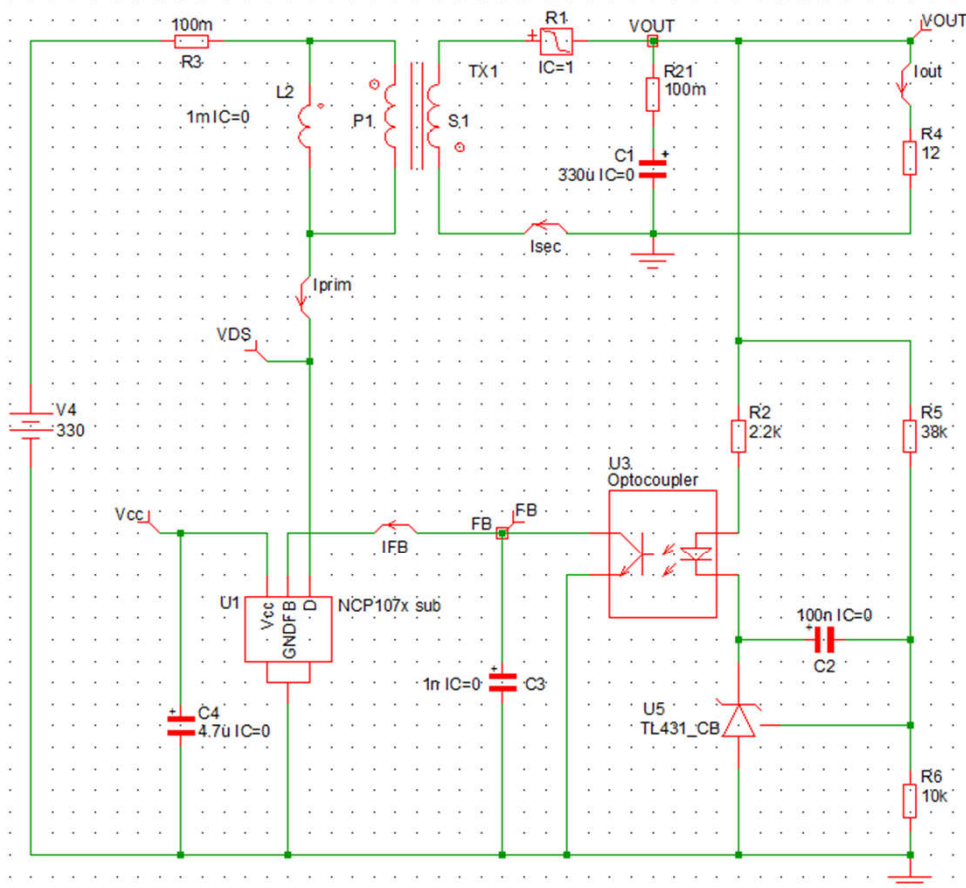


NCP107x Simplified Simulation Model
 ON Semiconductor - Christophe Basso
 Tested with SIMPLIS 8.4
 November 2020 - Rev. 0.1

Simplified model mainly intended to obtain an operating point
 (inductor current, ripple, duty ratio etc.) and a stability analysis.



* NCP107x

GLOBALVAR Fsw=100k

Select frequency here

**

** Select your part-number here **

*

GLOBALVAR NCP=1076

Select the part-number here

*

**

IF {NCP==1070}

GLOBALVAR RonNCP=22

GLOBALVAR k=14.9m ; Kelvin divider

GLOBALVAR Rs=66 ; Internal sense

GLOBALVAR Se=8.1u

GLOBALVAR kcons=200u * IC internal consumption Icons/5*

ELSE

IF {NCP==1071}

GLOBALVAR RonNCP=22

GLOBALVAR k=13.4m ; Kelvin divider

GLOBALVAR Rs=52.7 ; Internal sense

GLOBALVAR Se=7.9u

GLOBALVAR kcons=200u * IC internal consumption Icons/5*

ELSE

IF {NCP==1072}

GLOBALVAR RonNCP=11

GLOBALVAR k=13.1m ; Kelvin divider

GLOBALVAR Rs=81 ; Internal sense

GLOBALVAR Se=6.5u

GLOBALVAR kcons=200u * IC internal consumption Icons/5*

ELSE

IF {NCP==1075}

GLOBALVAR RonNCP=11

GLOBALVAR k=11.8m ; Kelvin divider

GLOBALVAR Rs=50.2 ; Internal sense

GLOBALVAR Se=5u

GLOBALVAR kcons=200u * IC internal consumption Icons/5*

ELSE

IF {NCP==1076}

GLOBALVAR RonNCP=4.7

GLOBALVAR k=7.44m ; Kelvin divider

GLOBALVAR Rs=52.7 ; Internal sense

GLOBALVAR Se=6.7u

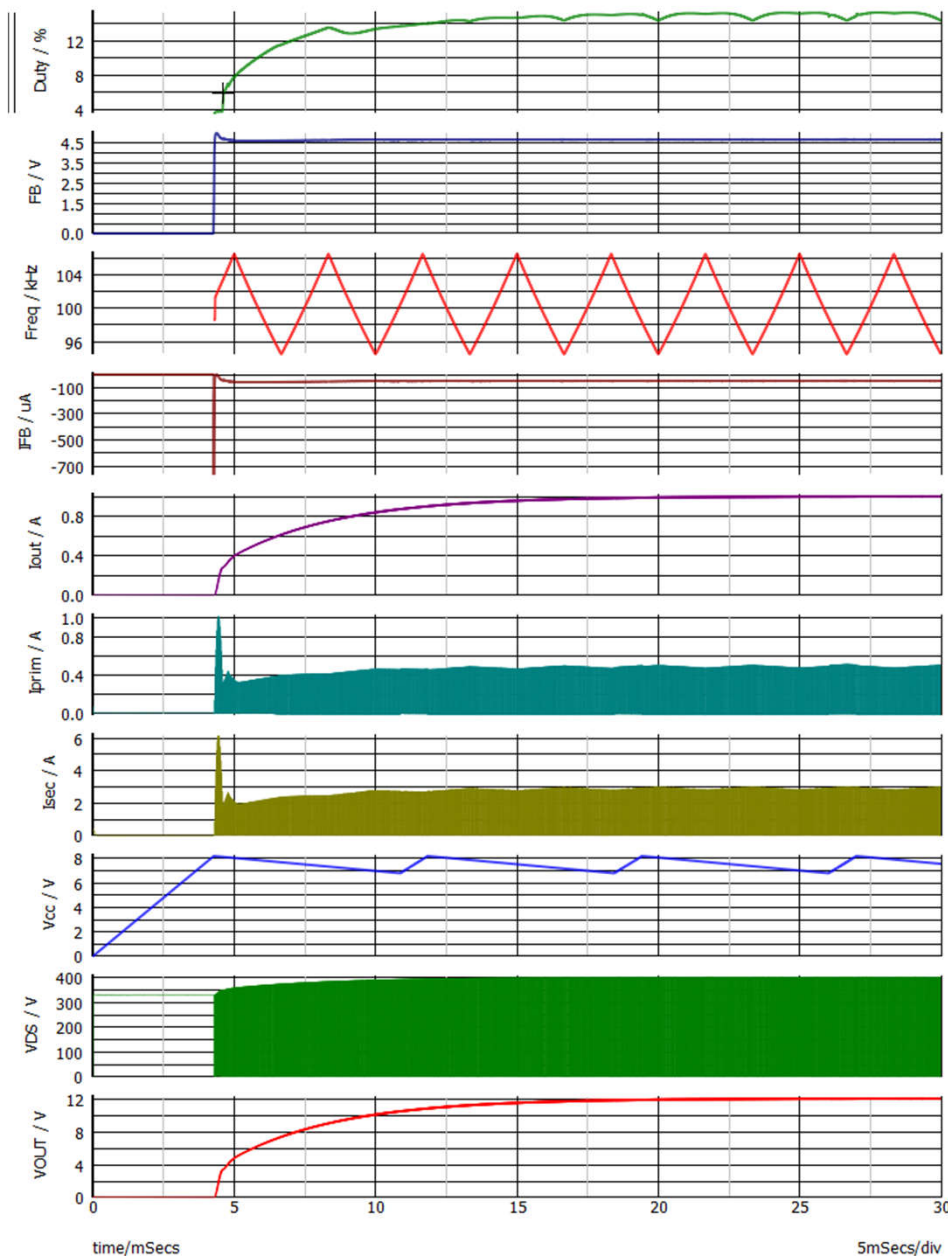
GLOBALVAR kcons=200u * IC internal consumption Icons/5*

ELSE

IF {NCP==1077}

GLOBALVAR RonNCP=4.7

ON Semiconductor
 November 2020 – Rev. 0.1
 Christophe Basso



The model includes the following features:

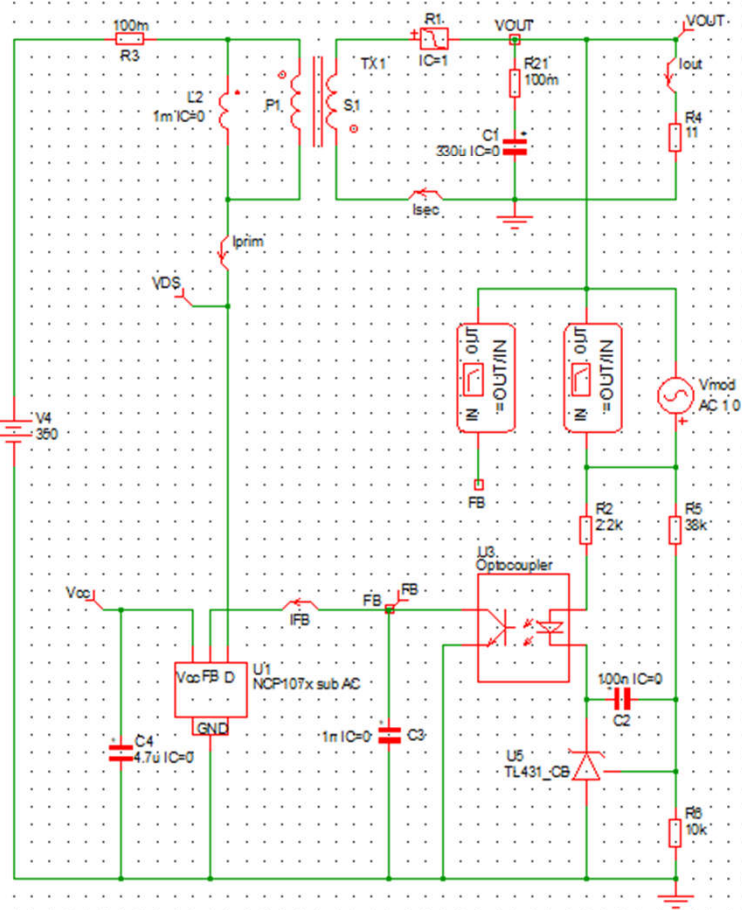
- Dynamic self-supply or DSS
- Frequency jitter
- Frequency foldback
- Peak current freeze
- Skip operation
- Soft-start
- OVP (1 shot)
- Timer-based fault (1 shot)
- Feedback pin current management

It does not include:

- A comprehensive model for the FET. Instead, a simple $r_{DS(ON)}$ -based switch is used with an additional diode for body.
- An autorecovery timer.

NCP107x Simplified Simulation Model
 For ac simulation only - no DSS, jitter, protection, soft-start, etc.
 ON Semiconductor - Christophe Basso
 Tested with SIMPLIS 8.4
 November 2020 - Rev. 0.1

Simplified model mainly intended to obtain an operating point
 (inductor current, ripple, duty ratio, etc.) and a stability analysis.



```

* NCP107x
GLOBALVAR Fsw=100k
**-----**
** Select your part-number here **
*
GLOBALVAR NCP=1076
**-----**
IF {NCP==1070}
GLOBALVAR RonNCP=22
GLOBALVAR k=14.9m ; Kelvin divider
GLOBALVAR Rs=66 ; Internal sense
GLOBALVAR Se=8.1u
GLOBALVAR kcons=200u * IC internal consumption Icons/5*
ELSE
IF {NCP==1071}
GLOBALVAR RonNCP=22
GLOBALVAR k=13.4m ; Kelvin divider
GLOBALVAR Rs=52.7 ; Internal sense
GLOBALVAR Se=7.9u
GLOBALVAR kcons=200u * IC internal consumption Icons/5*
ELSE
IF {NCP==1072}
GLOBALVAR RonNCP=11
GLOBALVAR k=13.1m ; Kelvin divider
GLOBALVAR Rs=81 ; Internal sense
GLOBALVAR Se=6.5u
GLOBALVAR kcons=200u * IC internal consumption Icons/5*
ELSE
IF {NCP==1075}
GLOBALVAR RonNCP=11
GLOBALVAR k=11.8m ; Kelvin divider
GLOBALVAR Rs=50.2 ; Internal sense
GLOBALVAR Se=5u
GLOBALVAR kcons=200u * IC internal consumption Icons/5*
ELSE
IF {NCP==1076}
GLOBALVAR RonNCP=4.7
GLOBALVAR k=7.44m ; Kelvin divider
GLOBALVAR Rs=52.7 ; Internal sense
GLOBALVAR Se=6.7u
GLOBALVAR kcons=200u * IC internal consumption Icons/5*
ELSE
IF {NCP==1077}
GLOBALVAR RonNCP=4.7
GLOBALVAR k=7m ; Kelvin divider
GLOBALVAR Rs=45.8 ; Internal sense
GLOBALVAR Se=6.6u
GLOBALVAR kcons=200u * IC internal consumption Icons/5*
ENDIF
ENDIF
ENDIF
ENDIF
ENDIF
ENDIF

```

Ac-simulations requires a dedicated part freed from the many circuitries not needed for small-signal response. The following features are purposely removed for an efficient POP computation:

- All protection features
- DSS
- Soft-start
- Leakage inductance

