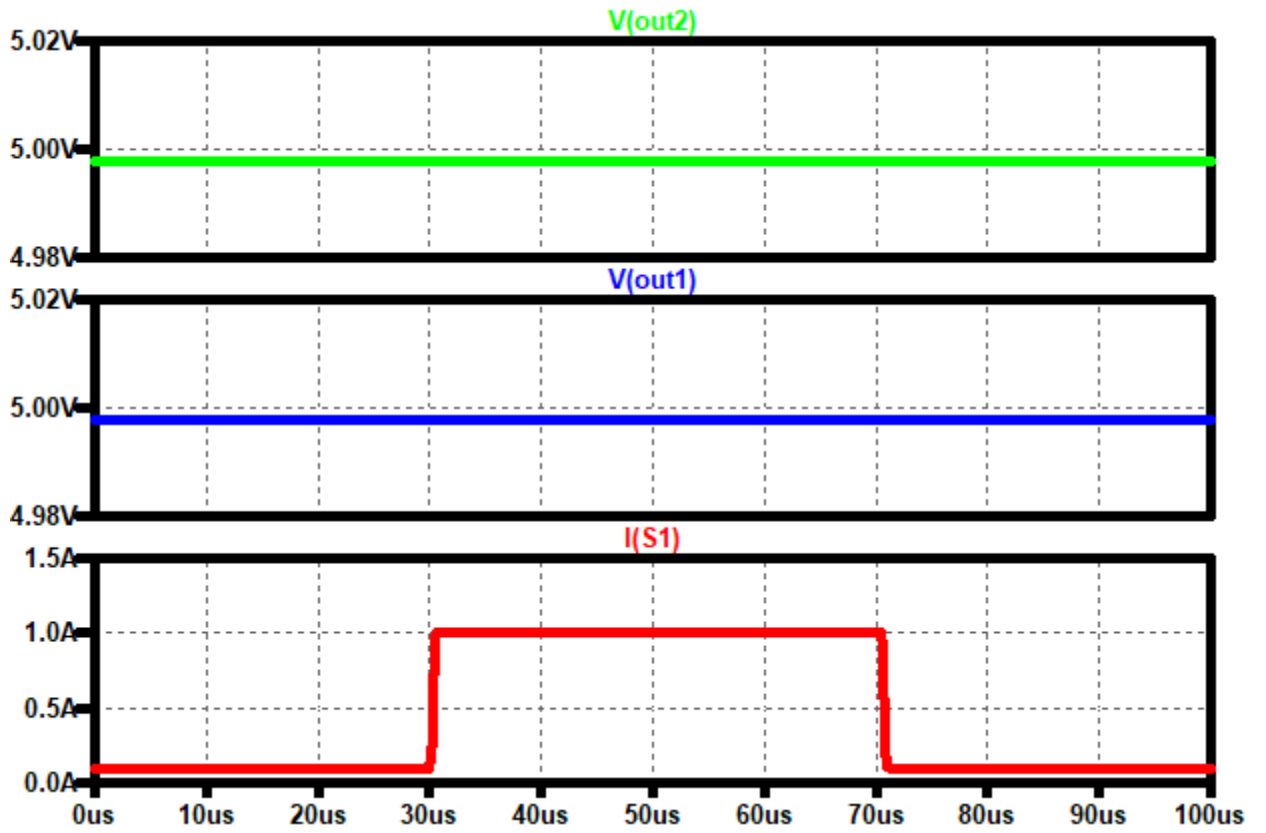
·V_{OUT}:1.2V



Simulation results are following.
Explanatory notes — : simulated

Load Transient Response

· V_{OUT} :5.0V

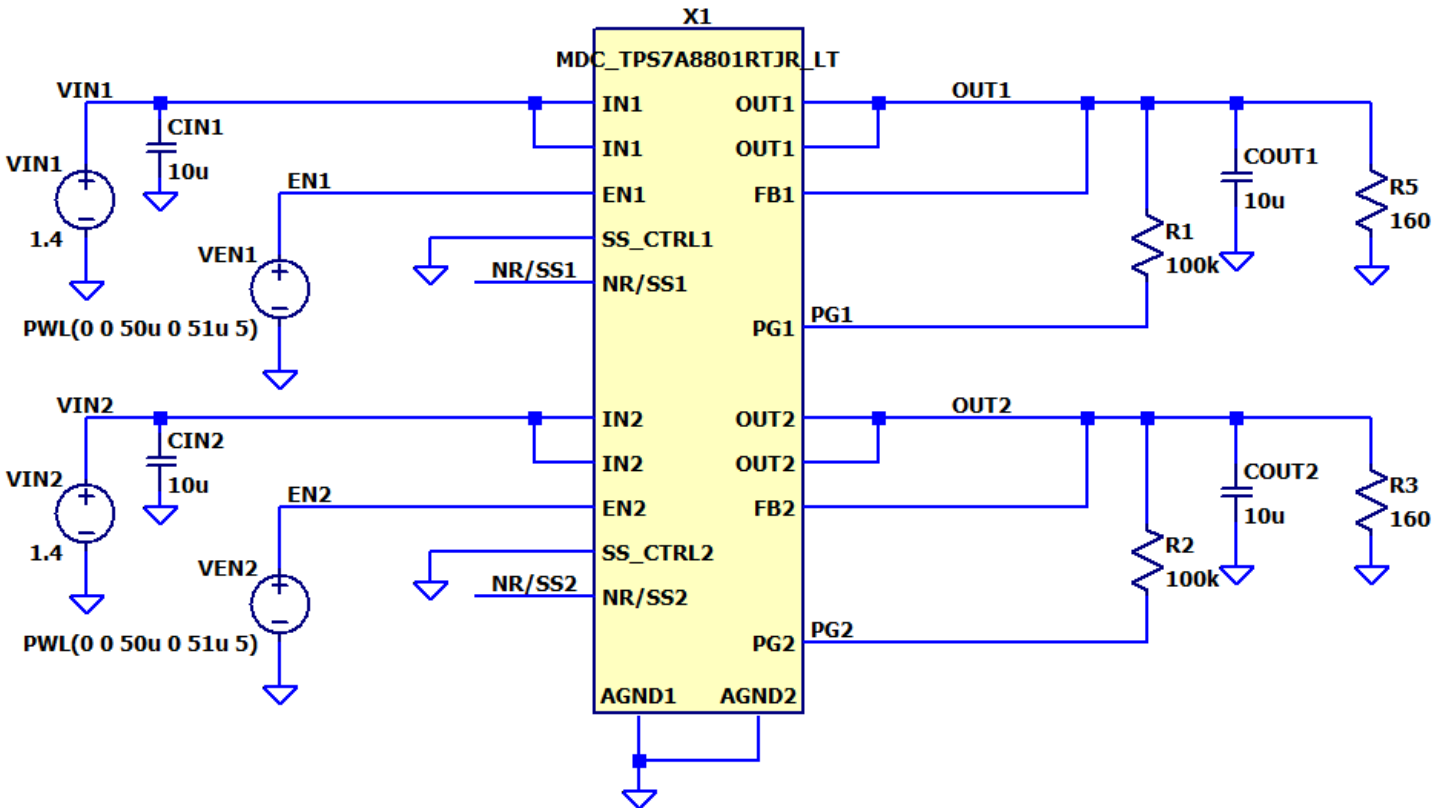


Start-UpTestbench

Referred to Data Sheet

• Start-Up (SS_CTRLx = GND, C_{NR/SSx} = 0 nF)

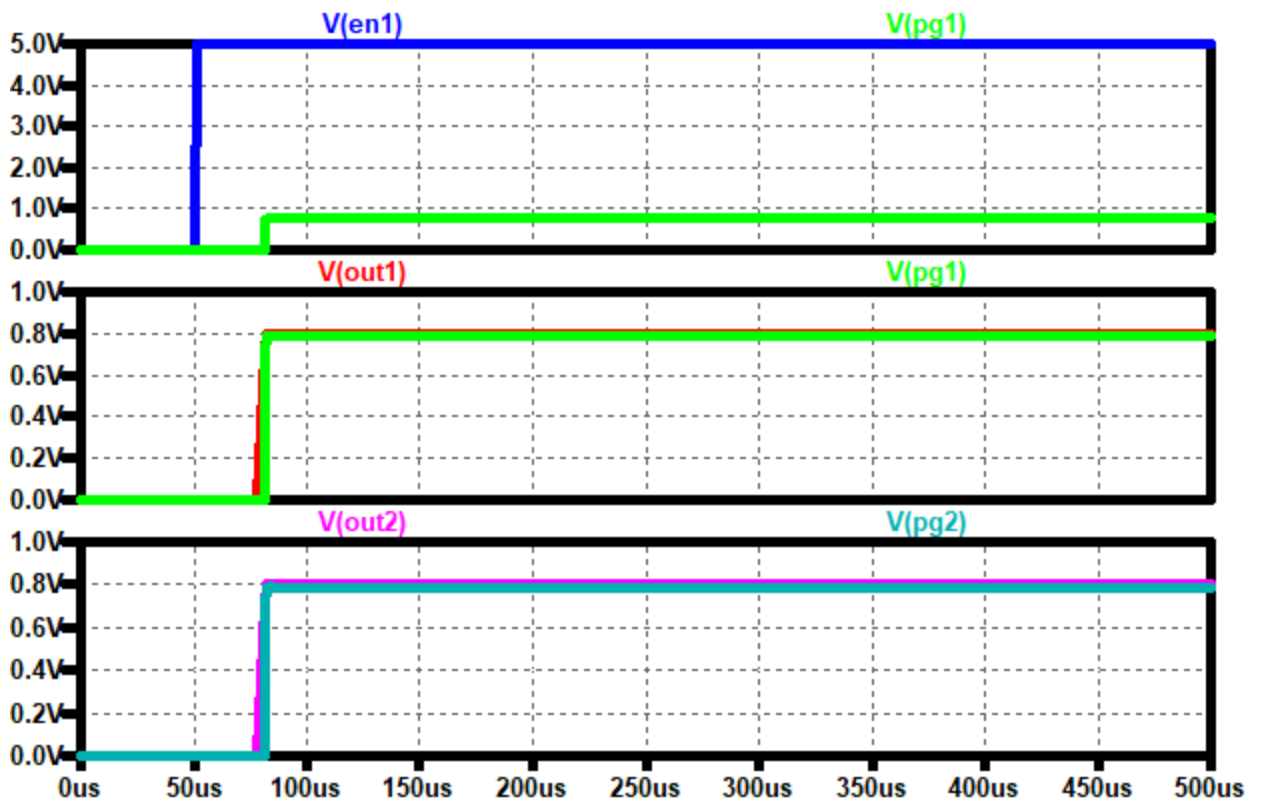
```
.option TNOM=25
.temp 25
.tran 0 500u 0      .lib MDC_TPS7A8801RTJR_LT.lib
```



Simulation results are following.
 Explanatory notes — : simulated

Start-Up

• Start-Up (SS_CTRLx = GND, C_{NR/SSx} = 0 nF)

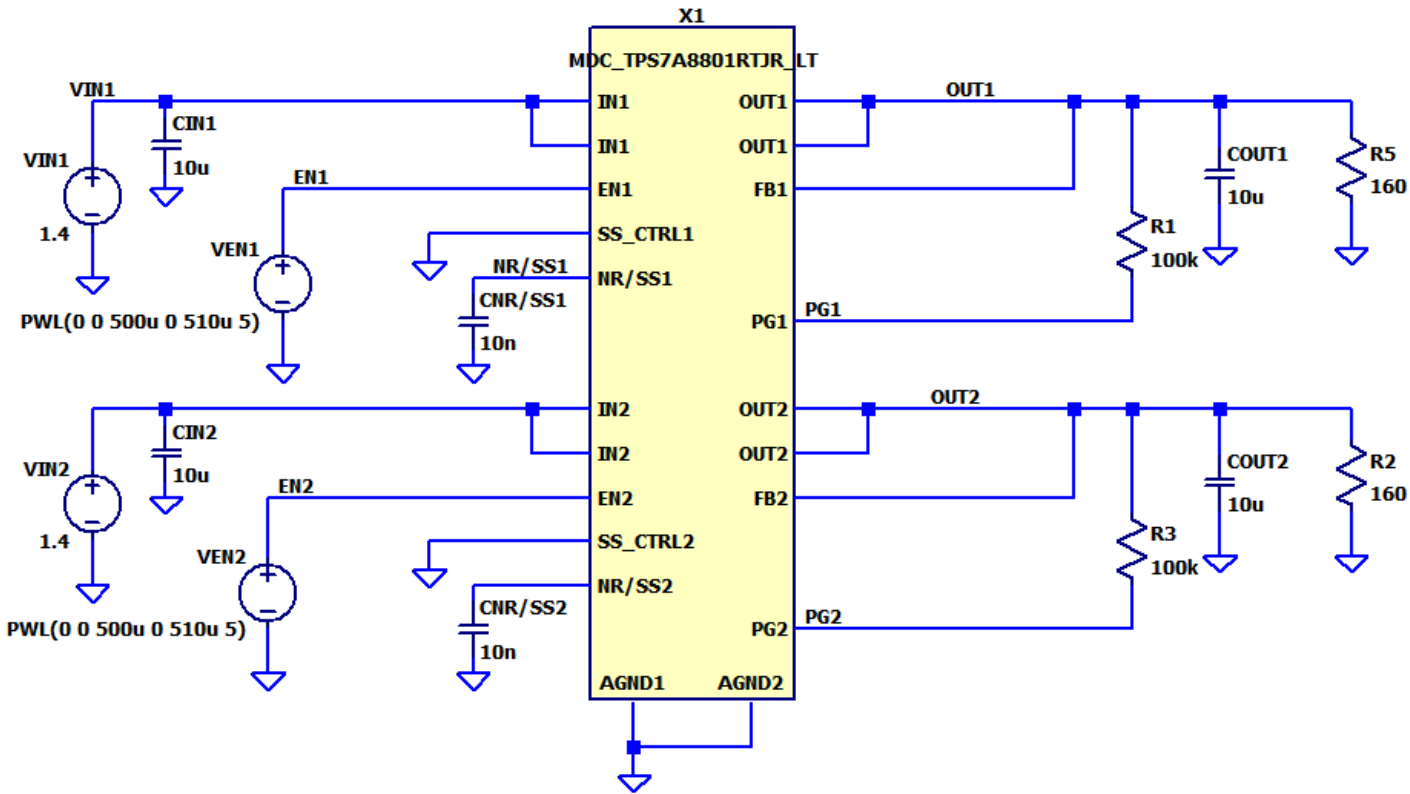


Start-UpTestbench

Referred to Data Sheet

• Start-Up (SS_CTRLx = GND, C_{NR/SSx} = 10 nF)

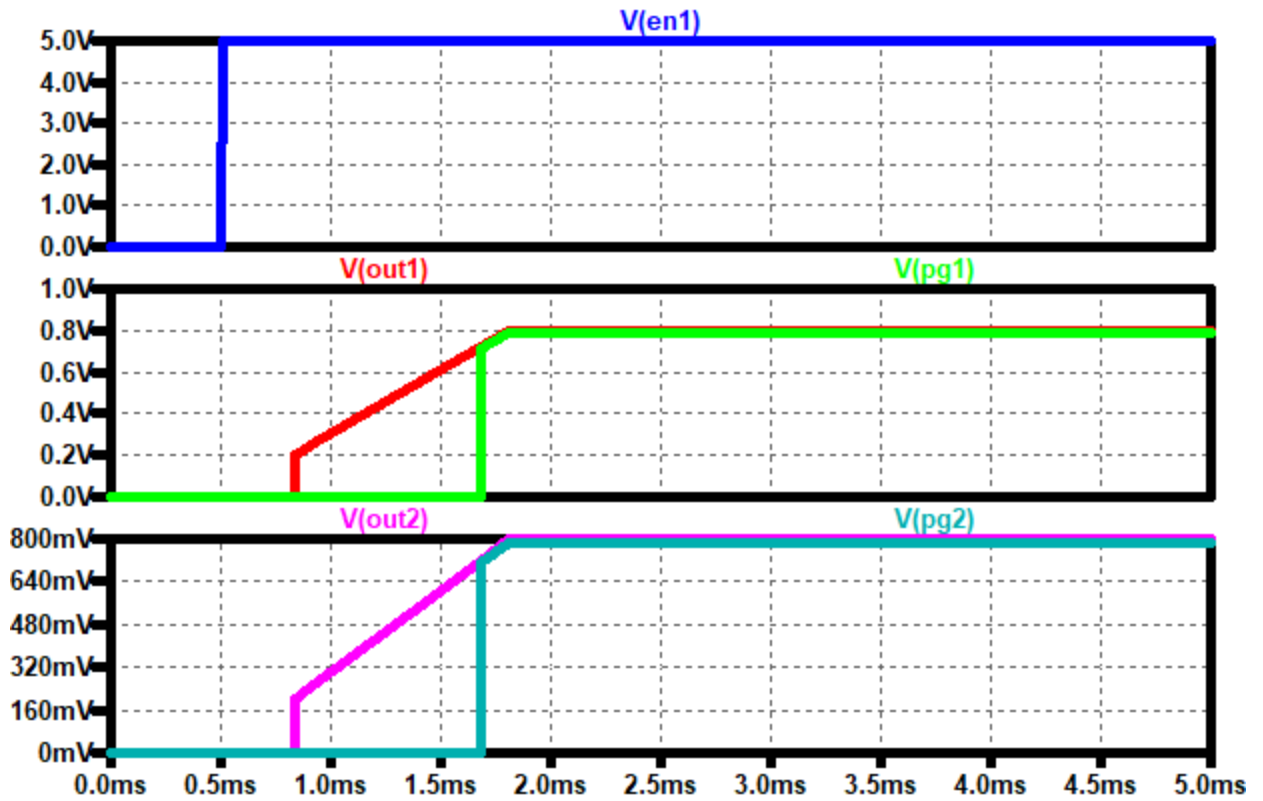
```
.option TNOM=25
.temp 25
.tran 0 5m 0 500n .lib MDC_TPS7A8801RTJR_LT.lib
```



Simulation results are following.
 Explanatory notes — : simulated

Start-Up

• Start-Up (SS_CTRLx = GND, C_{NR/SSx} = 10 nF)

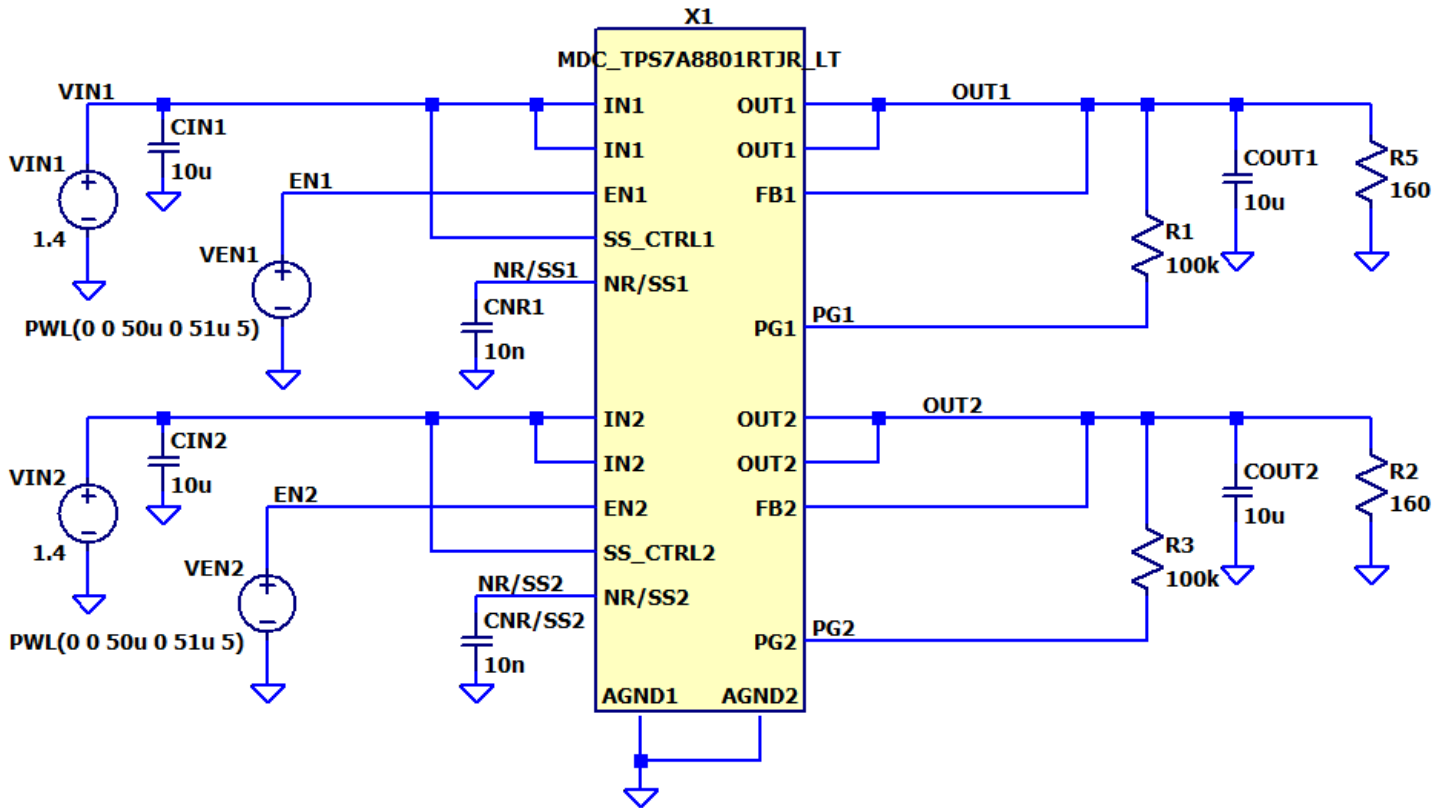


Start-Up Testbench

Referred to Data Sheet

• Start-Up ($SS_CTRLx = V_{INx}$, $C_{NR/SSx} = 10\text{ nF}$)

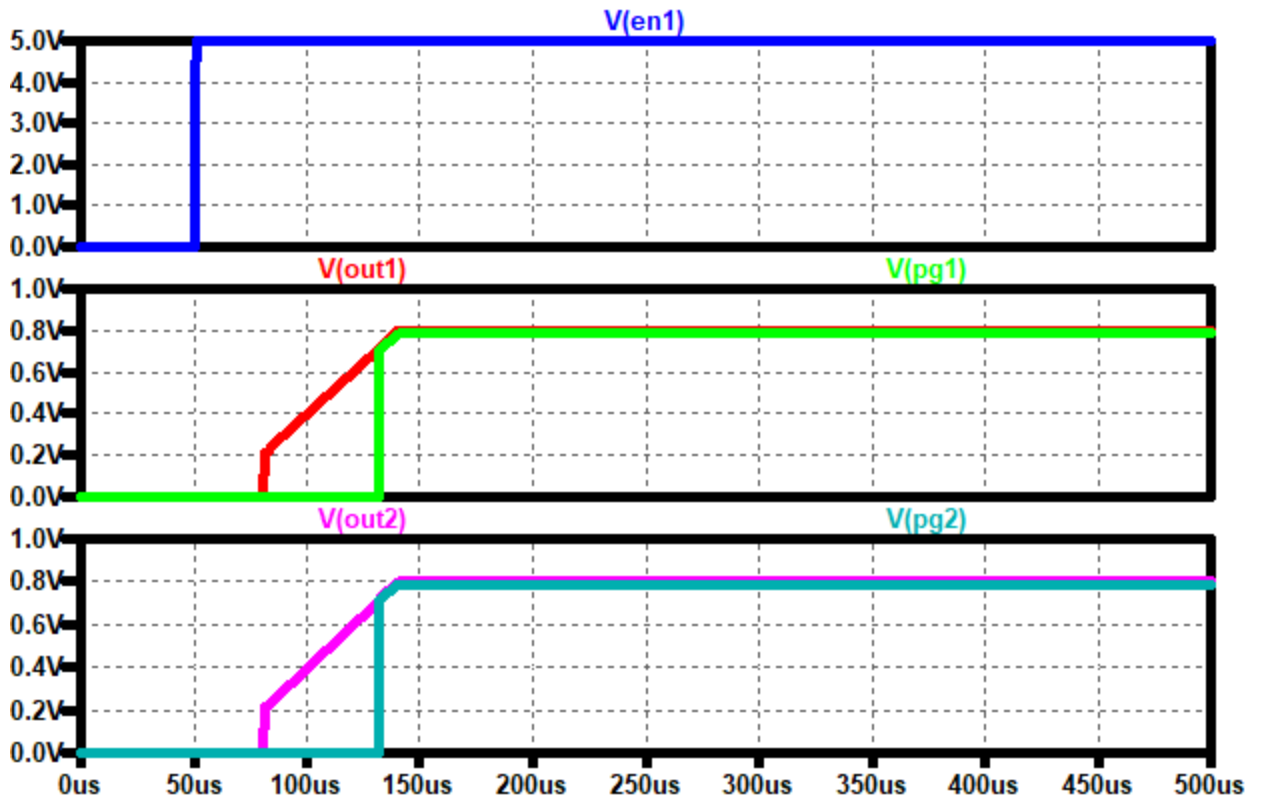
```
.option TNOM=25
.temp 25
.tran 0 500u 0 500n .lib MDC_TPS7A8801RTJR_LT.lib
```



Simulation results are following.
 Explanatory notes — : simulated

Start-Up

• Start-Up ($SS_CTRLx = V_{INx}$, $C_{NR/SSx} = 10\text{ nF}$)

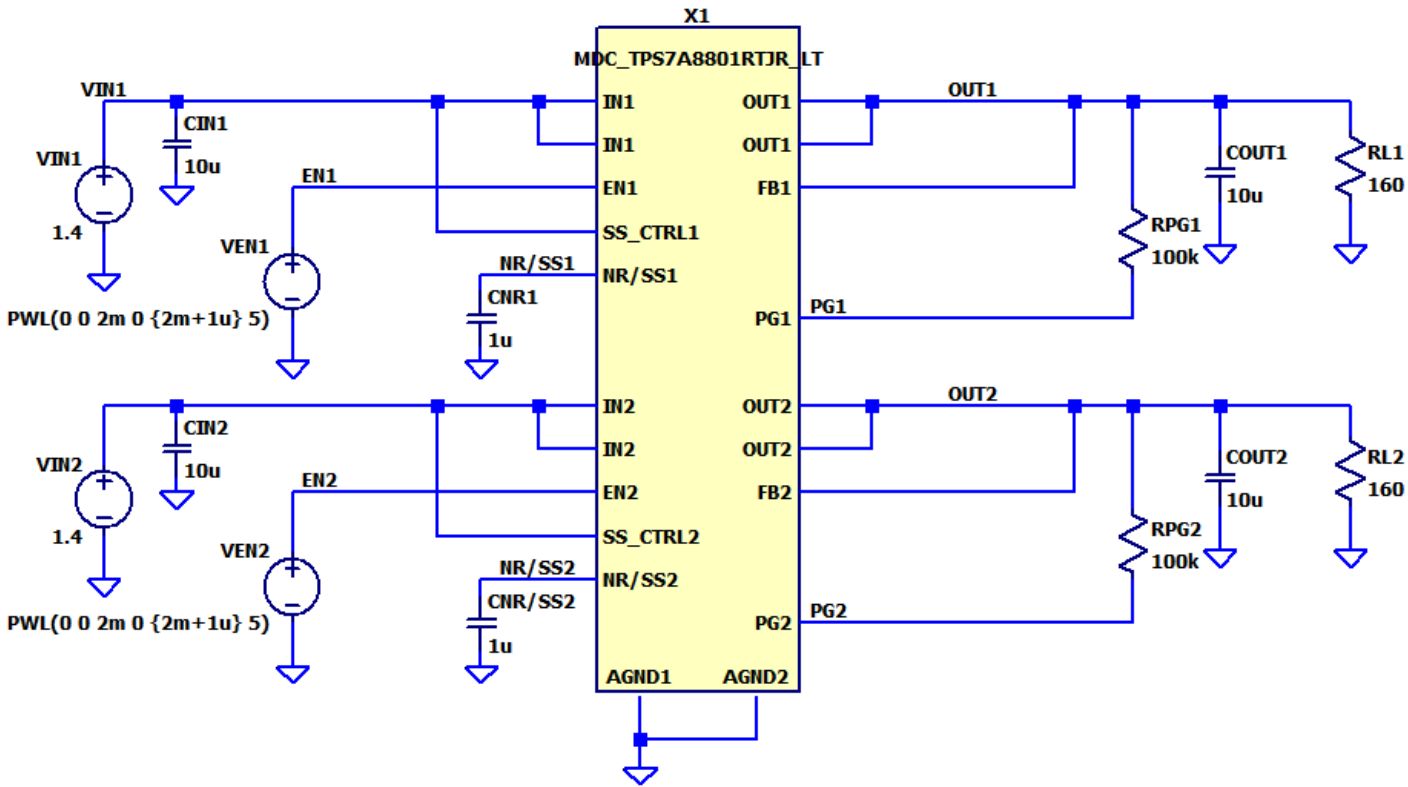


Start-Up Testbench

Referred to Data Sheet

• Start-Up ($SS_CTRLx = V_{INx}$, $C_{NR/SSx} = 1 \mu F$)

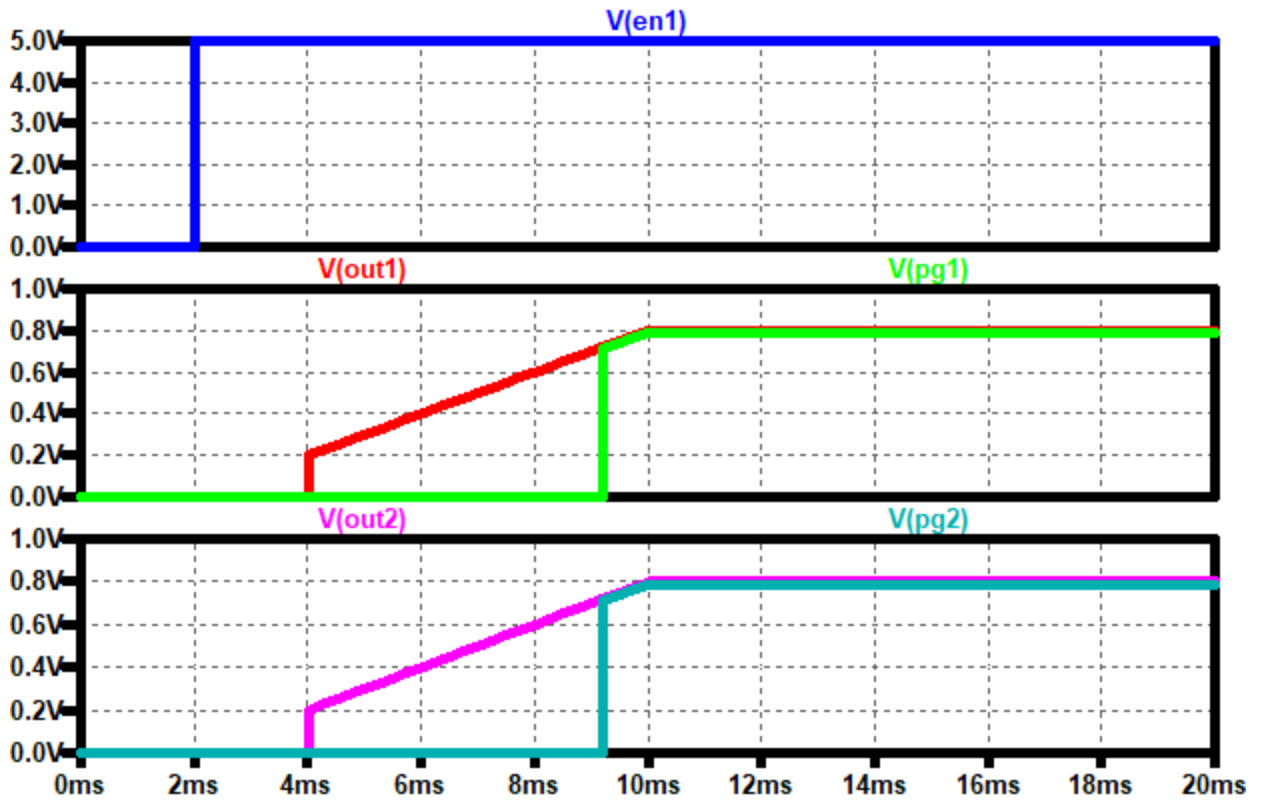
```
.option TNOM=25
.temp 25
.tran 0 20m 0 .lib MDC_TPS7A8801RTJR_LT.lib
```



Simulation results are following.
 Explanatory notes — : simulated

Start-Up

• Start-Up ($SS_CTRLx = V_{INx}$, $C_{NR/SSx} = 1 \mu F$)



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