

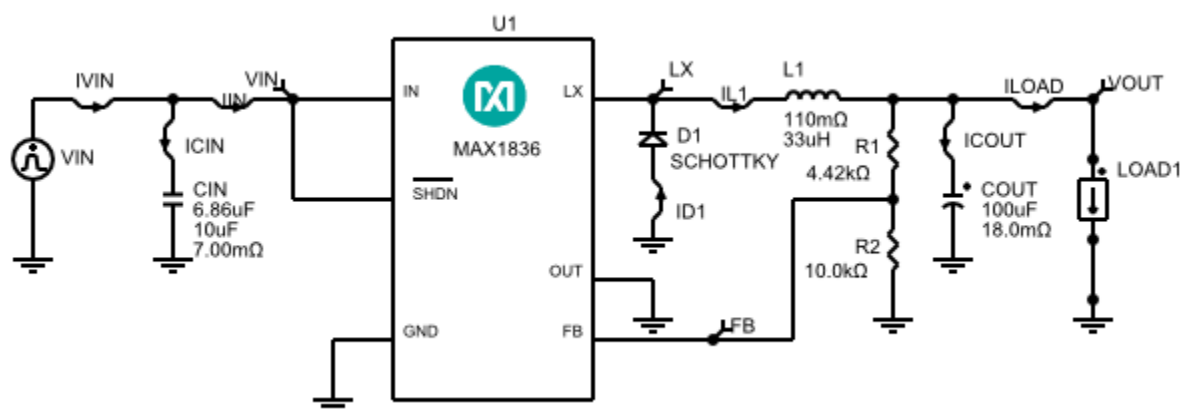
Initial Design

1.0

Design Requirements

Parameter	Value
Min. Input Voltage	11.5V
Max. Input Voltage	12.5V
Typ. Input Voltage	12V
Input Voltage Ripple	0.5V
Output Voltage	3.3V
Output Current	0.1A
Output Voltage Ripple	1V
Load Step Start Current	A
Load Step Current	A
Performance Priority	Balance Efficiency and Size
BOM Priority	Cost
Switching Frequency	Hz
Inductor Current Ratio (LIR)	

Schematic



BOM

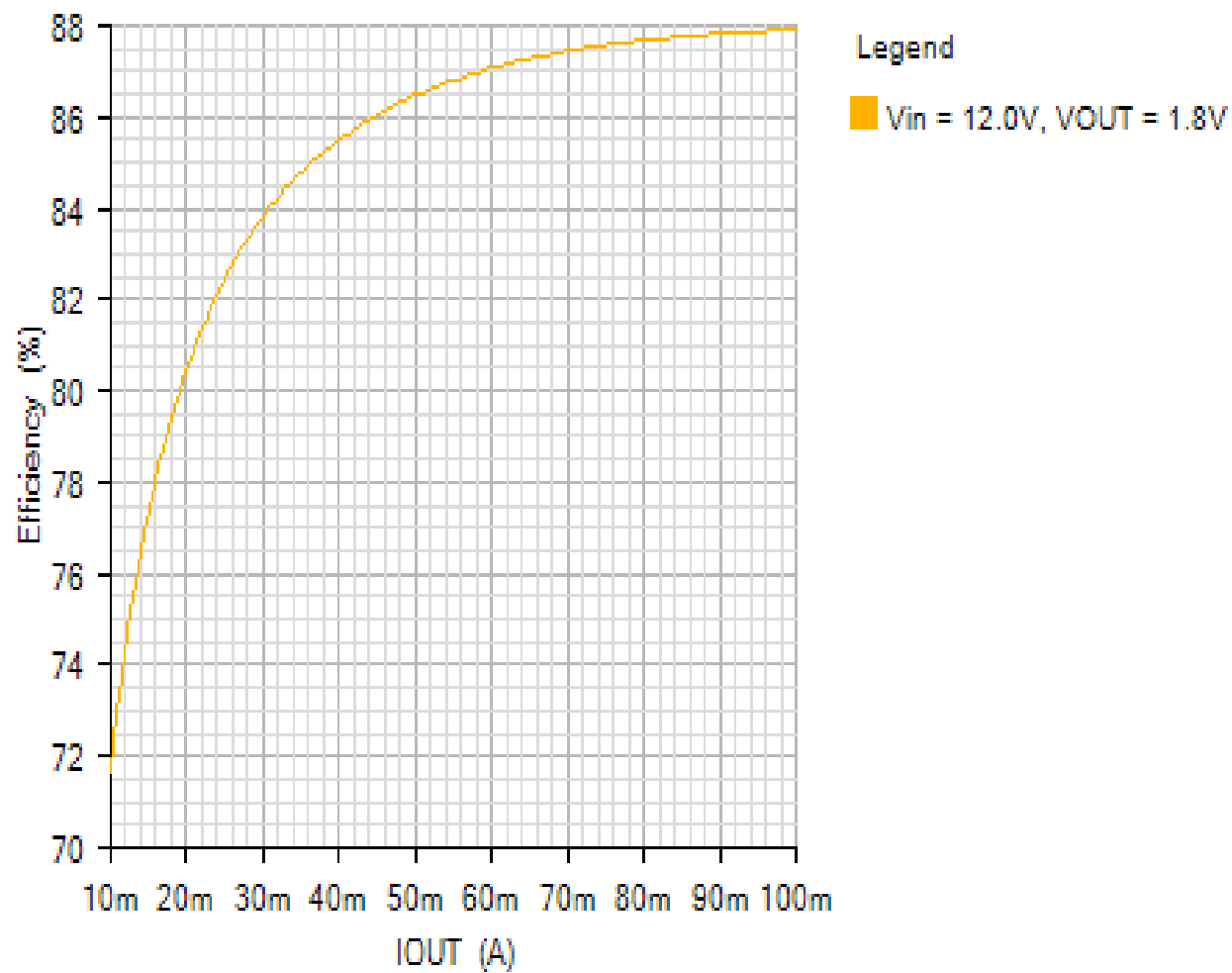
Ref	Qty	Part Number	Manufacturer	Description
U1	1	MAX1836EUT50#TG16	Maxim Integrated	24V Internal Switch, 100% Duty Cycle, Step-Down Converter
CIN	1	C1206C106K4PAC	Kemet	Cap Ceramic 10uF 16V X5R 10% SMD 1206 85C Bulk
COUT	1	6TPE100MI	Panasonic	Cap Tant Solid 100uF 6.3V D2E CASE 20% (7.3 X 4.3 X 1.8mm) SMD 7343 0.018 Ohm 105C Embossed T/R
D1	1	SD103CWS-7-F	Diodes Incorporated	Diode Schottky 20V 0.35A Automotive 2-Pin SOD-323 T/R
L1	1	VLP8040T-330M	TDK	Inductor Power Shielded Wirewound 33uH 20% 100KHz Ferrite 2.1A 110mOhm DCR Embossed Carrier T/R
R1	1	ERJ3EKF4421V	Panasonic	Res Thick Film 0603 4.42K Ohm 1% 0.1W(1/10W) ±100ppm/°C Pad SMD Automotive T/R
R2	1	ERJ2RKF1002X	Panasonic	Res Thick Film 0402 10K Ohm 1% 0.1W(1/10W) ±100ppm/°C Pad SMD Automotive T/R

Simulation Results

Efficiency - Tue Nov 20 2018 13:47:03

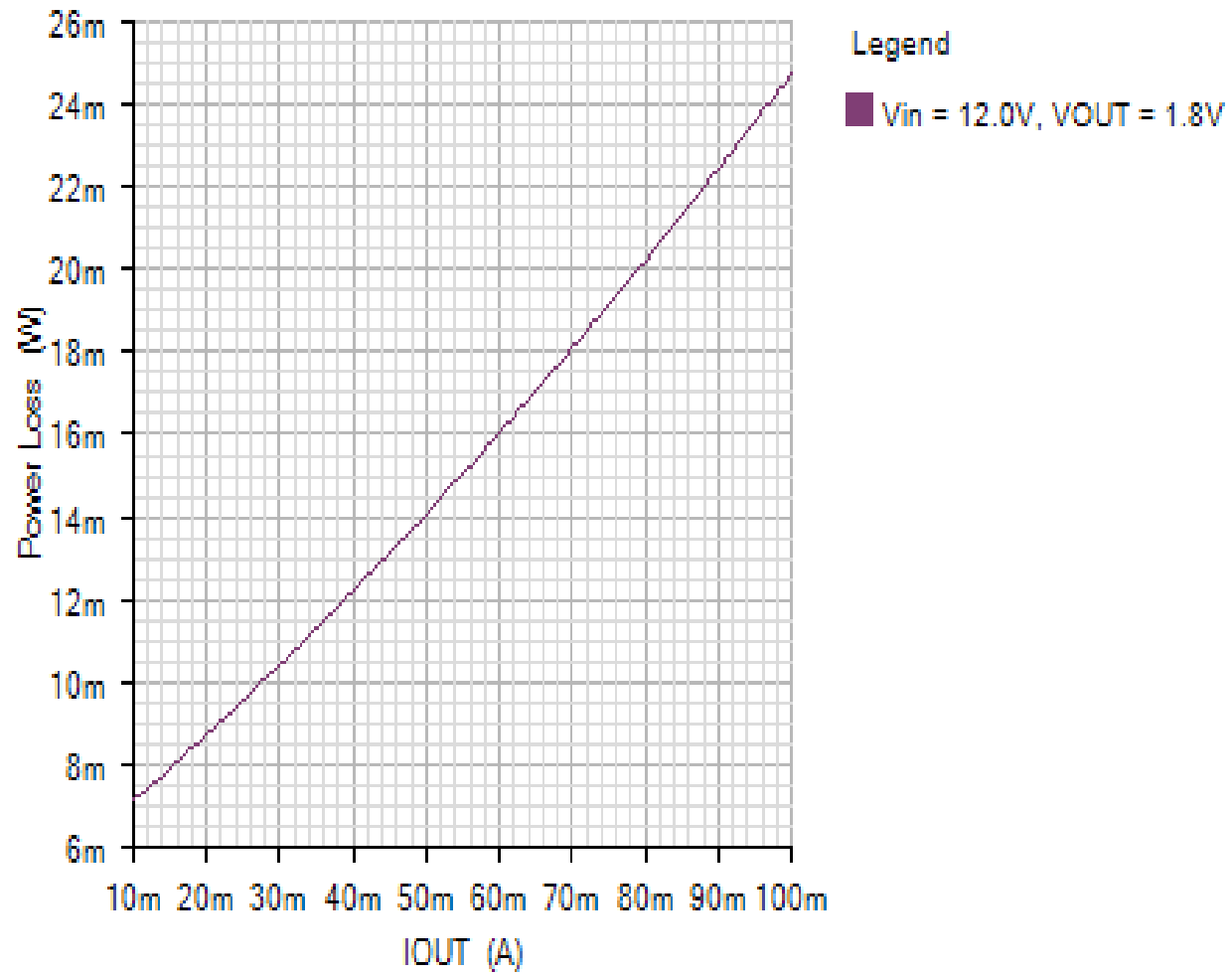
EFFICIENCY_PLOT

Default



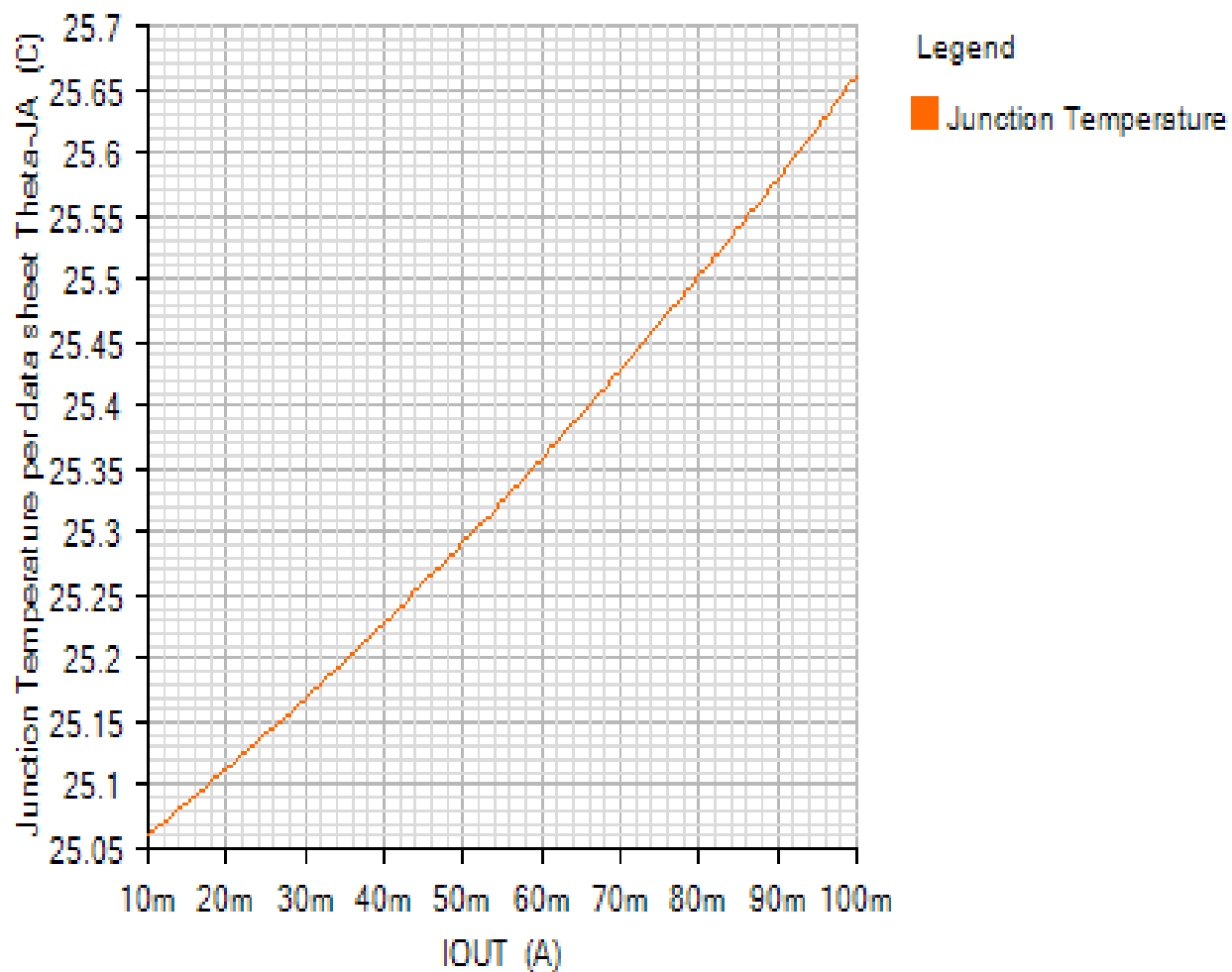
POWER_LOSS_PLOT

Default

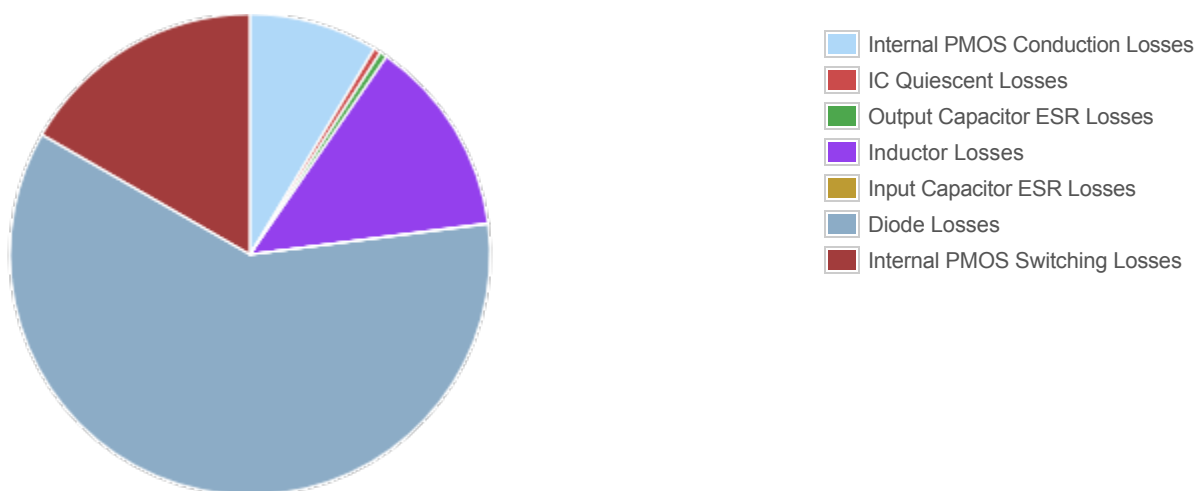


JUNCTION_TEMPERATURE_PLOT

Default



Losses



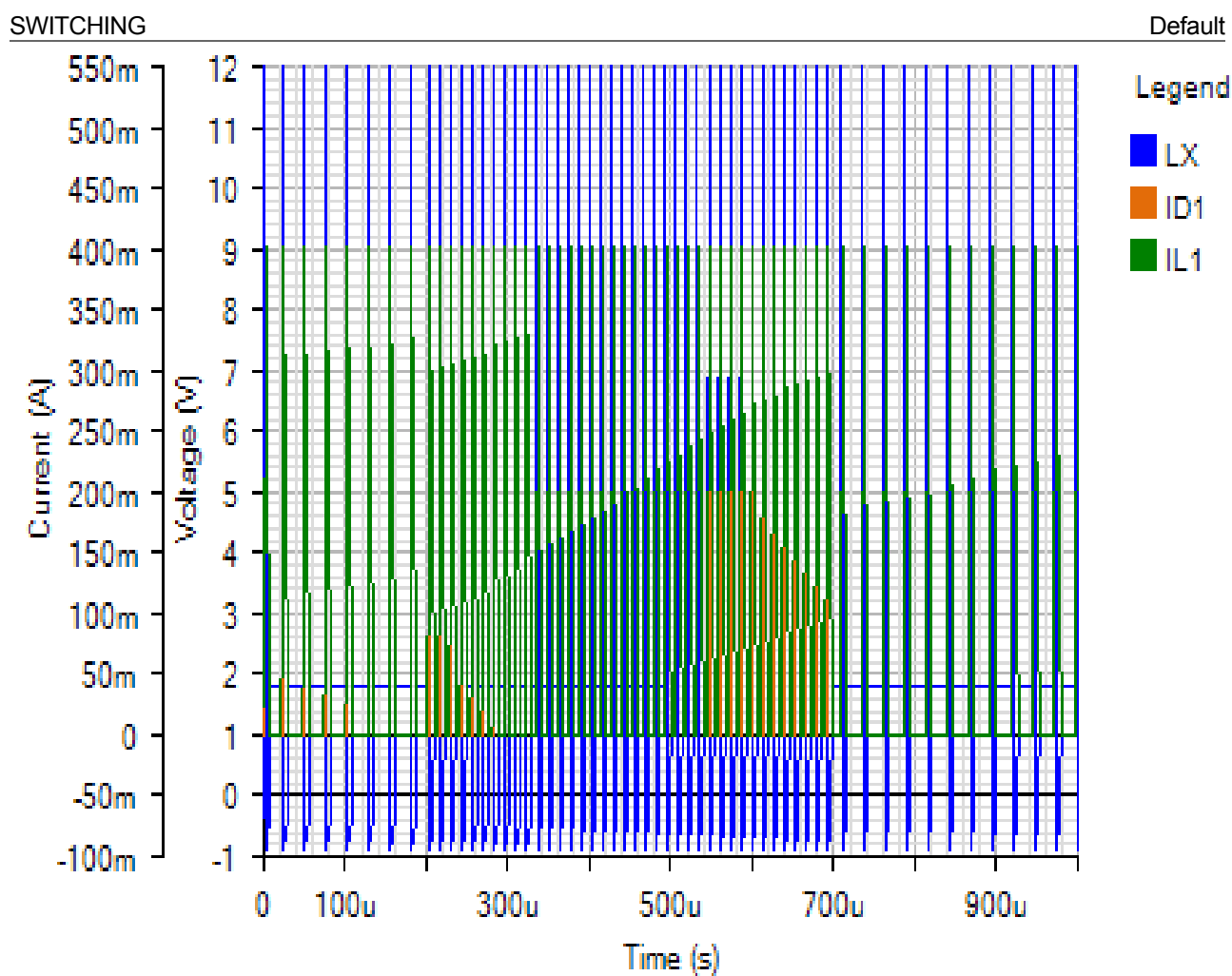
Component

Loss (W)

% of total

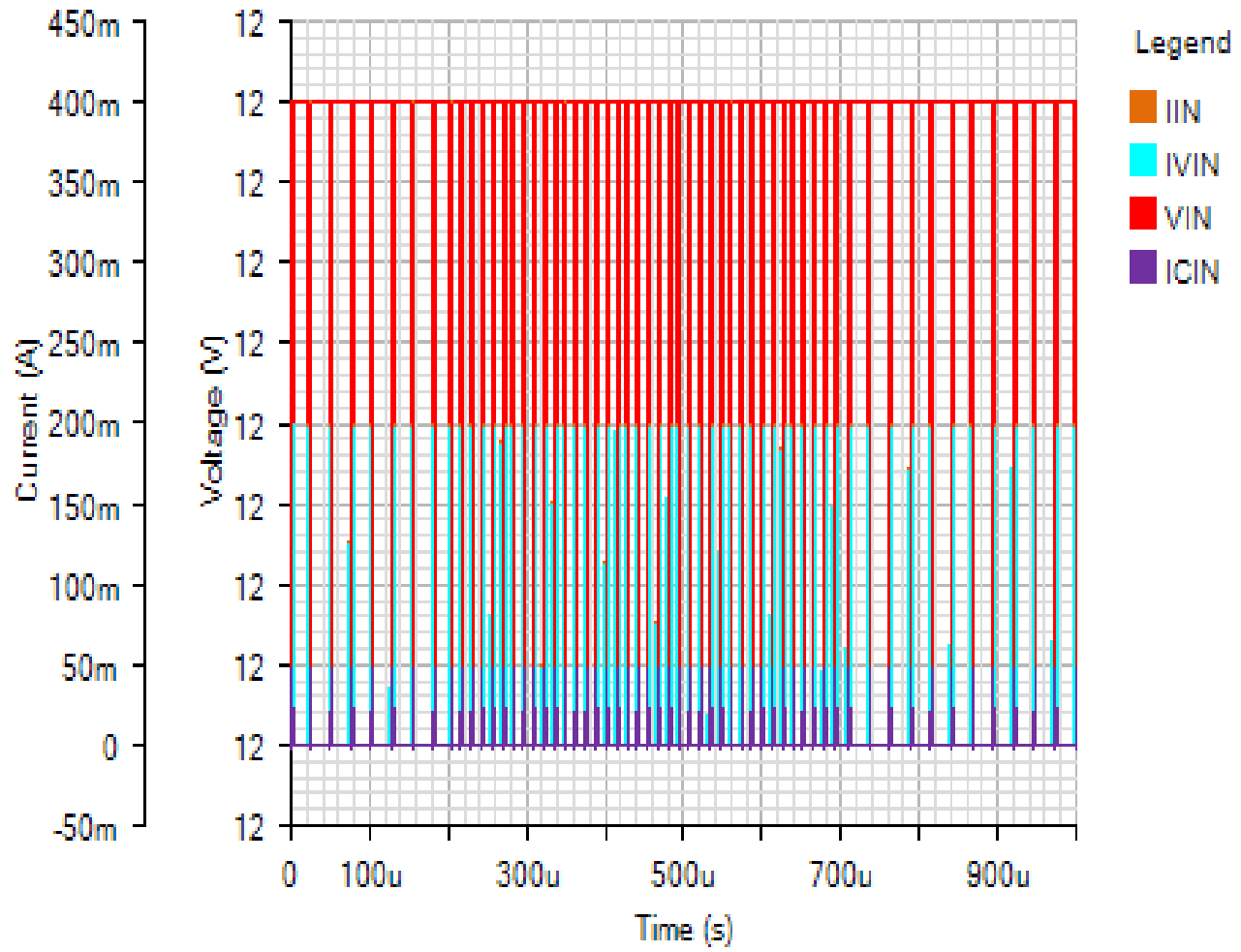
Component	Loss (W)	% of total
Internal PMOS Conduction Losses	0.086539	8.7
IC Quiescent Losses	0.004808	0.5
Output Capacitor ESR Losses	0.004868	0.5
Inductor Losses	0.133014	13.3
Input Capacitor ESR Losses	0.000456	0
Diode Losses	0.603353	60.3
Internal PMOS Switching Losses	0.166963	16.7
Total	1	100

Load Step - Tue Nov 20 2018 13:47:03



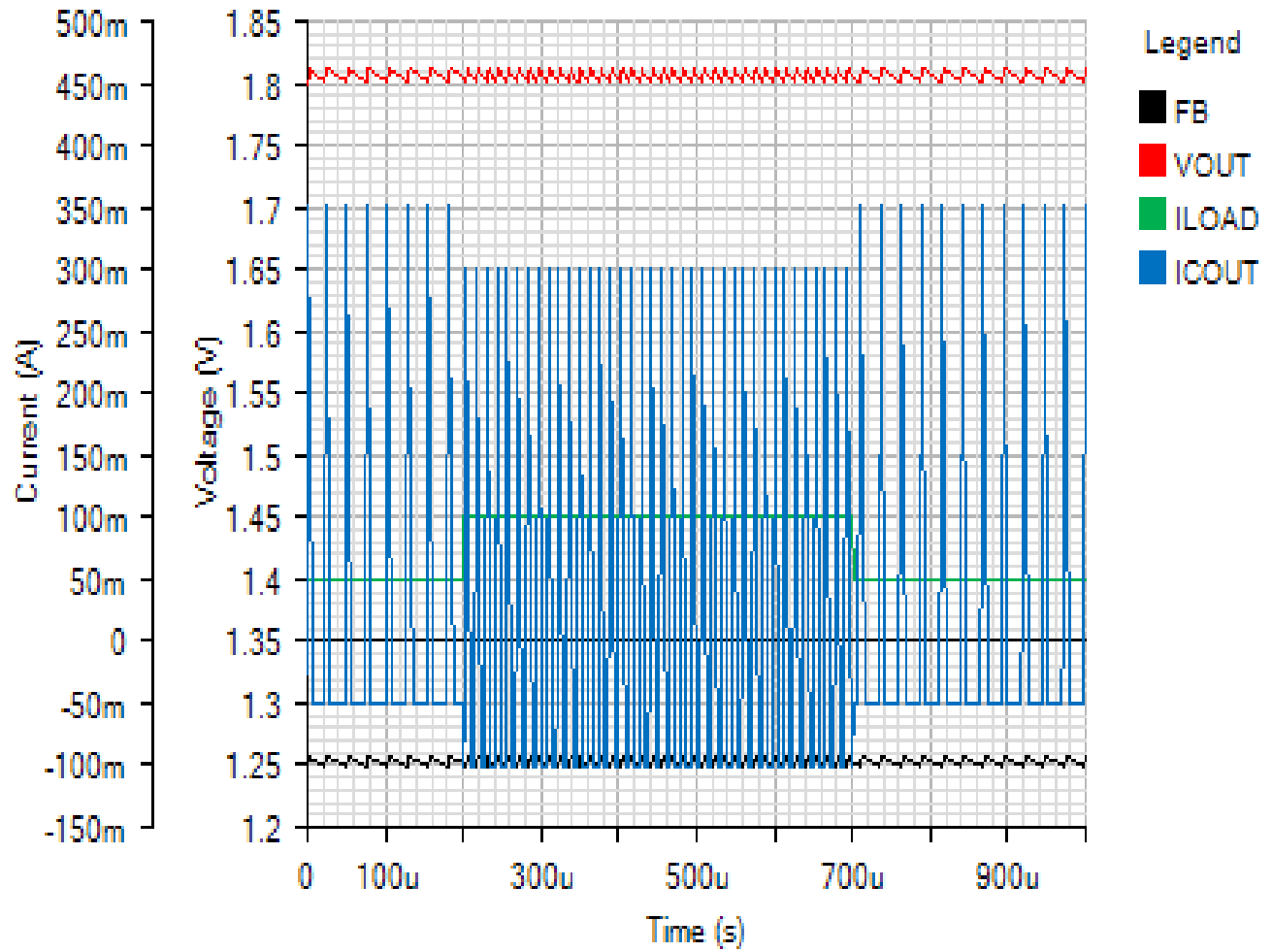
INPUT

Default



OUTPUT

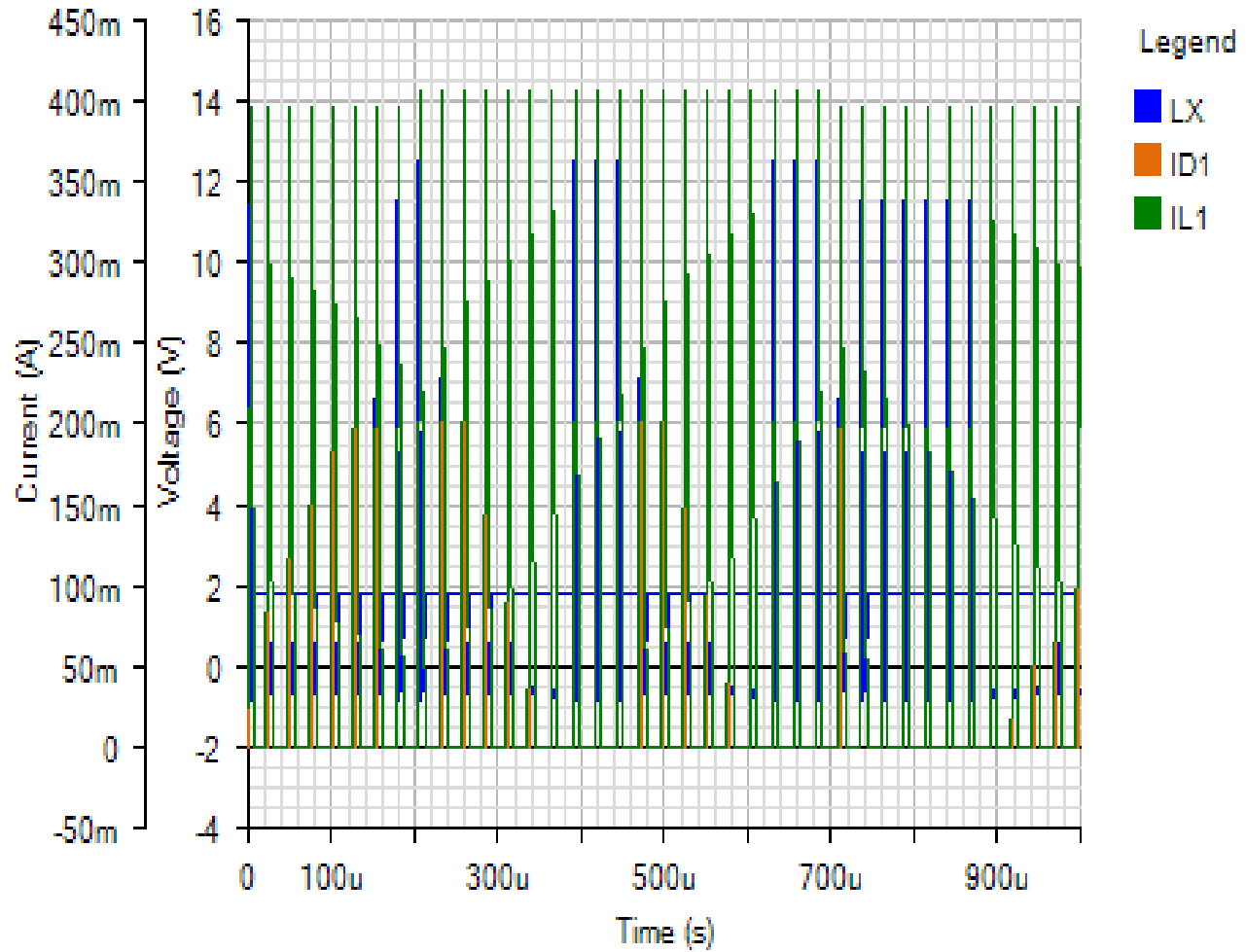
Default



Line Transient - Tue Nov 20 2018 13:47:03

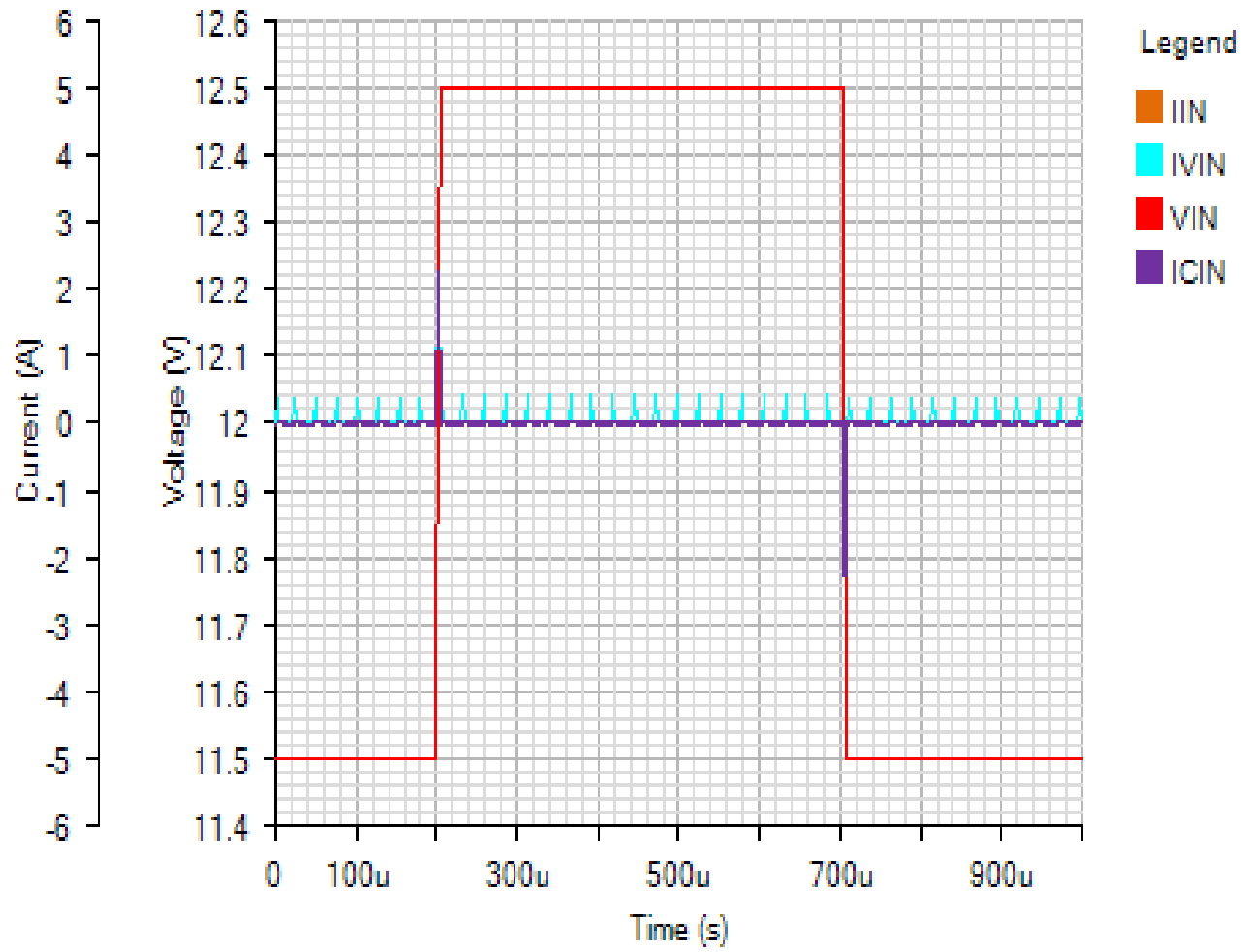
SWITCHING

Default



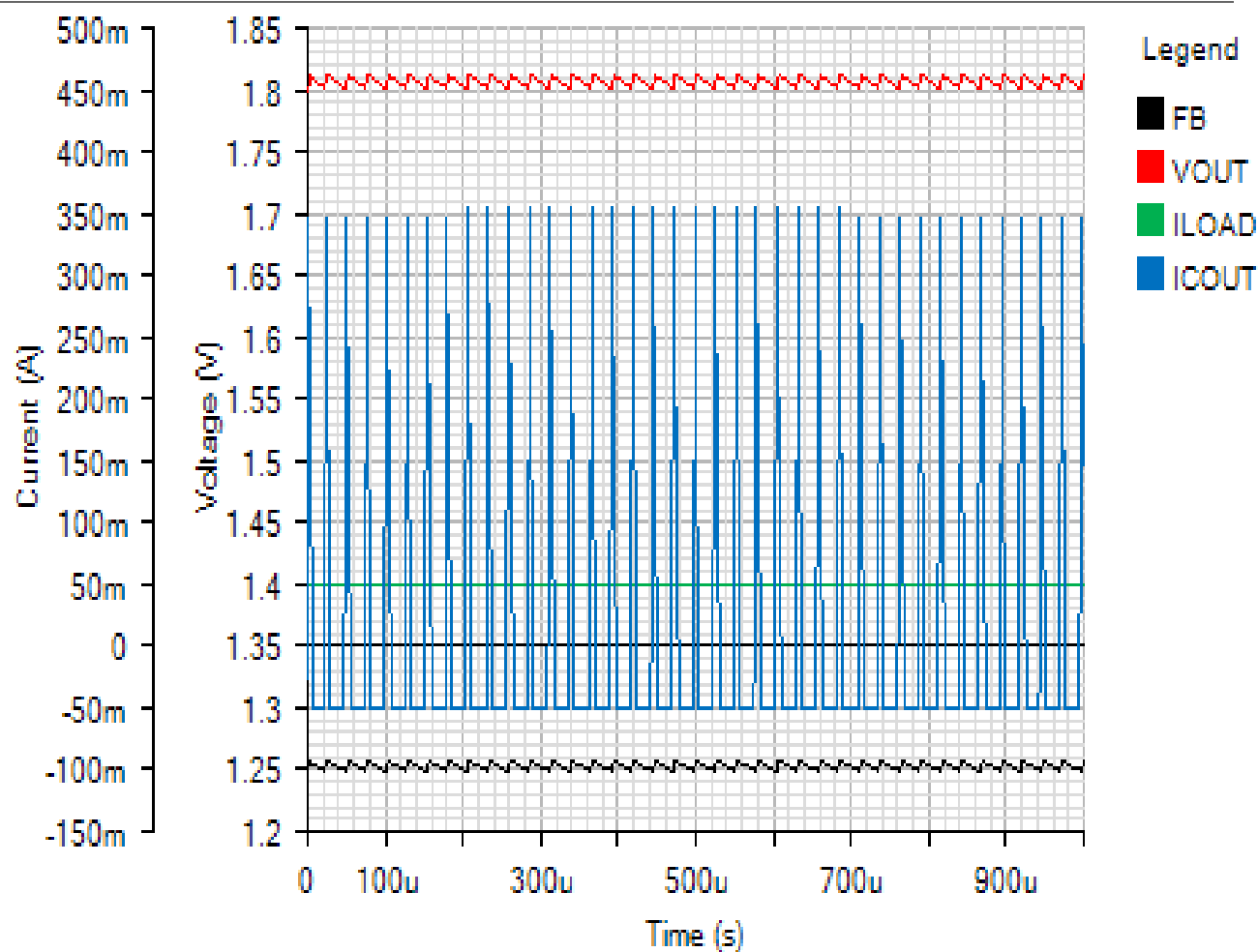
INPUT

Default

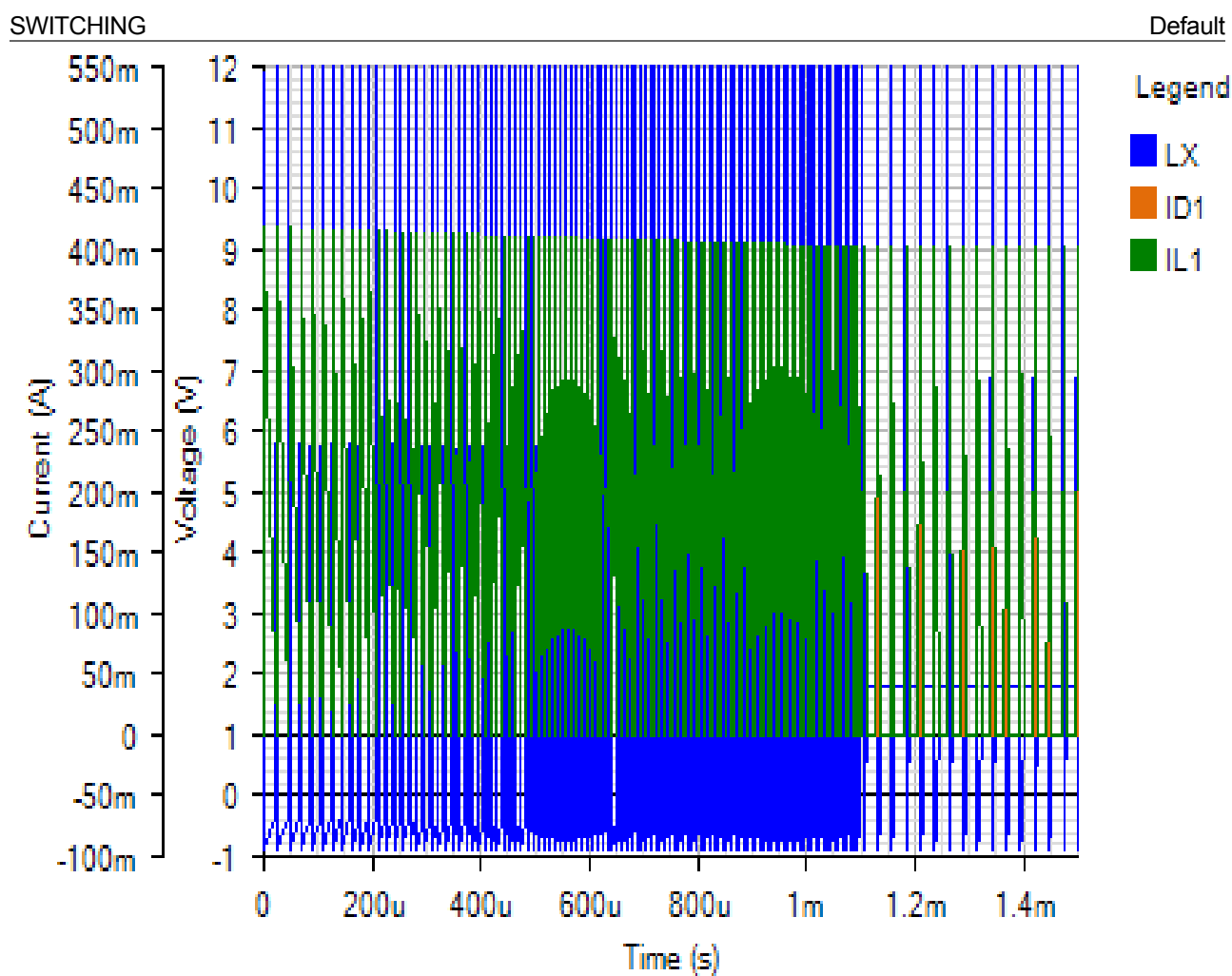


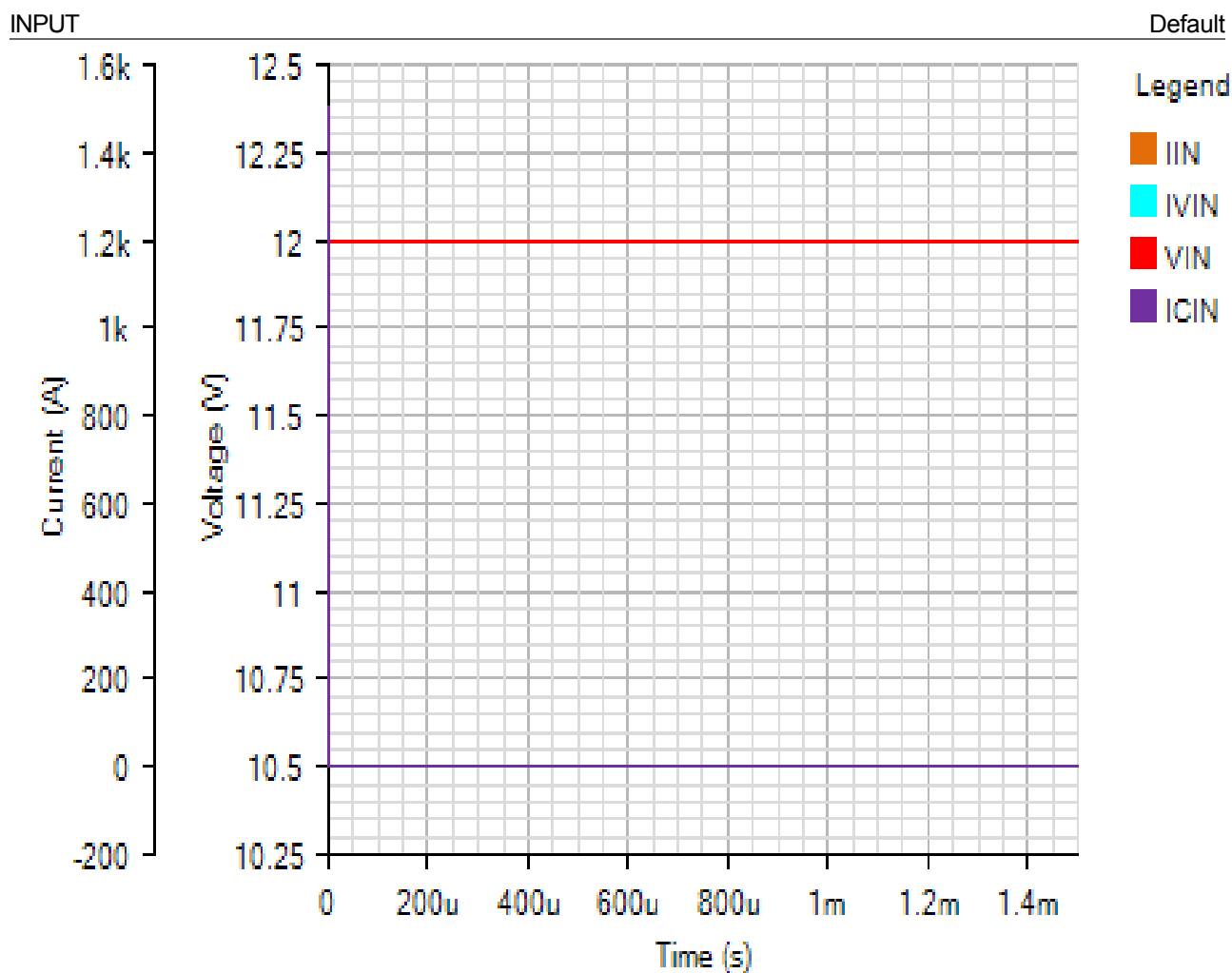
OUTPUT

Default



Start Up - Tue Nov 20 2018 13:47:03





OUTPUT

Default

