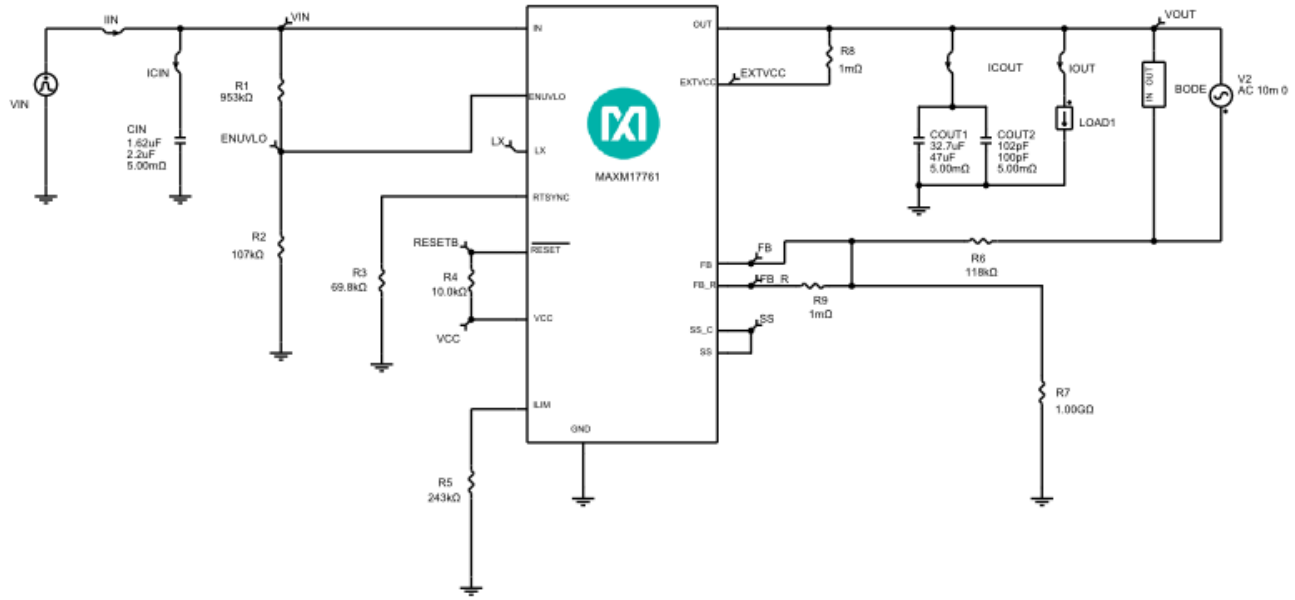
Initial Design

1.0

Design Requirements

Parameter	Value
Minimum Input Voltage	10V
Maximum Input Voltage	76V
Nominal Input Voltage	24V
Percentage Input Steady-State Ripple	5%
Input Undervoltage Lockout Level	9.6V
Output Voltage	5V
Load Current	1A
Load Step Start Current	1A
Load Step Current	0.75A
Load Step Edge Rate	10A/us
Feedback Network Bottom Resistor	Internal
Switching Freuency	537kHz
Ambient Temperature	25°C

Schematic



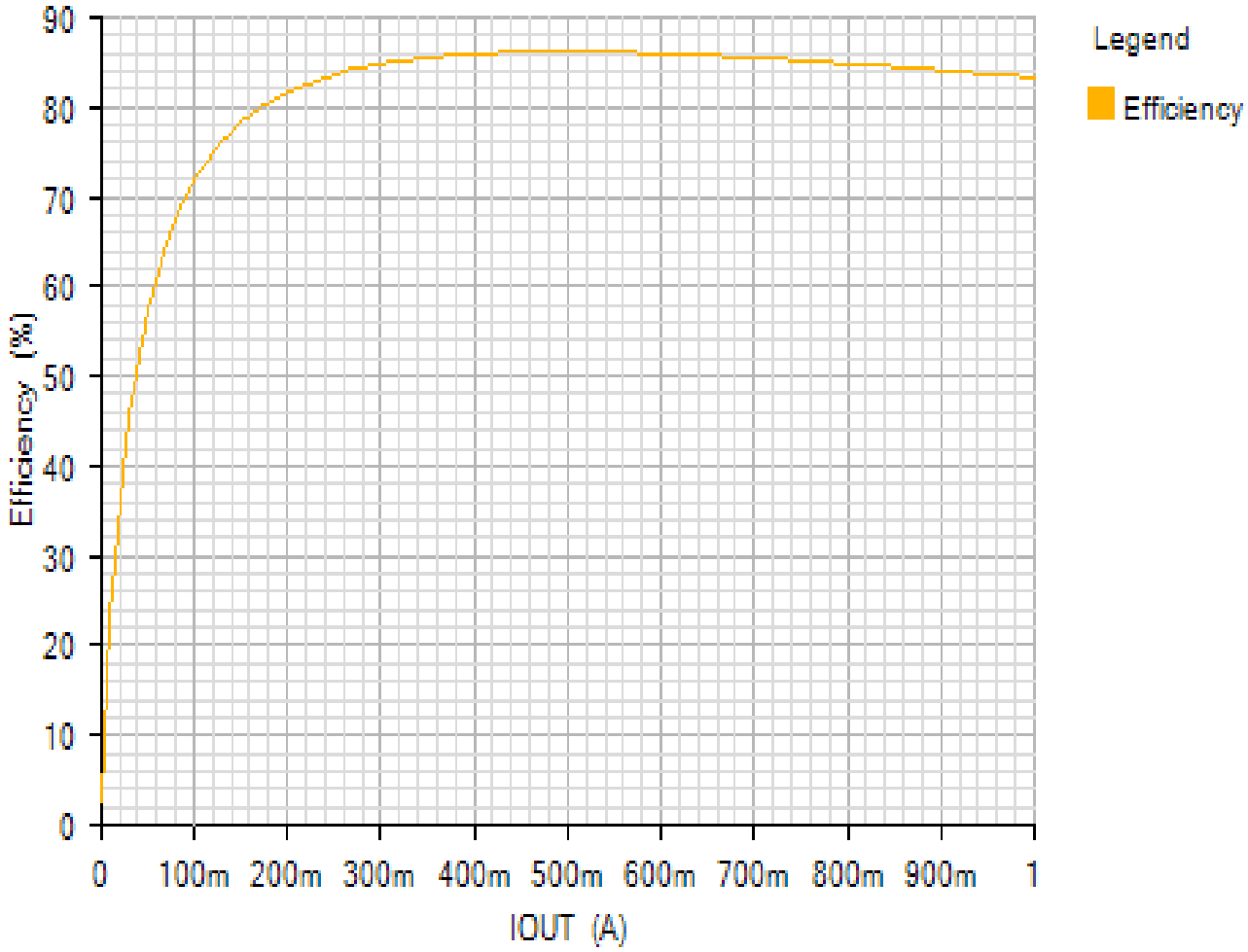
BOM

Ref	Qty	Part Number	Manufacturer	Description
U1	1	MAXM17761ALI#	User-Defined	IC
CIN	1	C1210C225K1RAC	Kemet	Cap Ceramic 2.2uF 100V X7R 10% SMD 1210 125C Bulk
COUT1	1	GRM32ER61A476ME20L	Murata	Cap Ceramic 47uF 10V X5R 20% SMD 1210 85C Embossed T/R
COUT2	1	CGA1A2X7R1H101K030BA	TDK	Cap Ceramic 100pF 50V 0201 125C
R1	1	ERJ2RKF9533X	Panasonic	Res Thick Film 0402 953K Ohm 1% 0.1W(1/10W) ±100ppm/°C Pad SMD Automotive T/R
R2	1	ERJ3EKF1073V	Panasonic	Res Thick Film 0603 107K Ohm 1% 0.1W(1/10W) ±100ppm/°C Pad SMD Automotive T/R
R3	1	ERJ3EKF6982V	Panasonic	Res Thick Film 0603 69.8K Ohm 1% 0.1W(1/10W) ±100ppm/°C Pad SMD Automotive T/R
R4	1	ERJ2RKF1002X	Panasonic	Res Thick Film 0402 10K Ohm 1% 0.1W(1/10W) ±100ppm/°C Pad SMD Automotive T/R
R5	1	ERJ2RKF2433X	Panasonic	Res Thick Film 0402 243K Ohm 1% 0.1W(1/10W) ±100ppm/°C Pad SMD Automotive T/R
R6	1	ERJ3EKF1183V	Panasonic	Res Thick Film 0603 118K Ohm 1% 0.1W(1/10W) ±100ppm/°C Pad SMD Automotive T/R

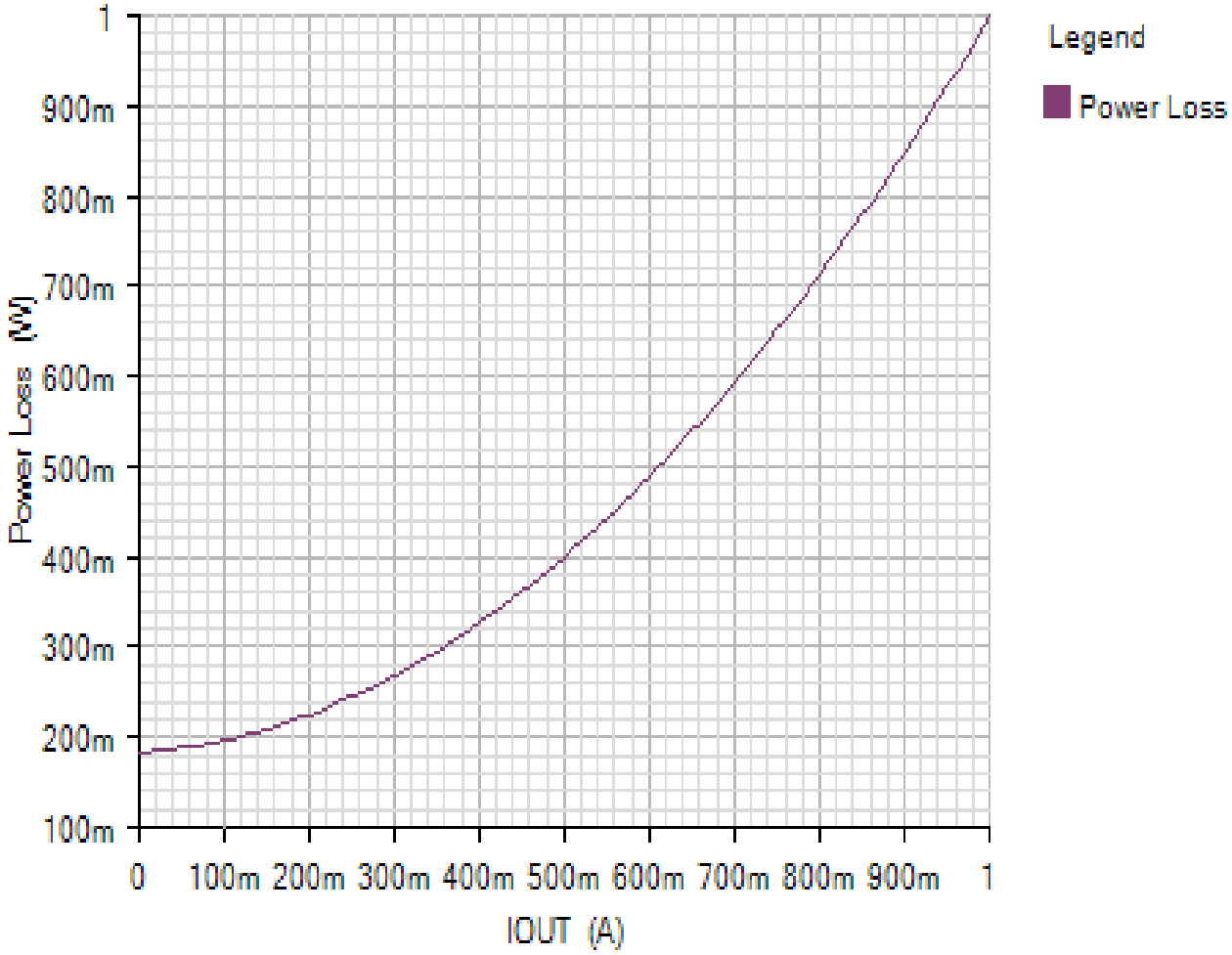
Simulation Results

Efficiency - Sun Nov 25 2018 21:17:31

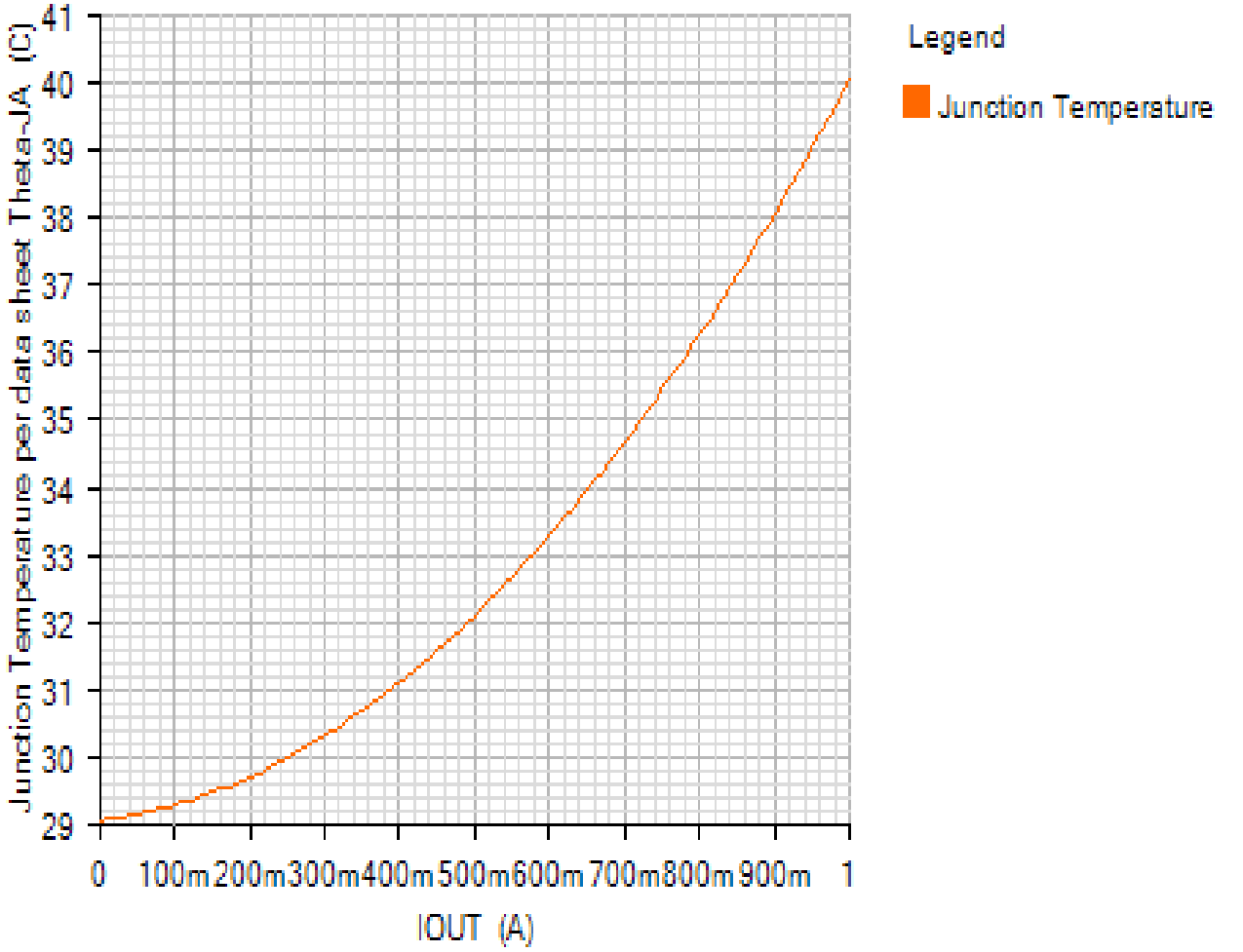
EFFICIENCY_PLOT Default



POWER_LOSS_PLOT Default



JUNCTION_TEMPERATURE_PLOT Default



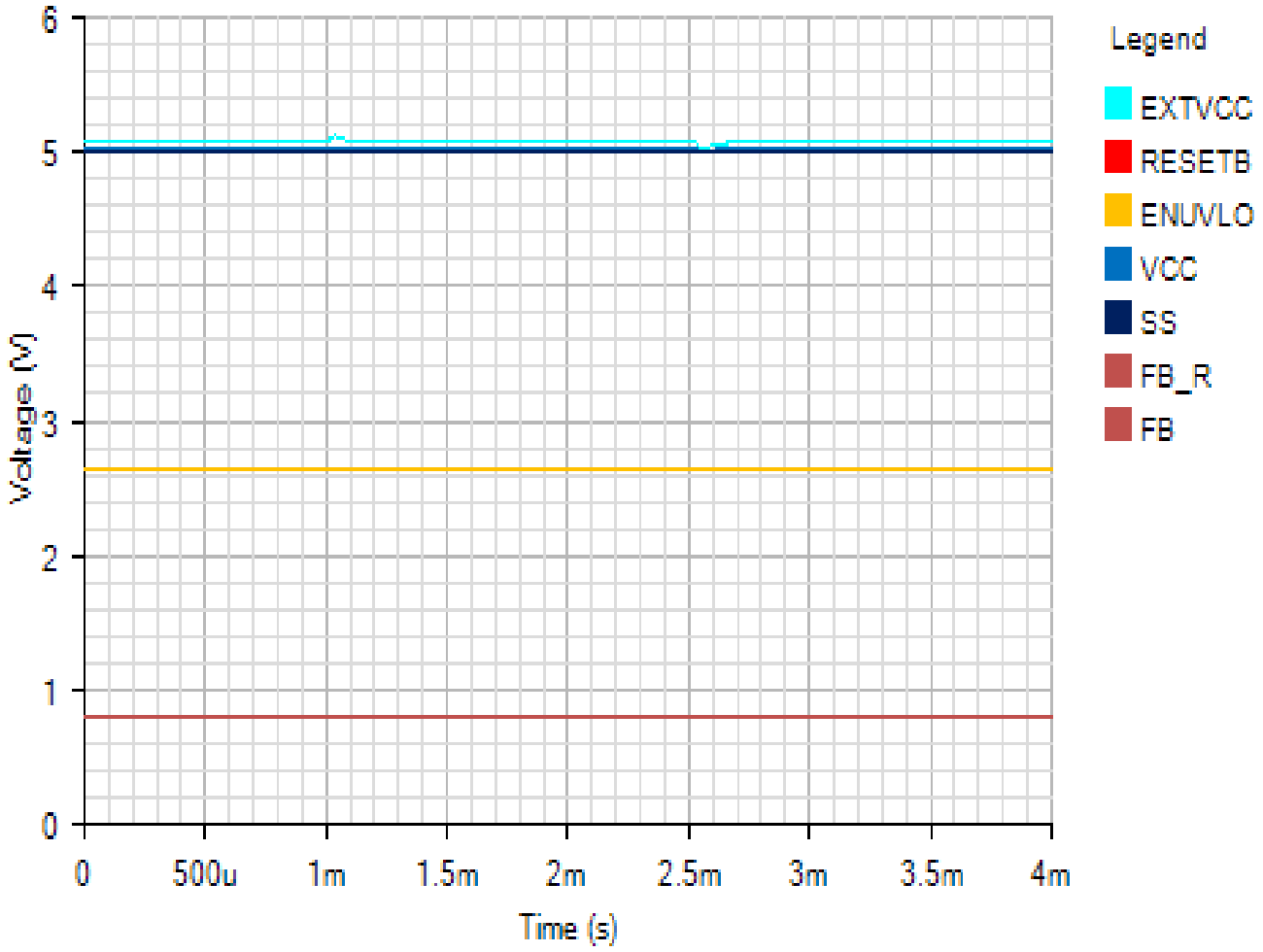
Losses

Component	Loss (W)	% of total

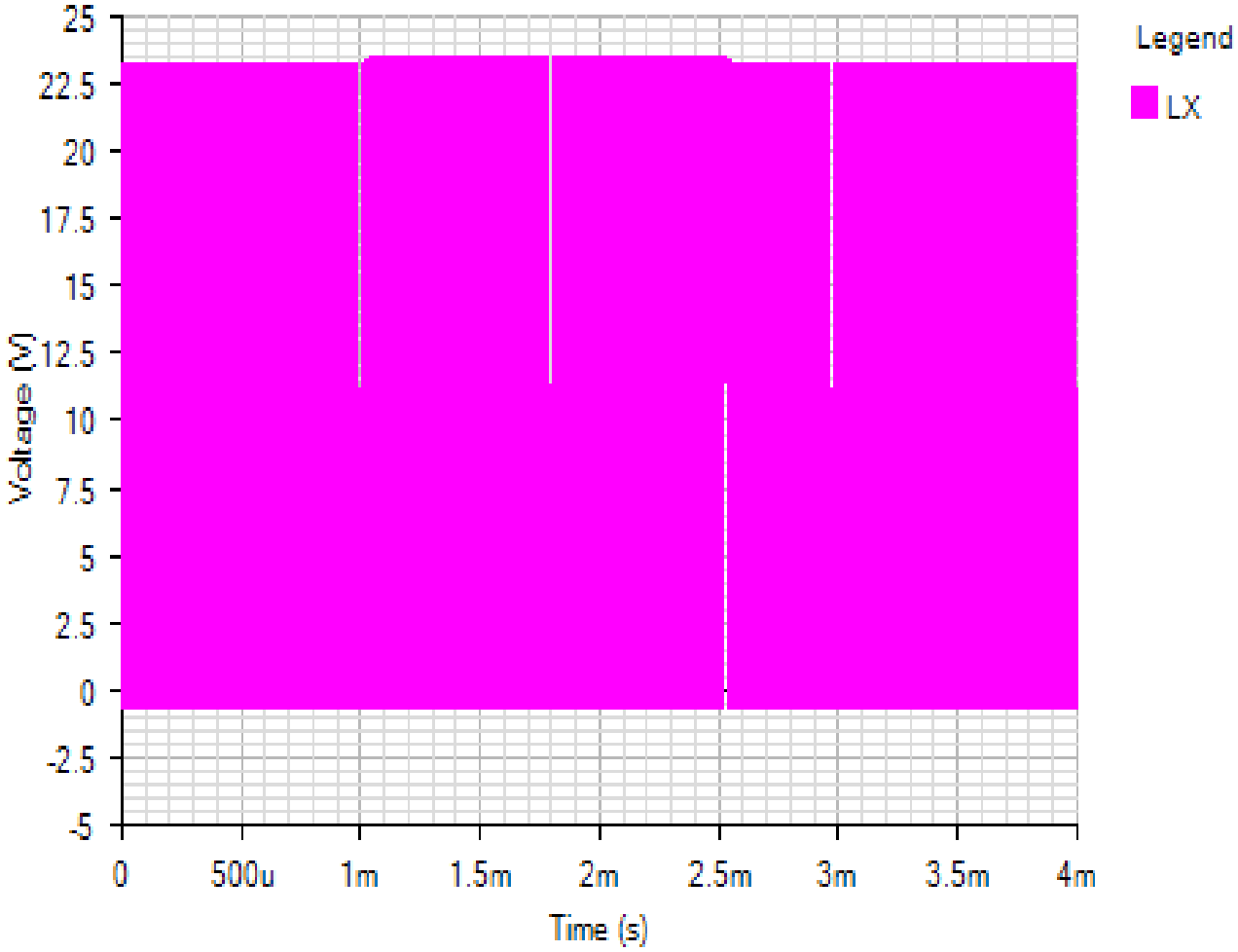
Component	Loss (W)	% of total
Total	0	100

Load Step - Sun Nov 25 2018 21:17:31

IC Default



SWITCHING Default



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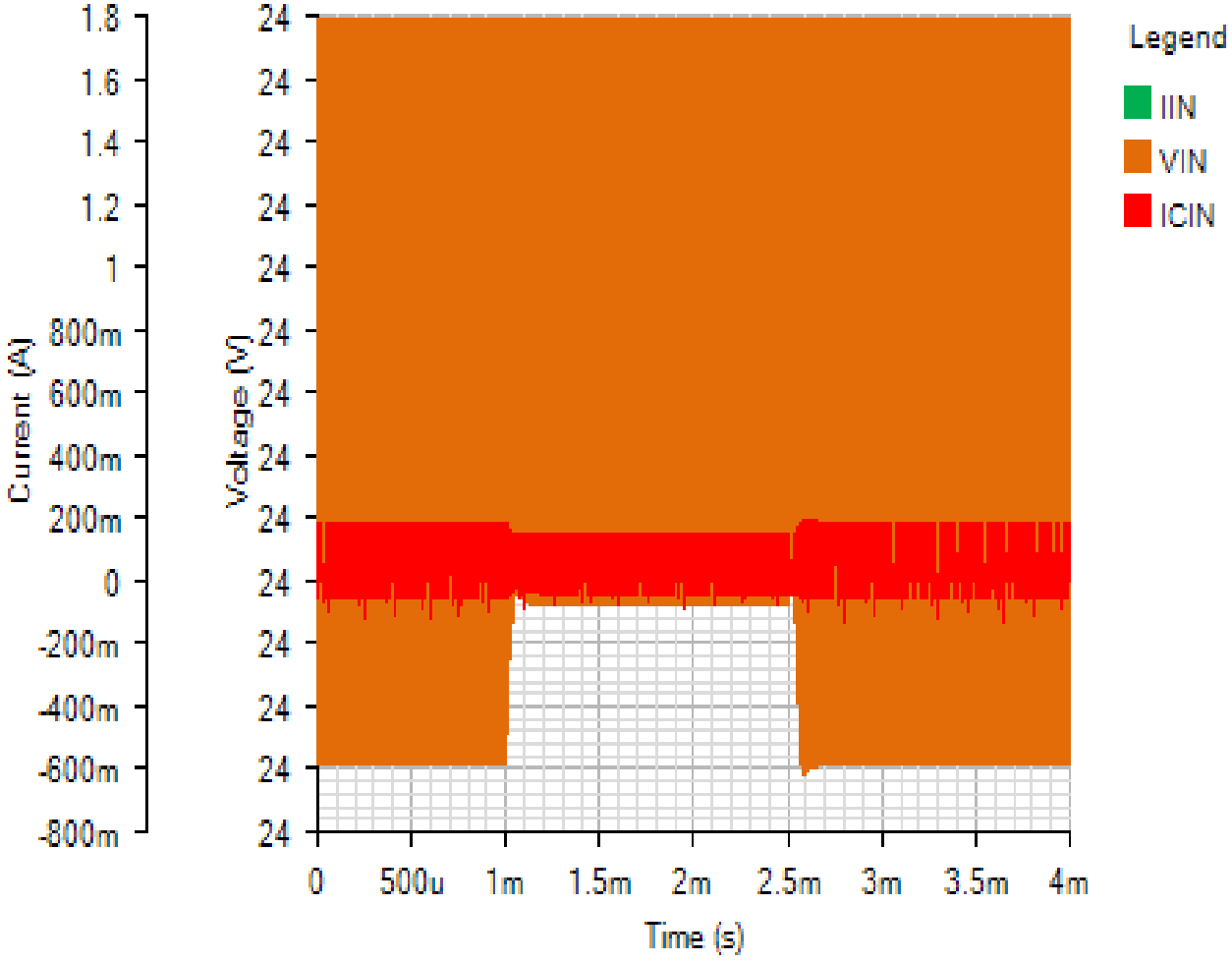

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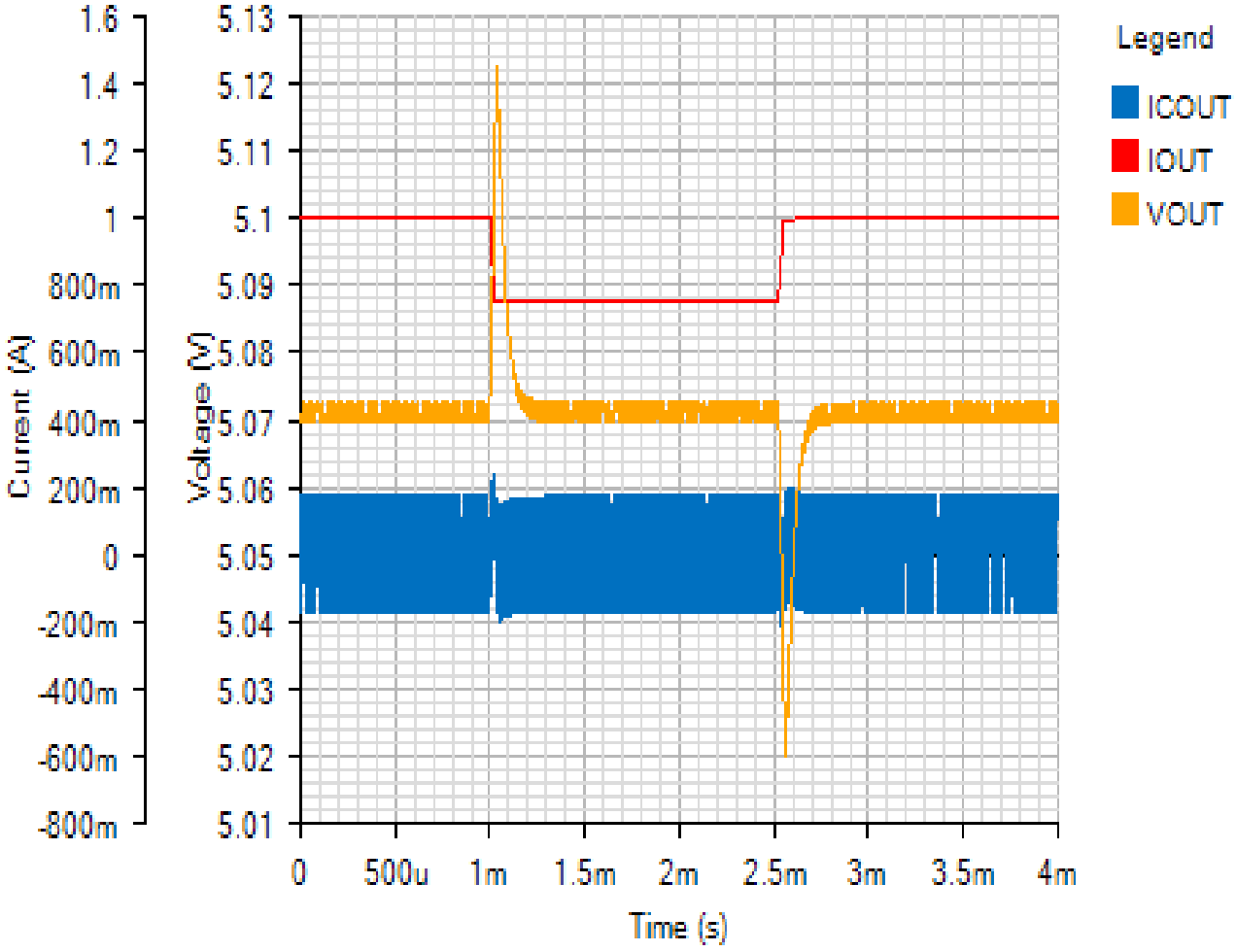

Steady State - Sun Nov 25 2018 21:17:31

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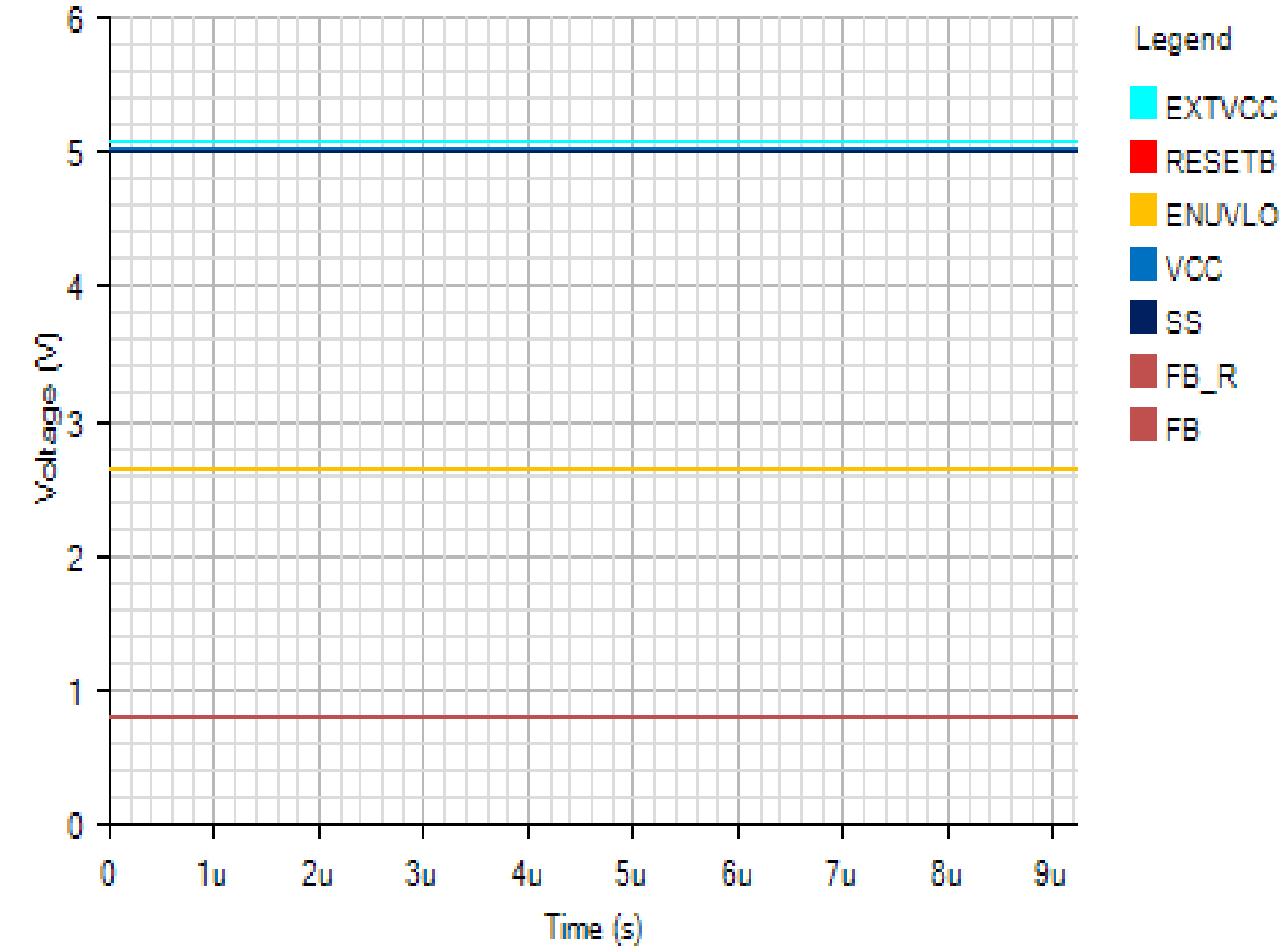

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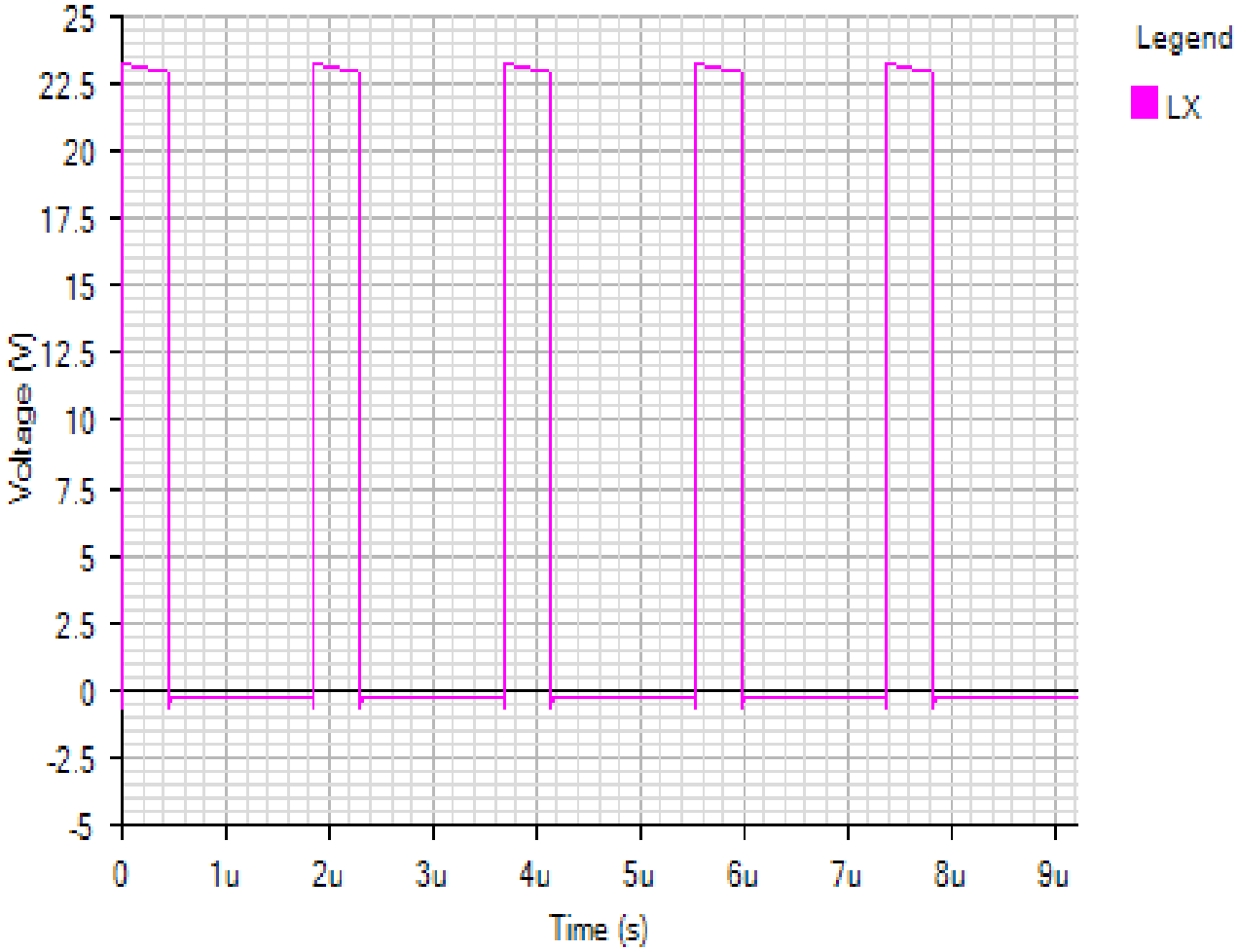

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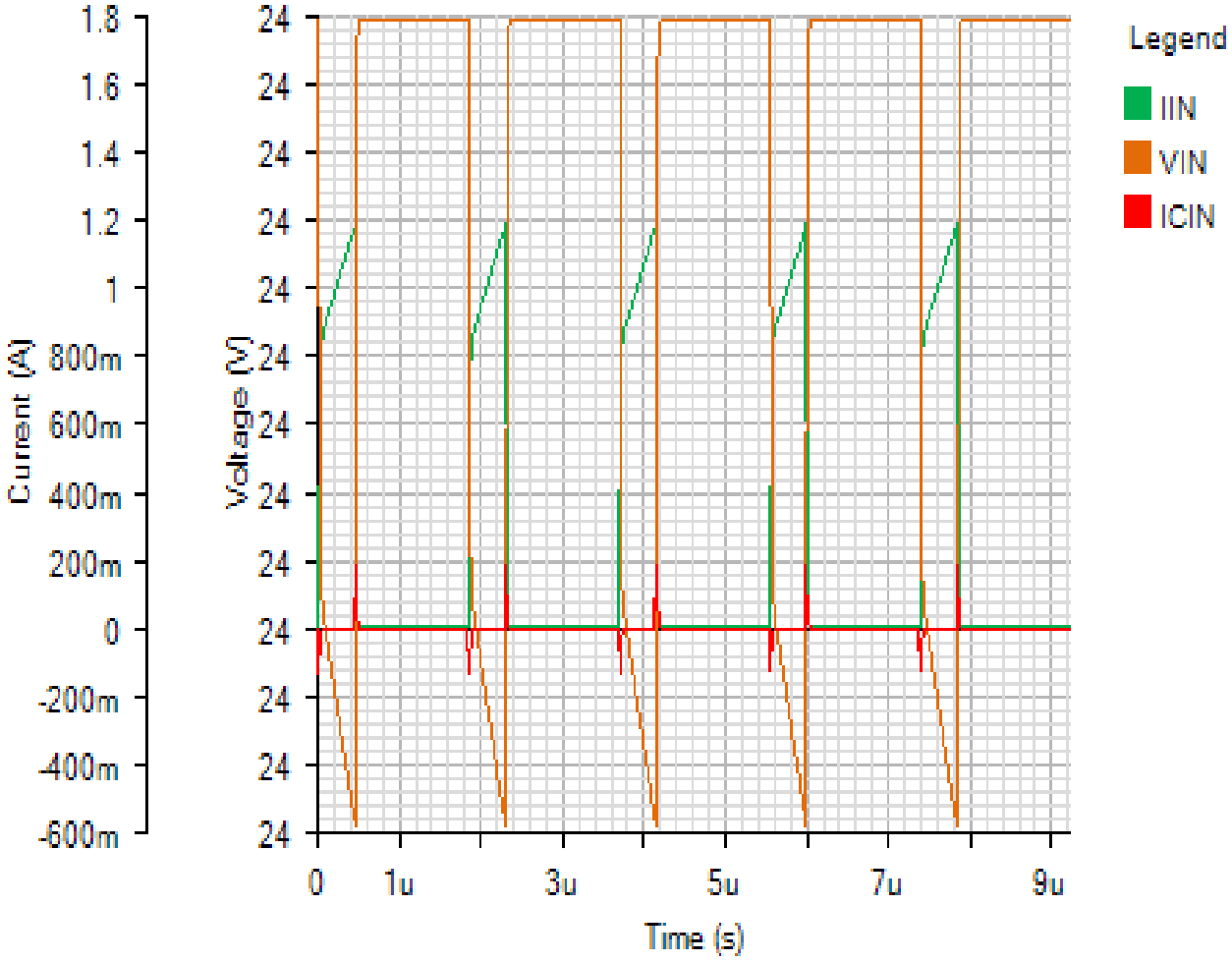

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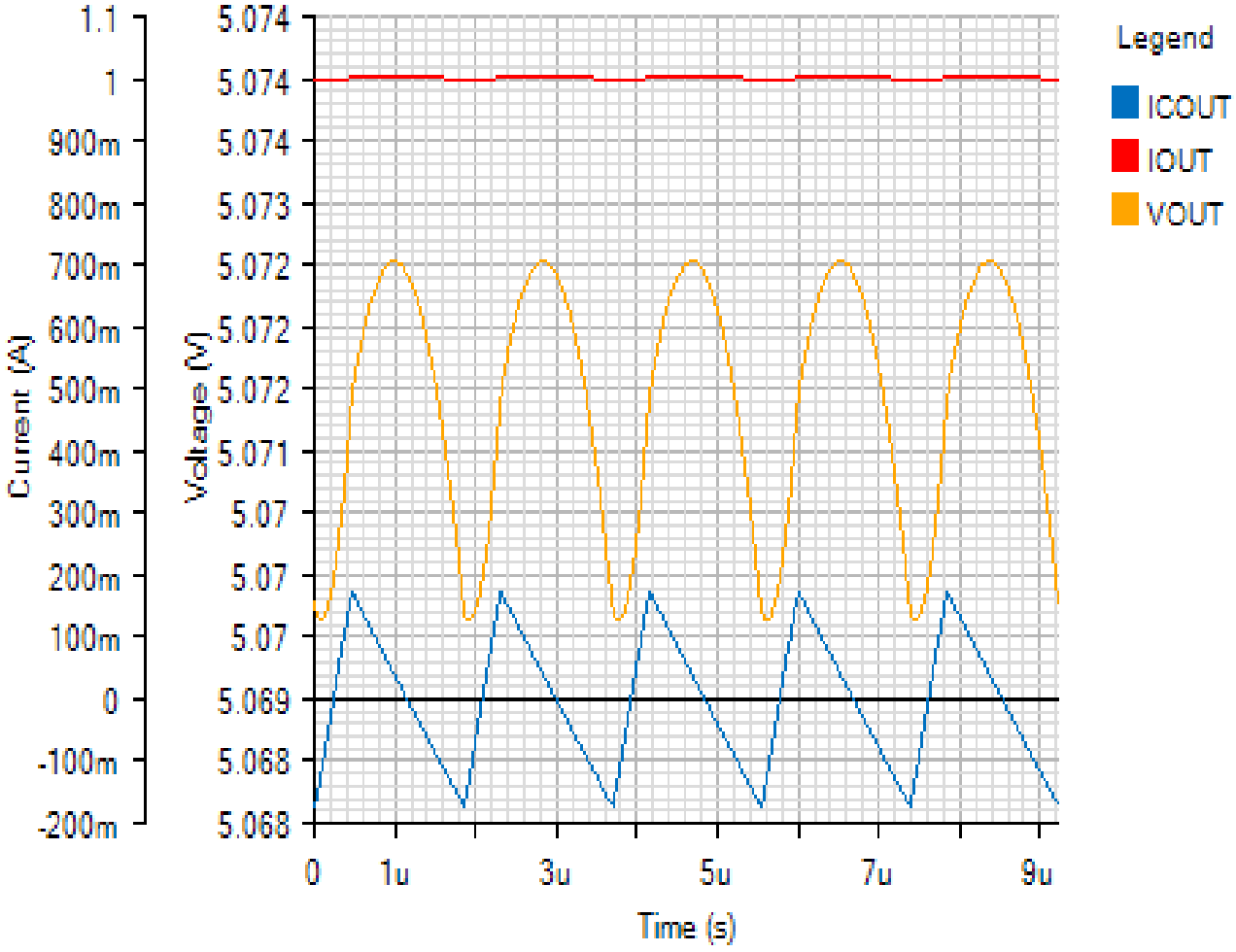

Start Up - Sun Nov 25 2018 21:17:31

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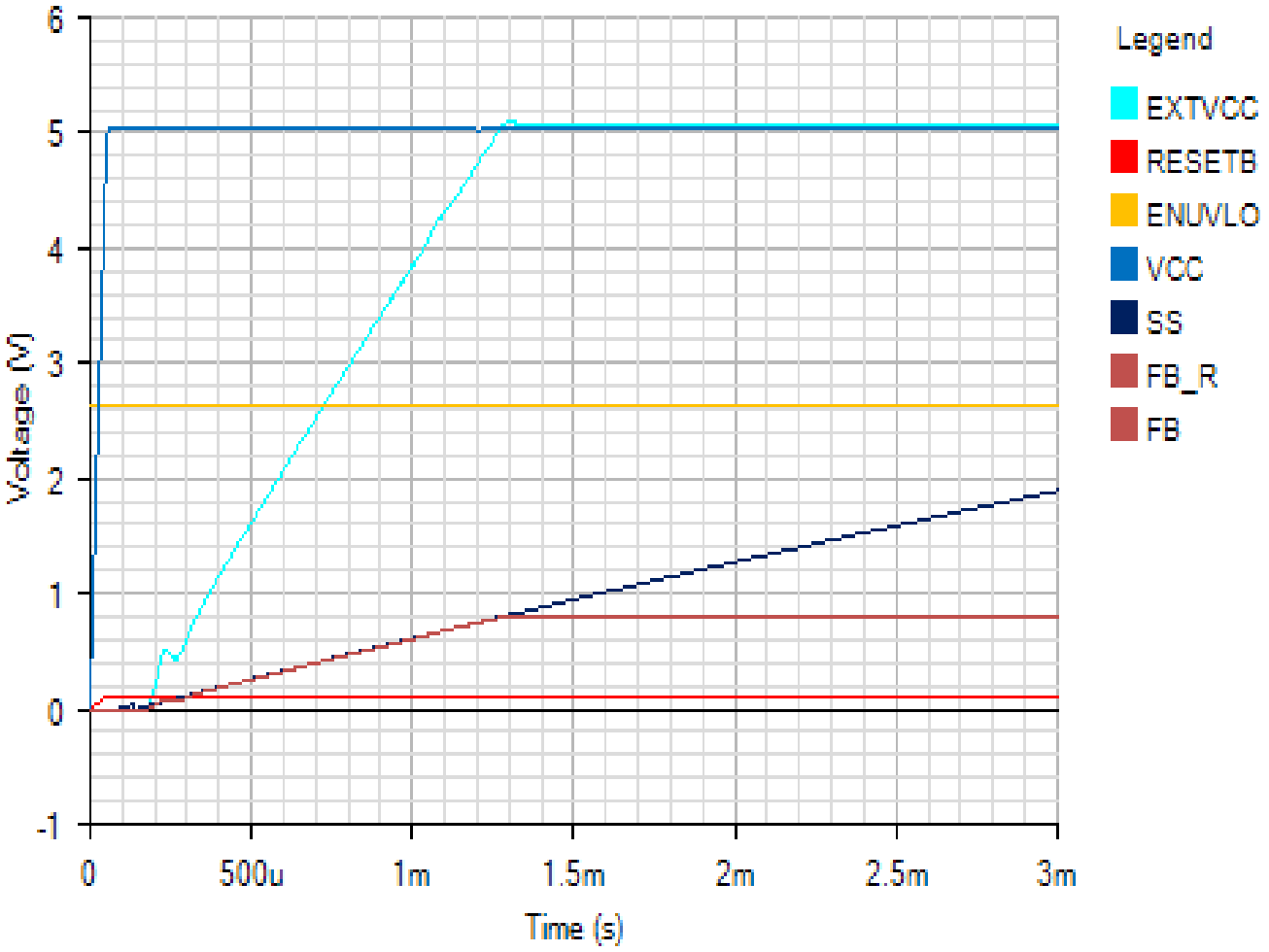

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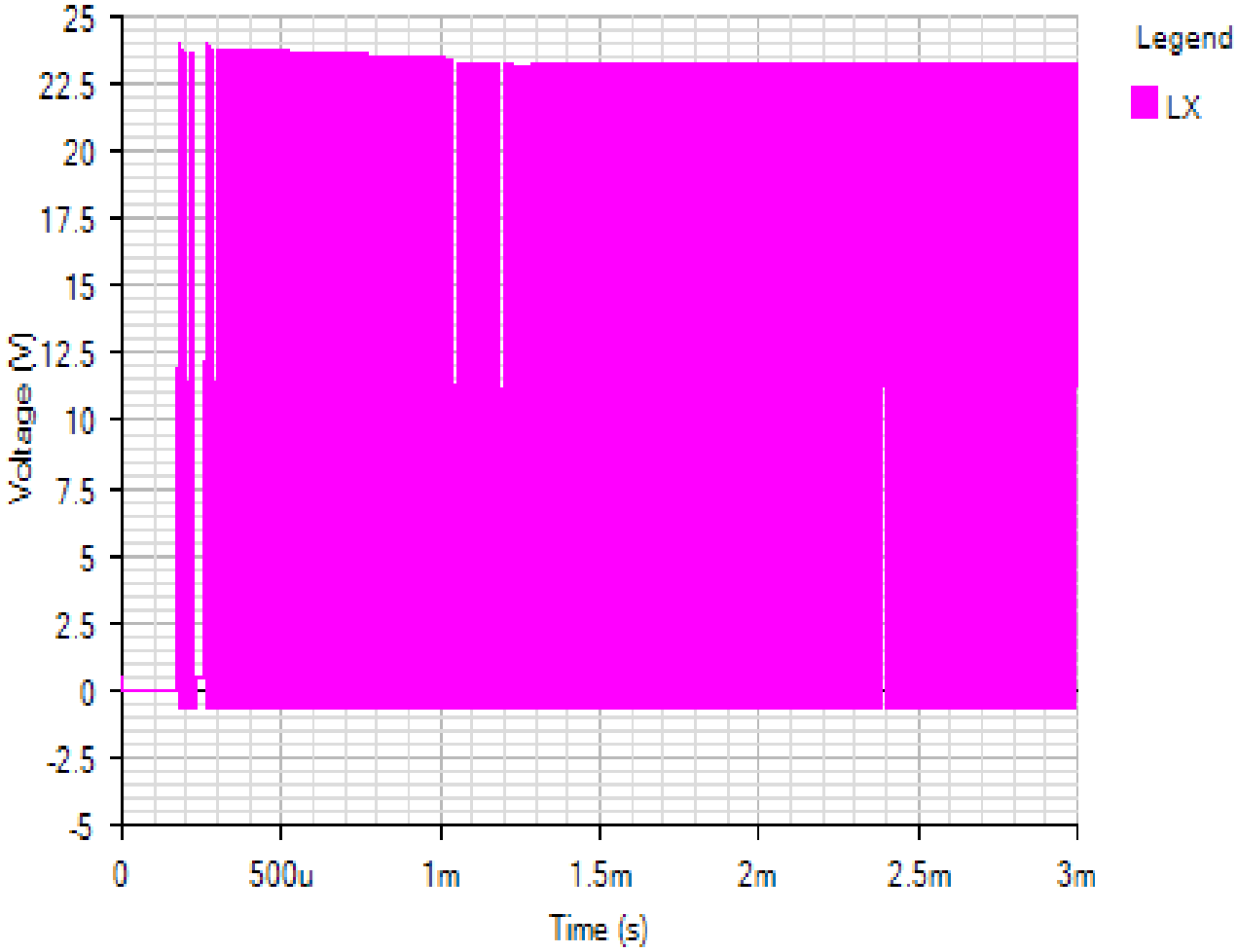

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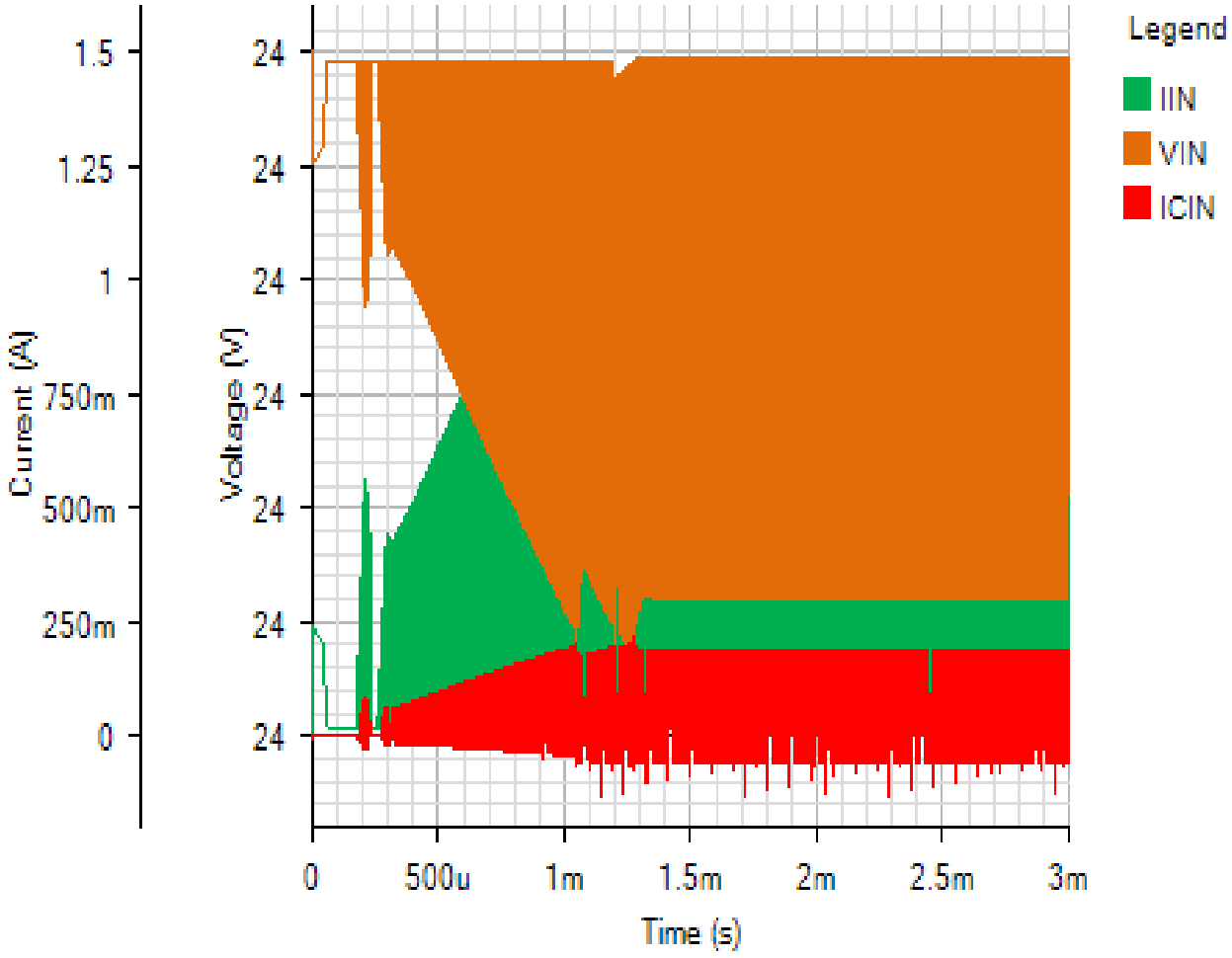

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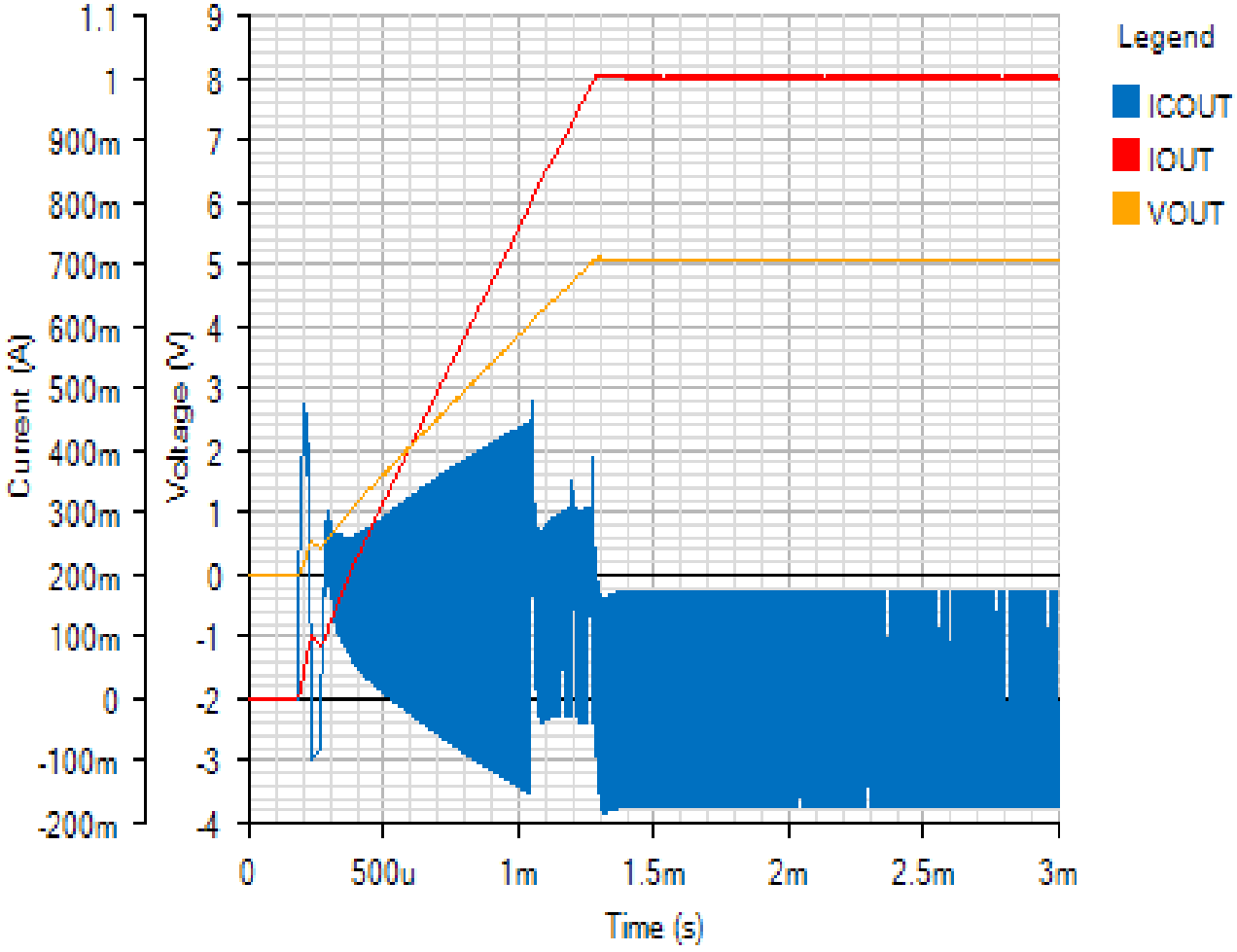
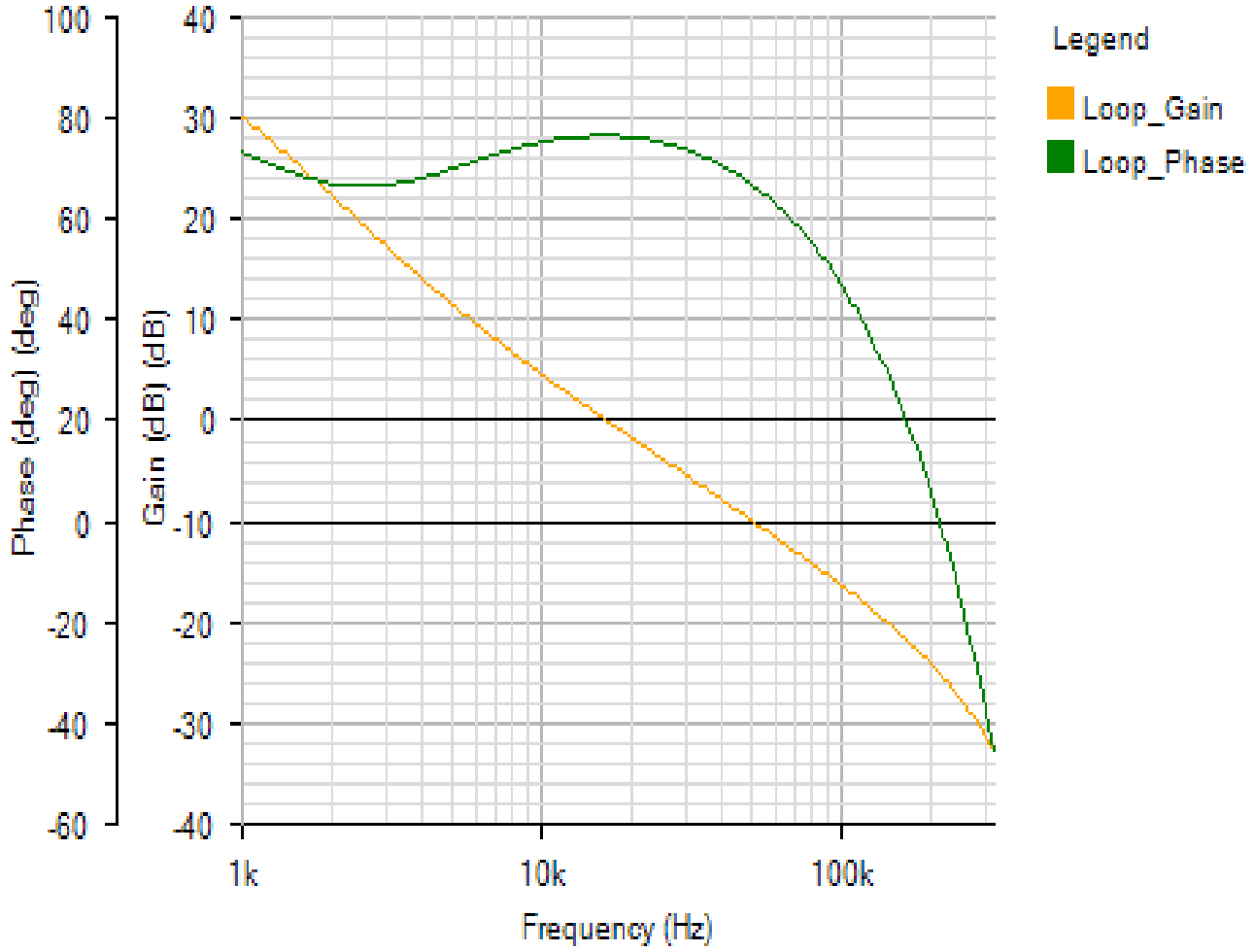
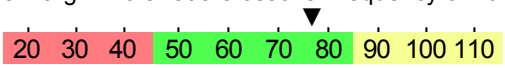


AC Loop - Sun Nov 25 2018 21:17:31

BODE Default



Phase Margin: 76.5° at a crossover frequency of 16.5kHz



Line Transient - Sun Nov 25 2018 21:17:31

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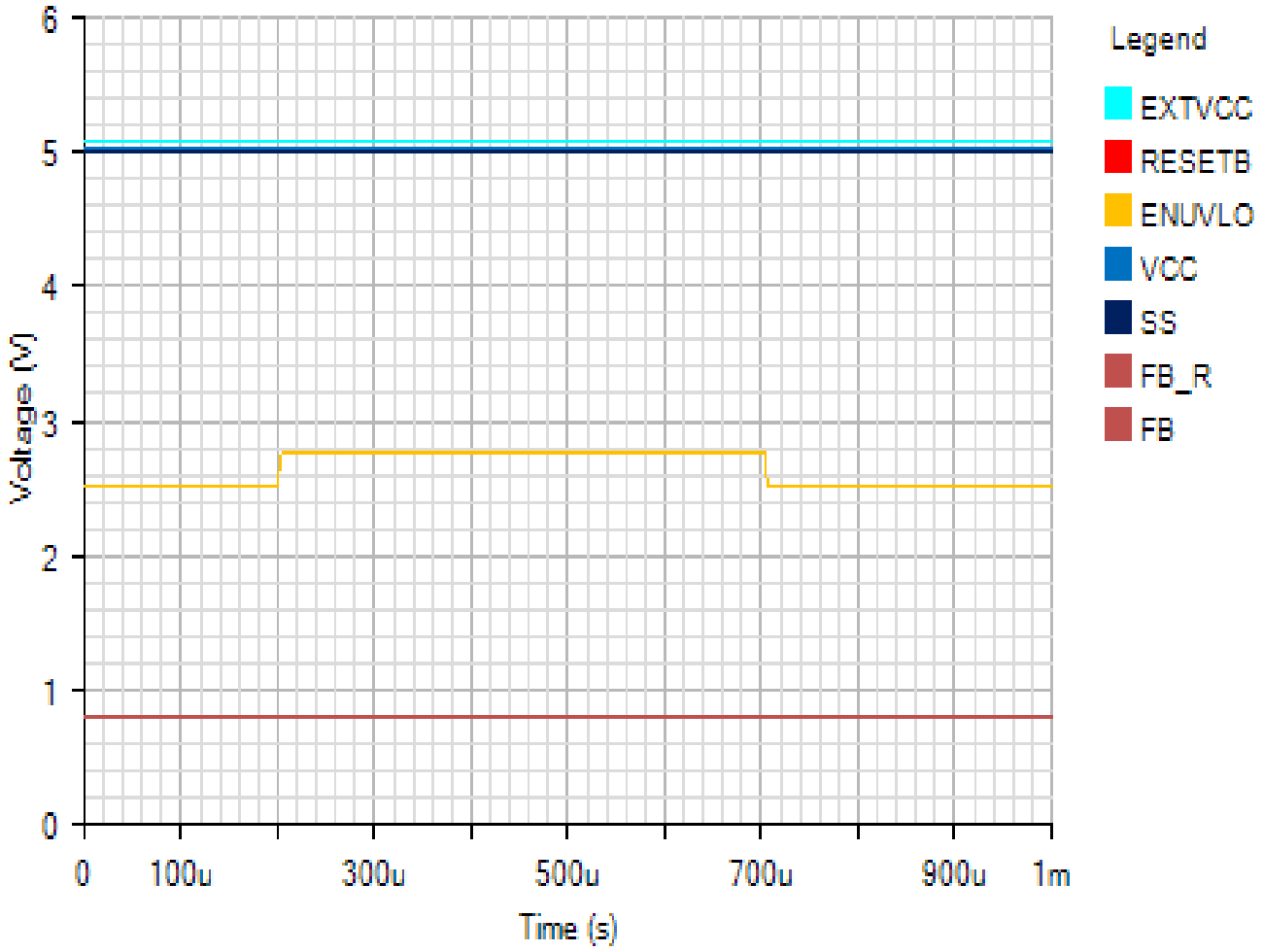
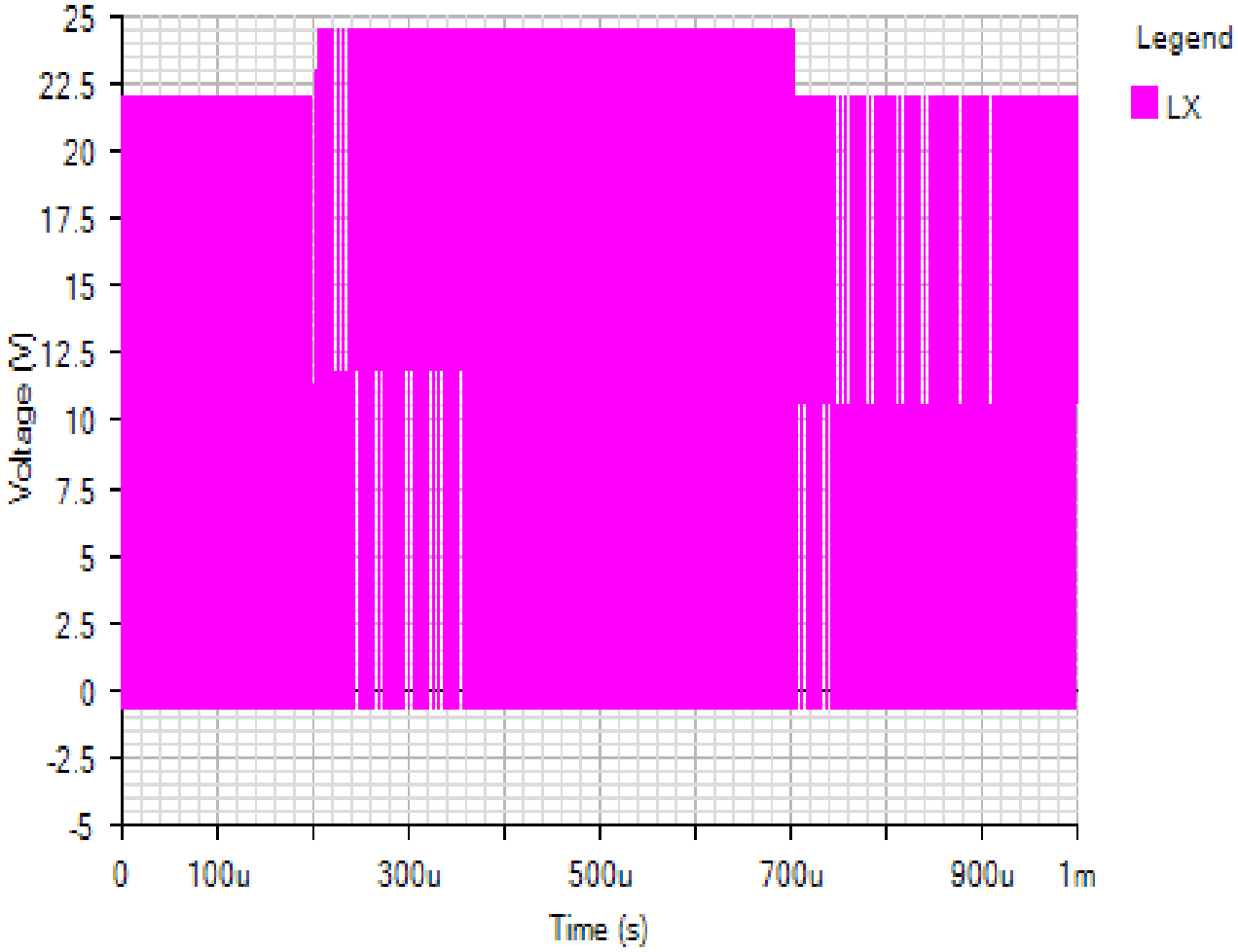


SWITCHING Default



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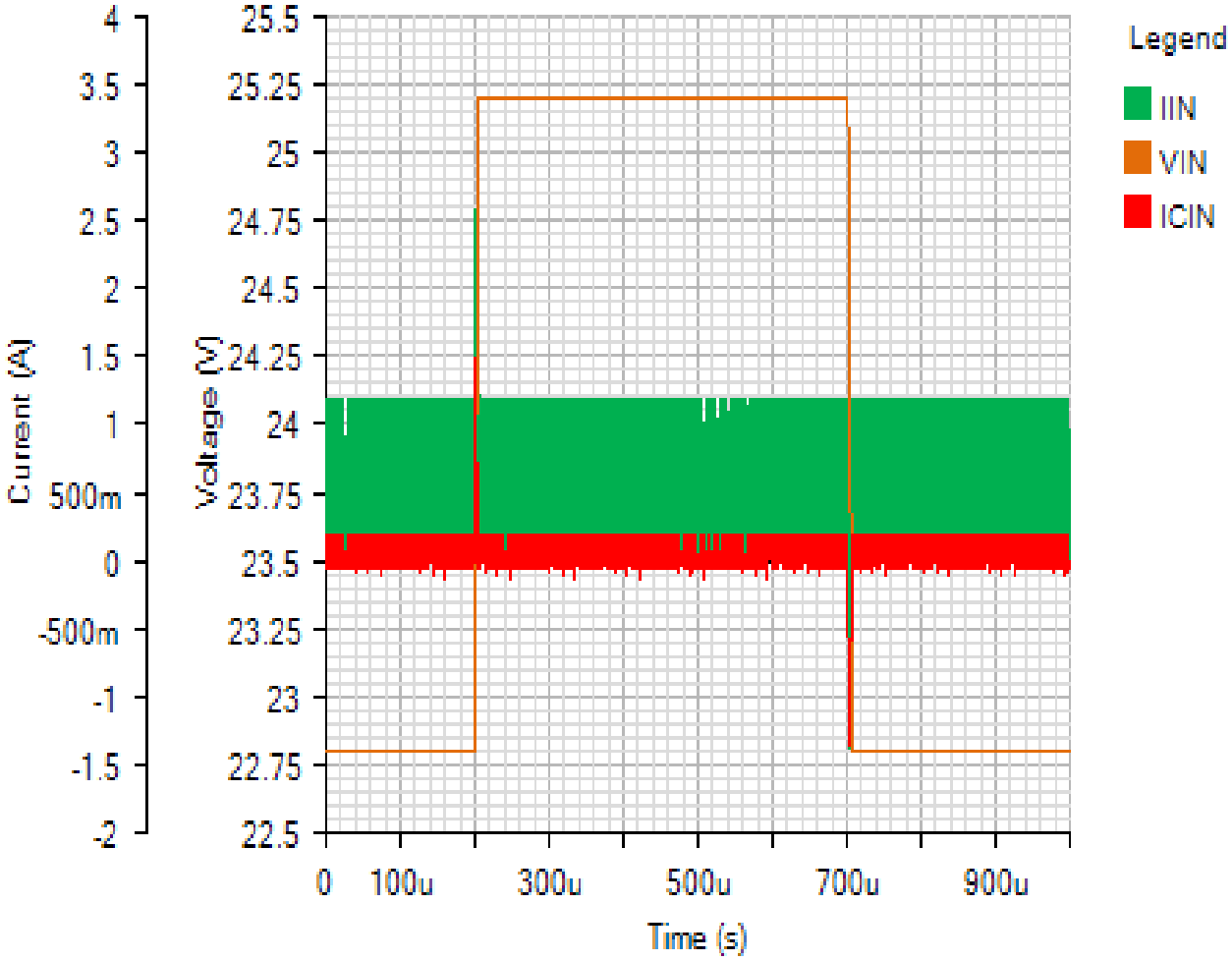

OUTPUT Default