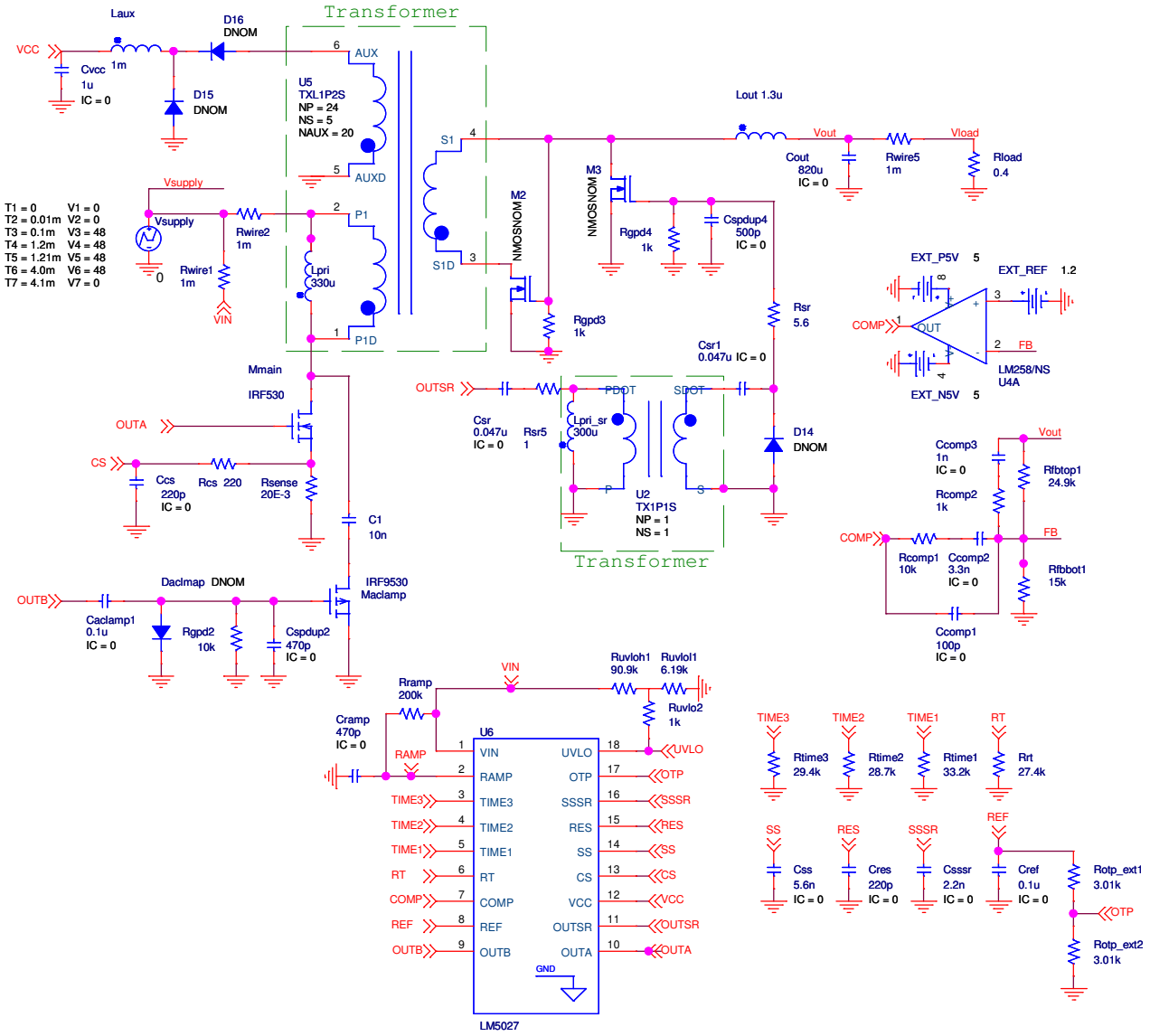
LM5027 Voltage Mode Active Clamp Controller
TRANSIENT TIME SIMULATION EXAMPLE



<Introduction >
This document contains the SPICE model, application example for National Semiconductor's LM5027 Voltage Mode Active Clamp Controller. The LM5027 PWM controller contains all of the features necessary to implement power converters utilizing the Active Clamp Reset technique. With the active clamp technique, higher efficiencies and greater power densities can be realized compared to conventional catch winding or RDC clamp reset techniques

<LM5027 Model>
The LM5027 PSPICE Model contains all of the basic features including;
- Voltage Mode Control
- Line Feedforward PWM Ramp
- Internal Start-up Bias Regulator
- Programmable line UVLO with adjustable hysteresis
- Dual mode over-current protection including cycle-by-clcle and hiccup mode current limit
- Programmable volt-second limiter
- Programmable soft-start
- Programmable synchronous rectifier soft start and soft stop
- Programmable Switching Frequency
- 5V reference
- Programmable time delays between outputs

<Assumptions and limitations>
Model & Example Assumptions;
- The temperature for this model is 25C
- No parasitic elements of components are considered

Some functions/characteristics of LM5027 are not included in this model;
- Thermal shutdown
- Oscillator Synchronization

Some characteristics of LM5027 are included but not optimized
- Gate driver capability
- Power consumption of controller
- SS & SSSR full discharging time

Also AGND&PGND pin of LM5027 are internally tied to GND (node number 0)

<Note>
-To run the simulation a simulation profile should be added first--> click 'New Simulation Profile'
-The simulation takes around 1~3min actual time per 1mSec simulation on a 1.7GHz machine.
-Vsupply should have a slope lower than 150V/Sec
-It is recommended to set the Maximum Step Size as 10uSec

Title	**LM5027 Simulation Example**	
Size	Document Number **Model by Eric Lee, Phoenix Design Center , National Semiconductor**	Rev
Date: Friday, January 08, 2010	Sheet 1 of 1	