LTspice Model
Switching Regulator Control
RENESAS
M51996AFP

Model Information

Model	A macro model
Call Name	MDC_M51996AFP_LT
Pin Assign	1:Collector 2:VOUT 3:Emitter 4:Heat sink pin 5:OVP 6:F/B 7:DET 8:REG 9:SOFT 10:T-ON 11:CF 12:T-OFF 13:Heat sink pin 14:GND 15:CLM+ 16:VCC
File List	Model Library MDC_M51996AFP_LT01.lib Model Report MDC_M51996AFP_LT.pdf(this file)

Verified Simulator Version LTspice

Note

References

The information which was used for modeling is as follow:

[Data Sheet]

- ●Date/Version Nov 14,2007 Rev.2.01
- ●Product name M51996AFP
- ●Company name RENESAS

[Characteristics listed]

- ●Characteristics Oscillator operation at the SOFT(Input=138V Output=8.5V IOUT=1.0A)

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

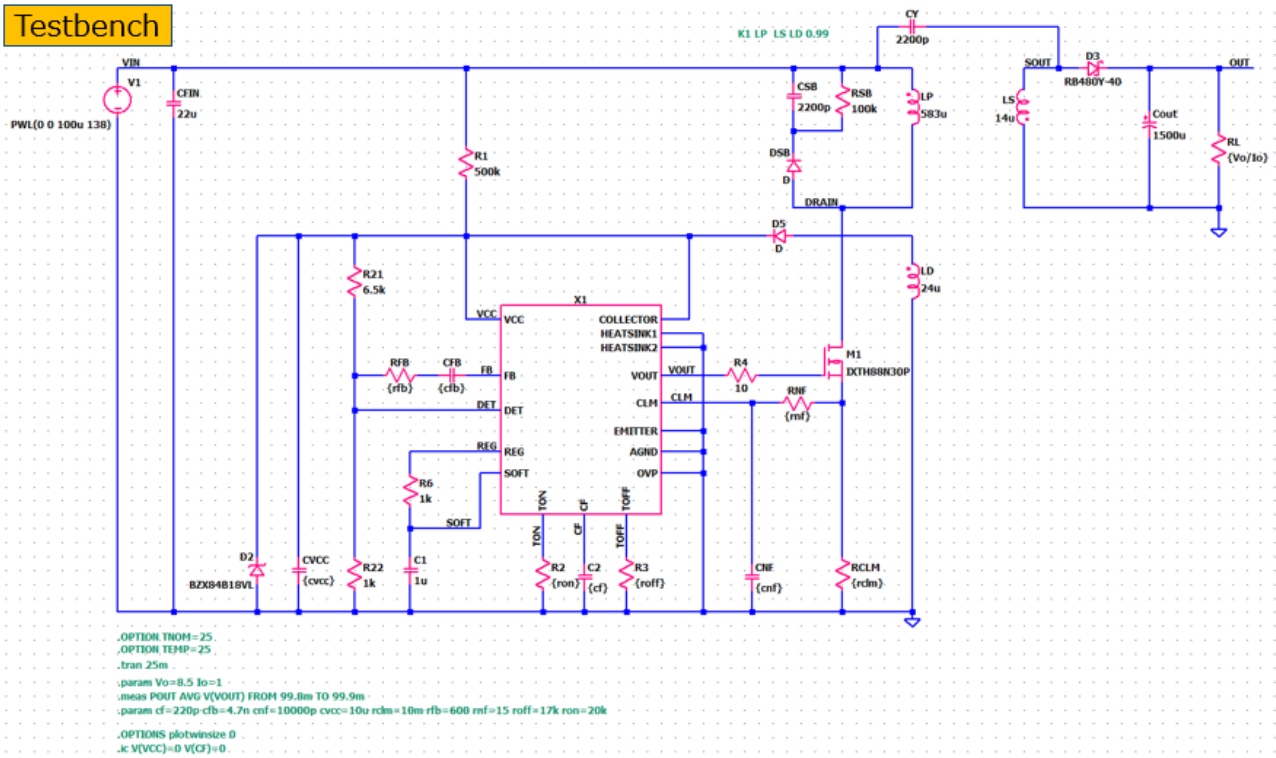
Model Functions Table

Functions	Implemented
500kHz operation to MOS FET	○
Triangular wave oscillator	○
Small start-up current : 100μA @typ	○
Start-up threshold 16V,stop voltage 10V	○
High-speed current limiting circuit using pulse-by-pulse method (CLM+)	○
Over-voltage protection circuit with an externally re-settable latch (OVP)	○
Protection circuit for output miss action at low supply voltage (UVLO)	○
SOFT start function	○

Oscillator operation at the SOFT(Input=138V Output=8.5V IOUT=1.0A)

Simulation results are following.
Explanatory notes — : simulated

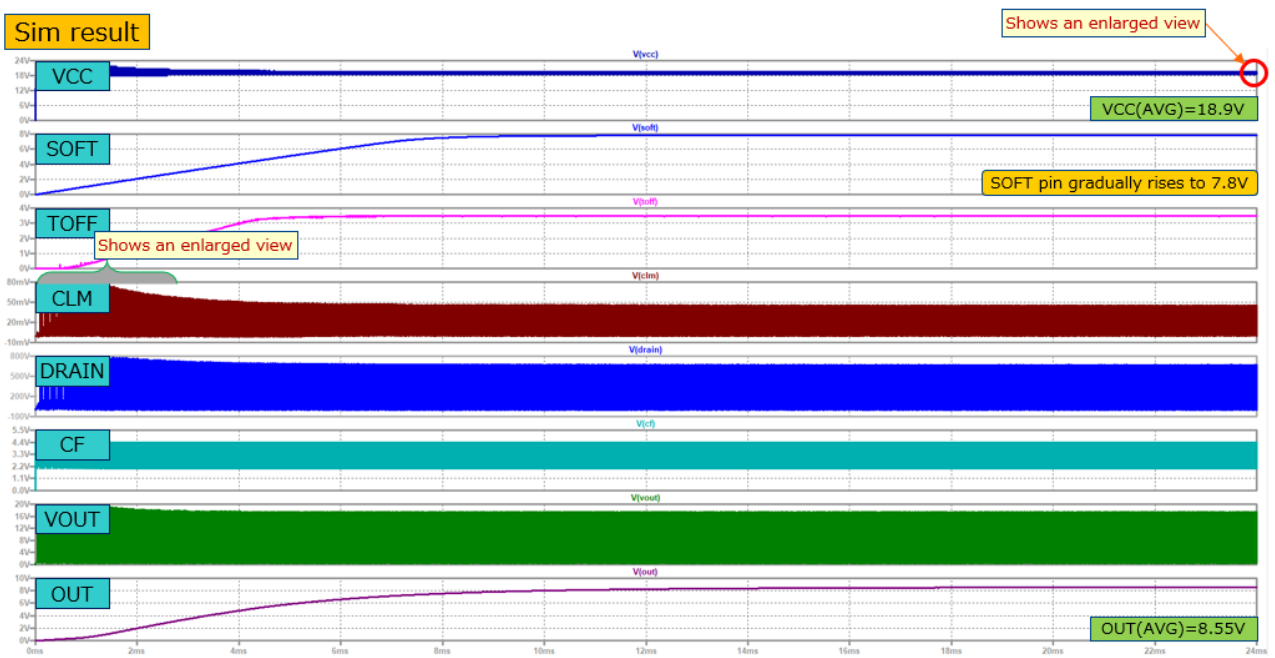
Testbench



Oscillator operation at the SOFT(Input=138V Output=8.5V IOUT=1.0A)

Simulation results are following.
Explanatory notes — : simulated

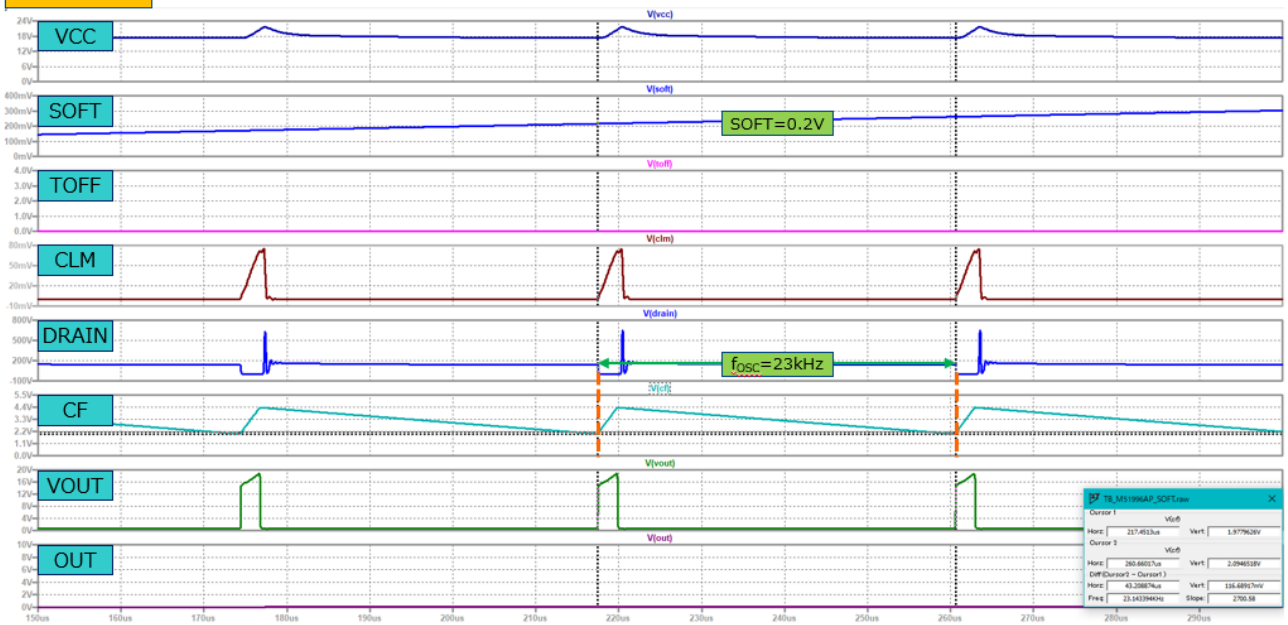
Sim result



Oscillator operation at the SOFT(Input=138V Output=8.5V IOUT=1.0A)

Simulation results are following.
Explanatory notes — : simulated

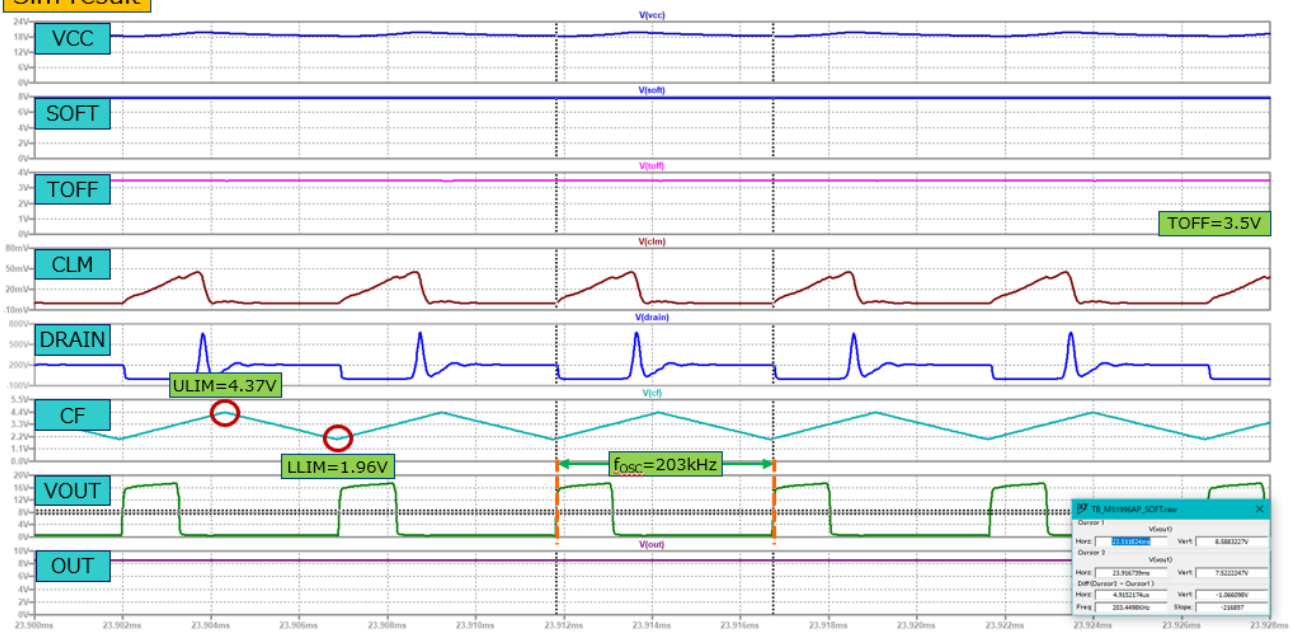
Sim result



Oscillator operation at the SOFT(Input=138V Output=8.5V IOUT=1.0A)

Simulation results are following.
Explanatory notes — : simulated

Sim result



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