

Initial Design

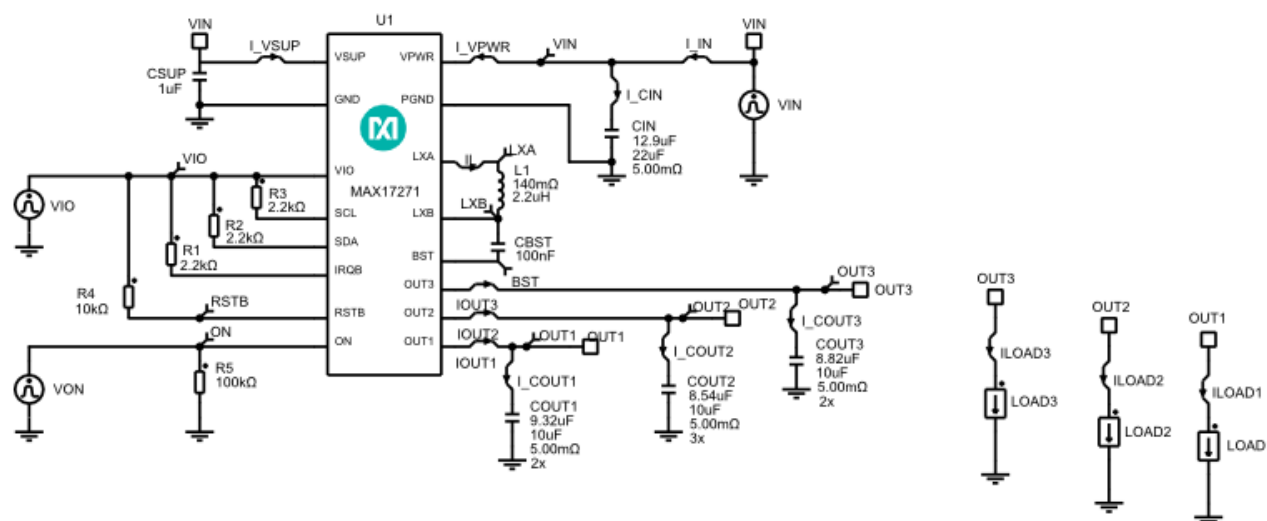
1.0

Design Requirements

Parameter	Value
Minimum Input Voltage	2.7V
Maximum Input Voltage	3.3V
Nominal Input Voltage	3V
Output1 Voltage	1.2V
Output1 Current	25mA
Output1 Inductor Current Limit	0.4A
Output1 Voltage Ripple	1%
Output2 Voltage	1.8V
Output2 Current	50mA
Output2 Inductor Current Limit	0.8A
Output2 Voltage Ripple	1%
Output3 Voltage	3.3V
Output3 Current	75mA
Output3 Inductor Current Limit	1.1A
Output3 Voltage Ripple	1%
Performance Priority	Balance Efficiency and Size
BOM Priority	Cost
Ambient Temperature	25°C
Maximum Idle Time Between Pulses (TIDL)	24μs
Output1 Power Up Delay	10ms
Output1 Power Down Delay	Equal to (40ms - Power Up Delay)
Output1 Active Discharge Enable	No
Output2 Power Up Delay	20ms

Parameter	Value
Output2 Power Down Delay	Equal to (40ms - Power Up Delay)
Output2 Active Discharge Enable	No
Output3 Power Up Delay	30ms
Output3 Power Down Delay	Equal to (40ms - Power Up Delay)
Output3 Active Discharge Enable	No

Schematic



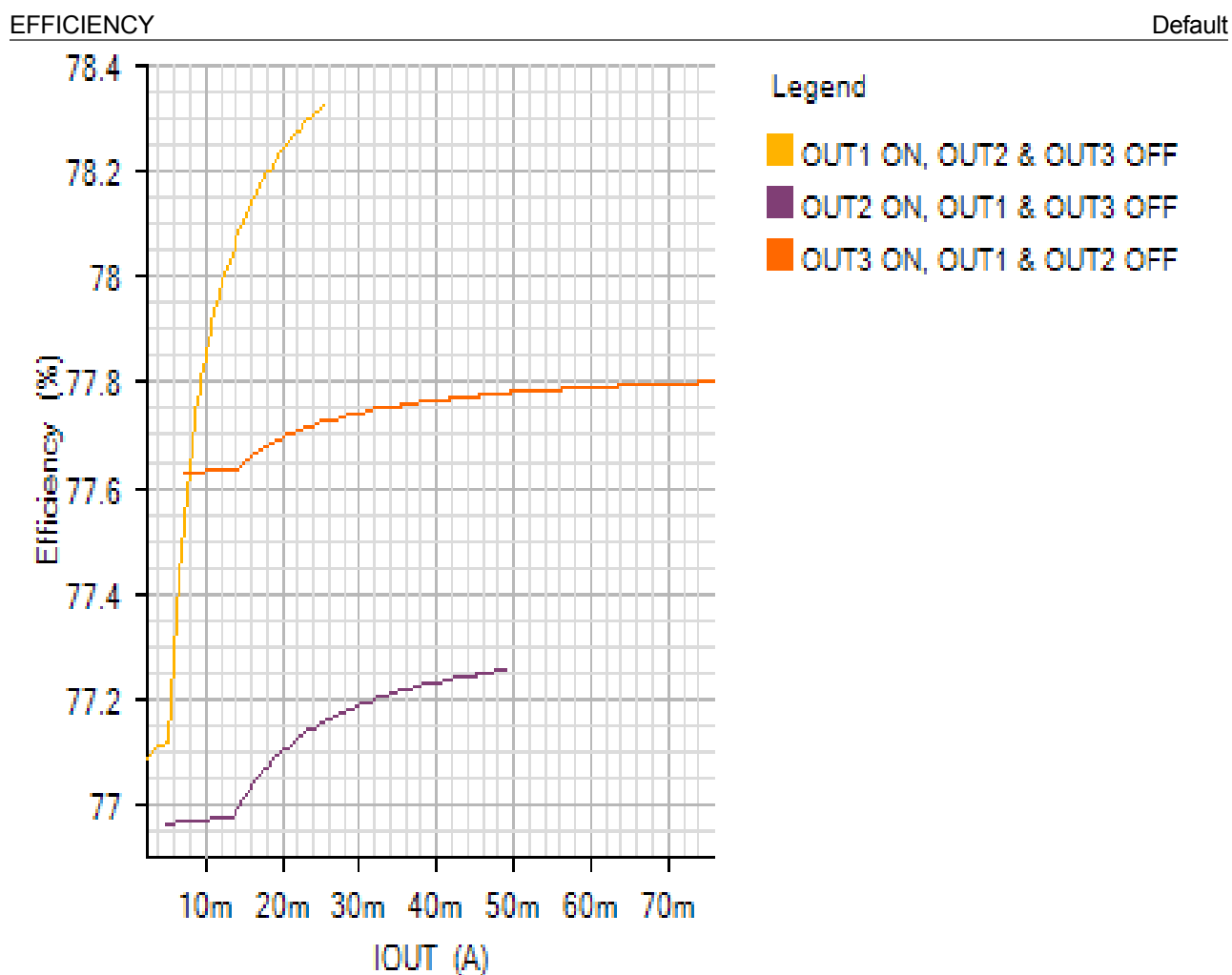
BOM

Ref	Qty	Part Number	Manufacturer	Description
U1	1	MAX17271	User-Defined	IC
CBST	1	GRM033R61A104KE15D	Murata Manufacturing	Cap Ceramic 0.1uF 10V X5R 10% Pad SMD 0201 85°C T/R
CIN	1	C2012X6S1C226M125AC	TDK	Cap Ceramic 22uF 16V X6S 20% SMD 0805 105C Plastic T/R
COUT1	2	C2012X6S1C106K085AC	TDK	Cap Ceramic 10uF 16V 0805 105C
COUT2	3	C2012X6S1C106K085AC	TDK	Cap Ceramic 10uF 16V 0805 105C
COUT3	2	C2012X7R1A106K125AC	TDK	Cap Ceramic 10uF 10V X7R 10% SMD 0805 125C Plastic T/R
CSUP	1	CL05A105KP5NNNC	Samsung Electro-Mechanics	Cap Ceramic 1uF 10V X5R 10% Pad SMD 0402 85°C T/R

L1	1	VLS201612CX-2R2M	TDK	Inductor 2.2uH 20% 117mOhm 1.48A Isat 1.77A Irms
R1	1	SR1-0603-222	NTE Electronics	Res Thick Film 0603 2.2K Ohm 5% 0.063W(1/16W) ±200ppm/°C Pad SMD
R2	1	SR1-0603-222	NTE Electronics	Res Thick Film 0603 2.2K Ohm 5% 0.063W(1/16W) ±200ppm/°C Pad SMD
R3	1	SR1-0603-222	NTE Electronics	Res Thick Film 0603 2.2K Ohm 5% 0.063W(1/16W) ±200ppm/°C Pad SMD
R4	1	SR1-0603-310	NTE Electronics	Res Thick Film 0603 10K Ohm 5% 0.063W(1/16W) ±200ppm/°C Pad SMD
R5	1	CR16104J	Meritek Electronics Corporation	Res Thick Film 0603 100K Ohm 5% 0.1W(1/10W) ±100ppm/°C Pad SMD T/R

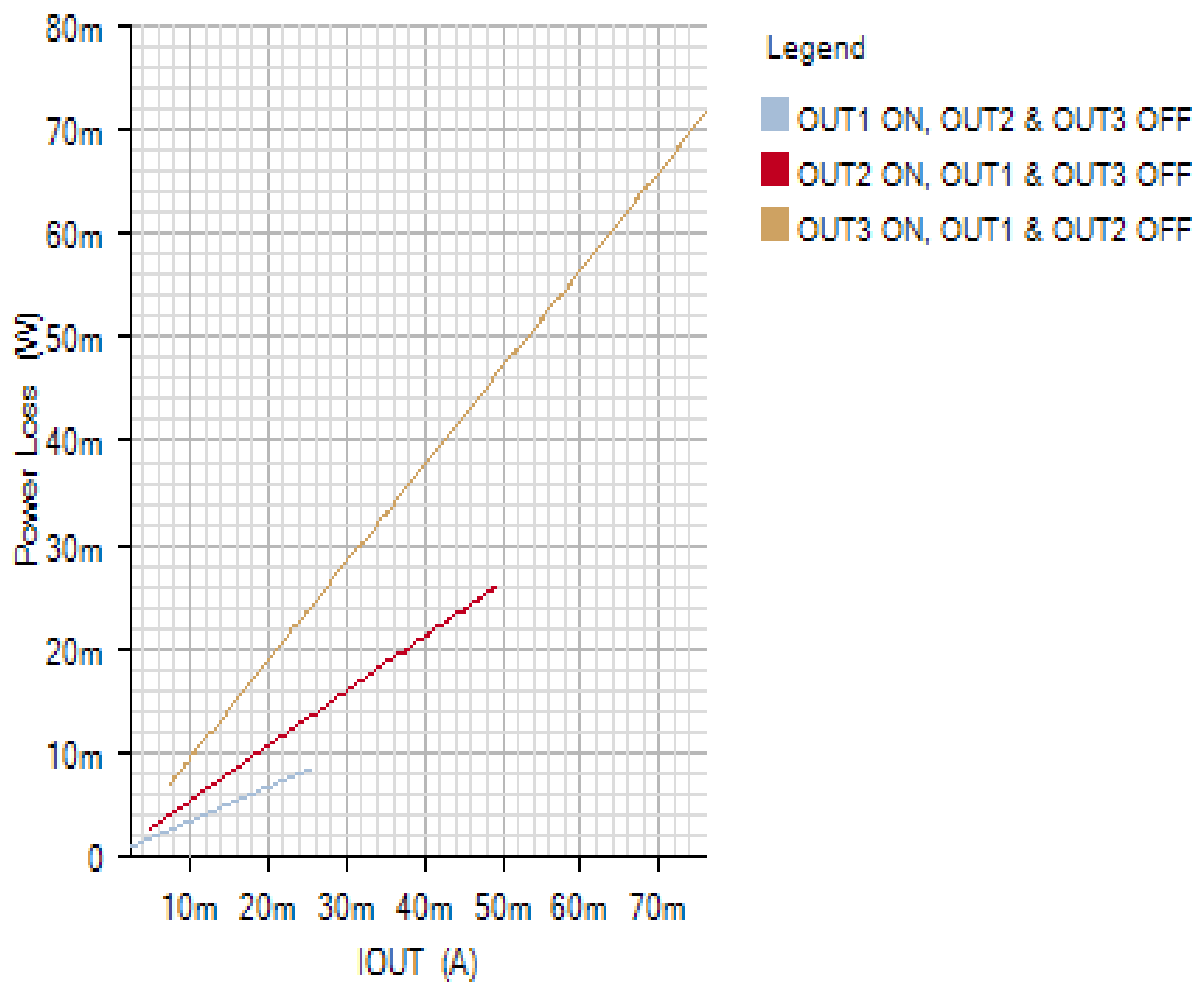
Simulation Results

Efficiency - Thu Jan 03 2019 13:48:14



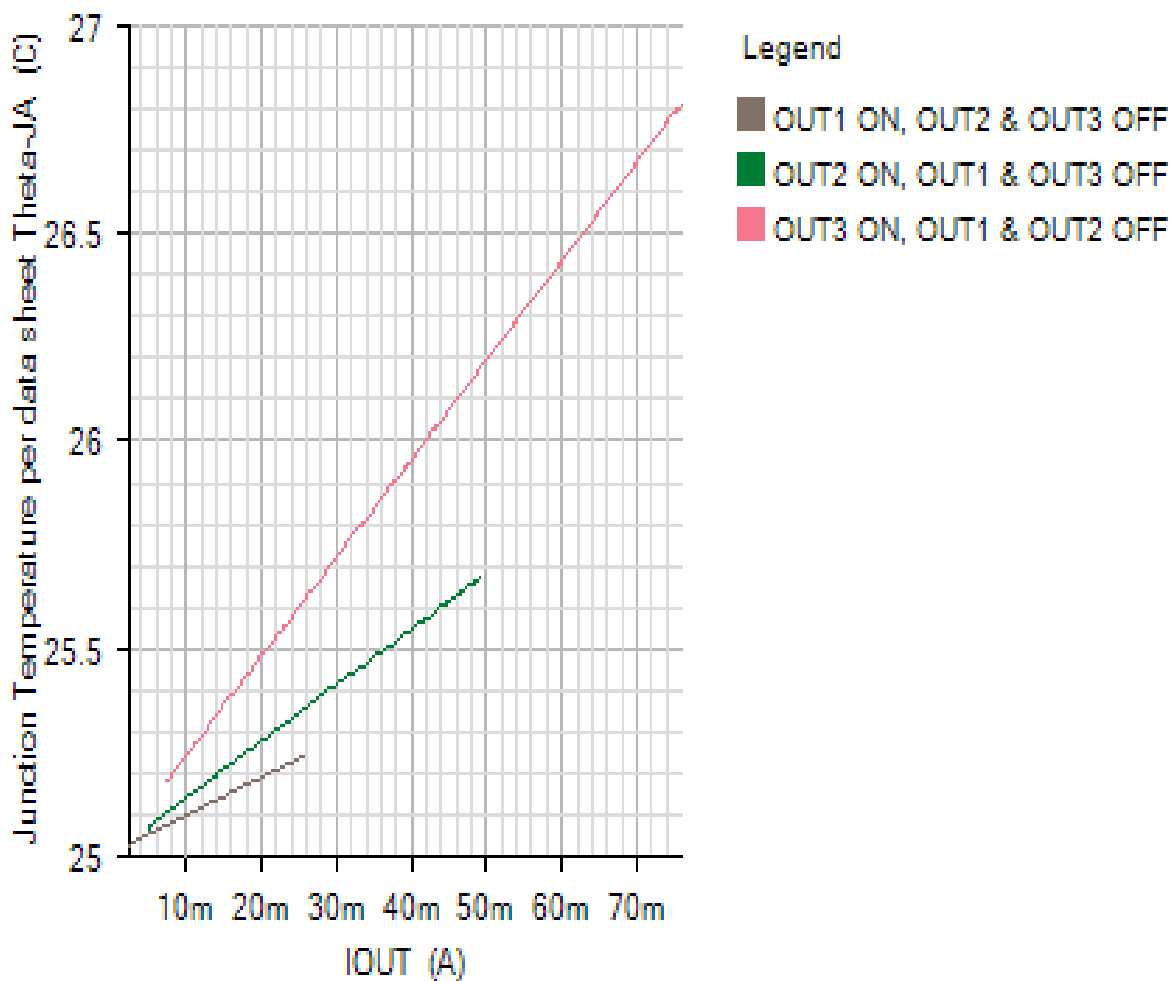
POWER_LOSS

Default

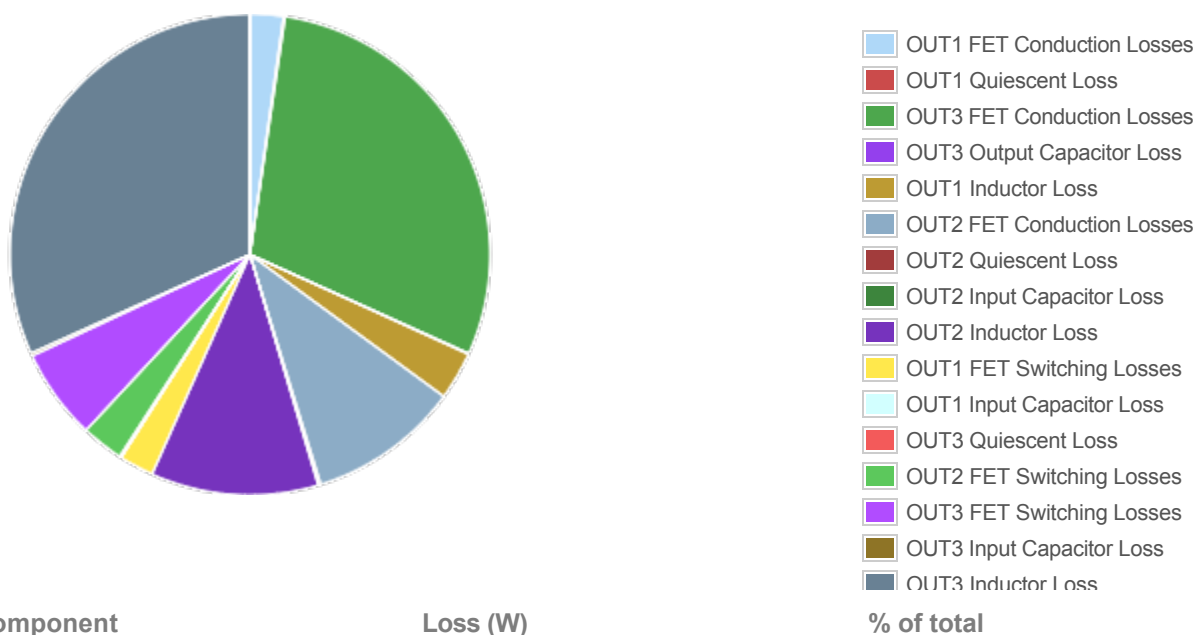


JUNCTION TEMPERATURE

Default



Losses

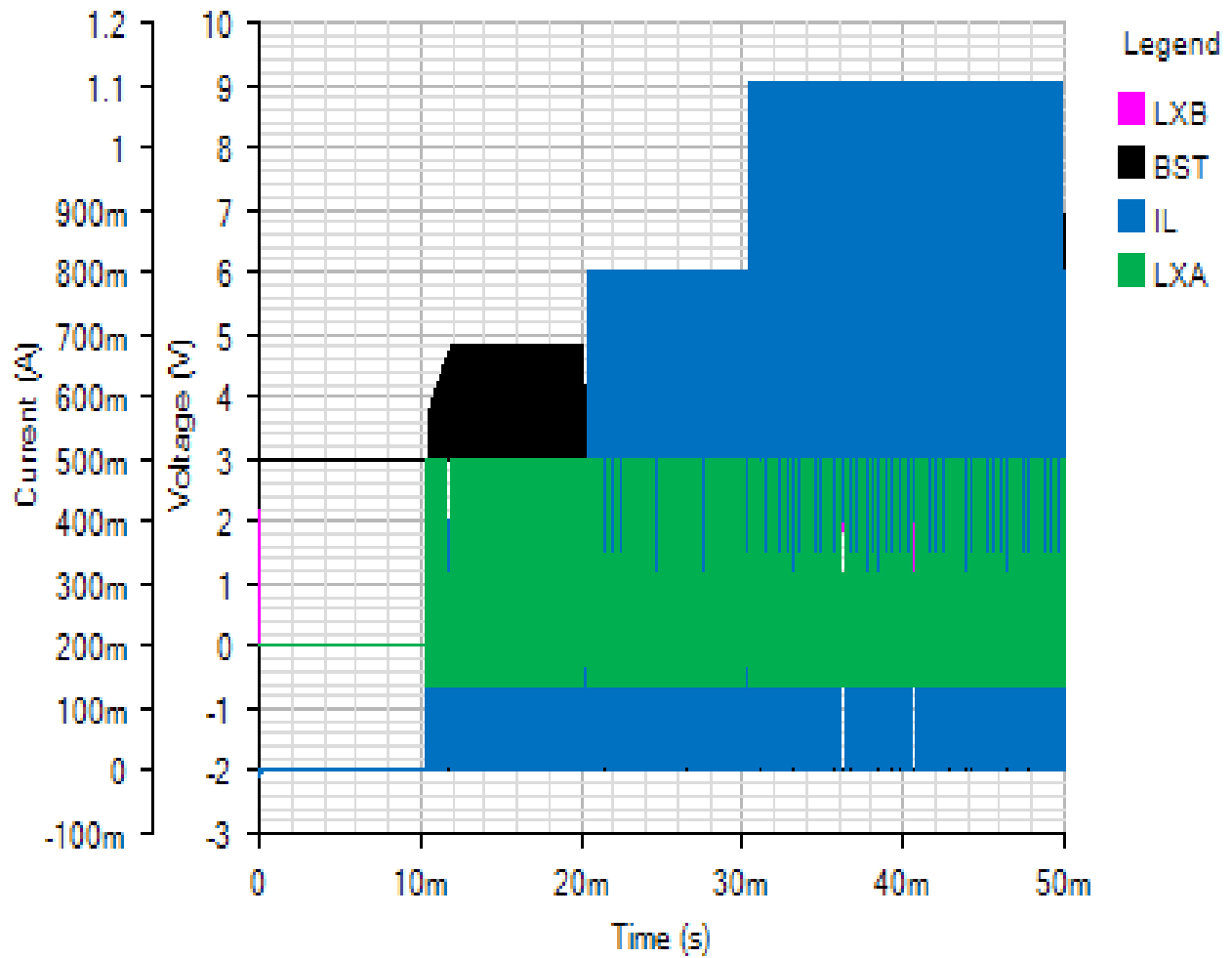


OUT1 FET Conduction Losses	0.002357	2.2
OUT1 Quiescent Loss	0.000122	0.1
OUT3 FET Conduction Losses	0.031083	29.4
OUT3 Output Capacitor Loss	0.000058	0.1
OUT1 Inductor Loss	0.003428	3.2
OUT2 FET Conduction Losses	0.010769	10.2
OUT2 Quiescent Loss	0.000122	0.1
OUT2 Input Capacitor Loss	0.000072	0.1
OUT2 Inductor Loss	0.011911	11.3
OUT1 FET Switching Losses	0.002451	2.3
OUT1 Input Capacitor Loss	0.000016	0
OUT3 Quiescent Loss	0.000122	0.1
OUT2 FET Switching Losses	0.002989	2.8
OUT3 FET Switching Losses	0.006466	6.1
OUT3 Input Capacitor Loss	0.000201	0.2
OUT3 Inductor Loss	0.033513	31.7
OUT1 Output Capacitor Loss	0.000006	0
OUT2 Output Capacitor Loss	0.000026	0
Total	0.105711	100

Start Up - Thu Jan 03 2019 13:48:14

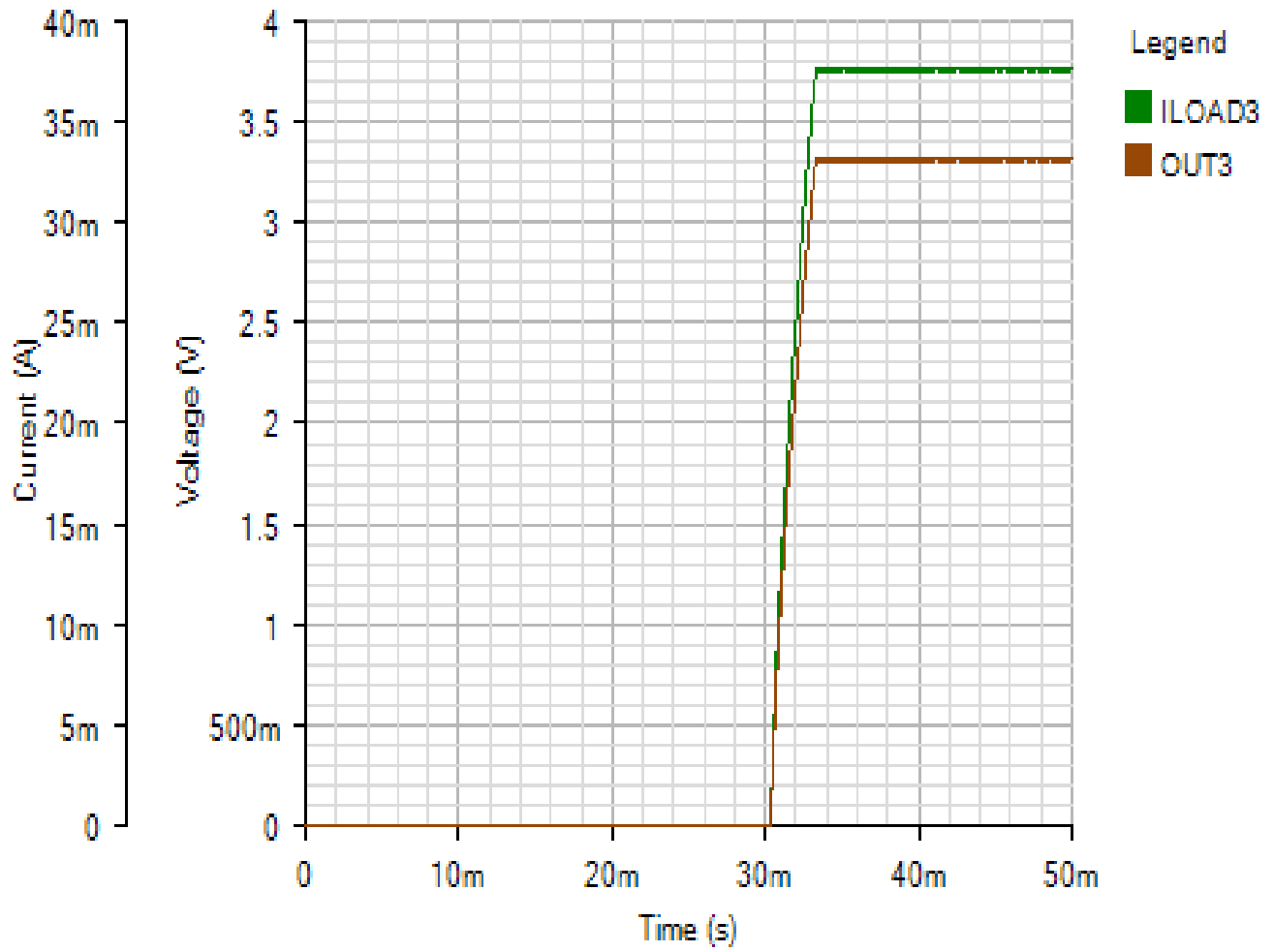
SWITCHING

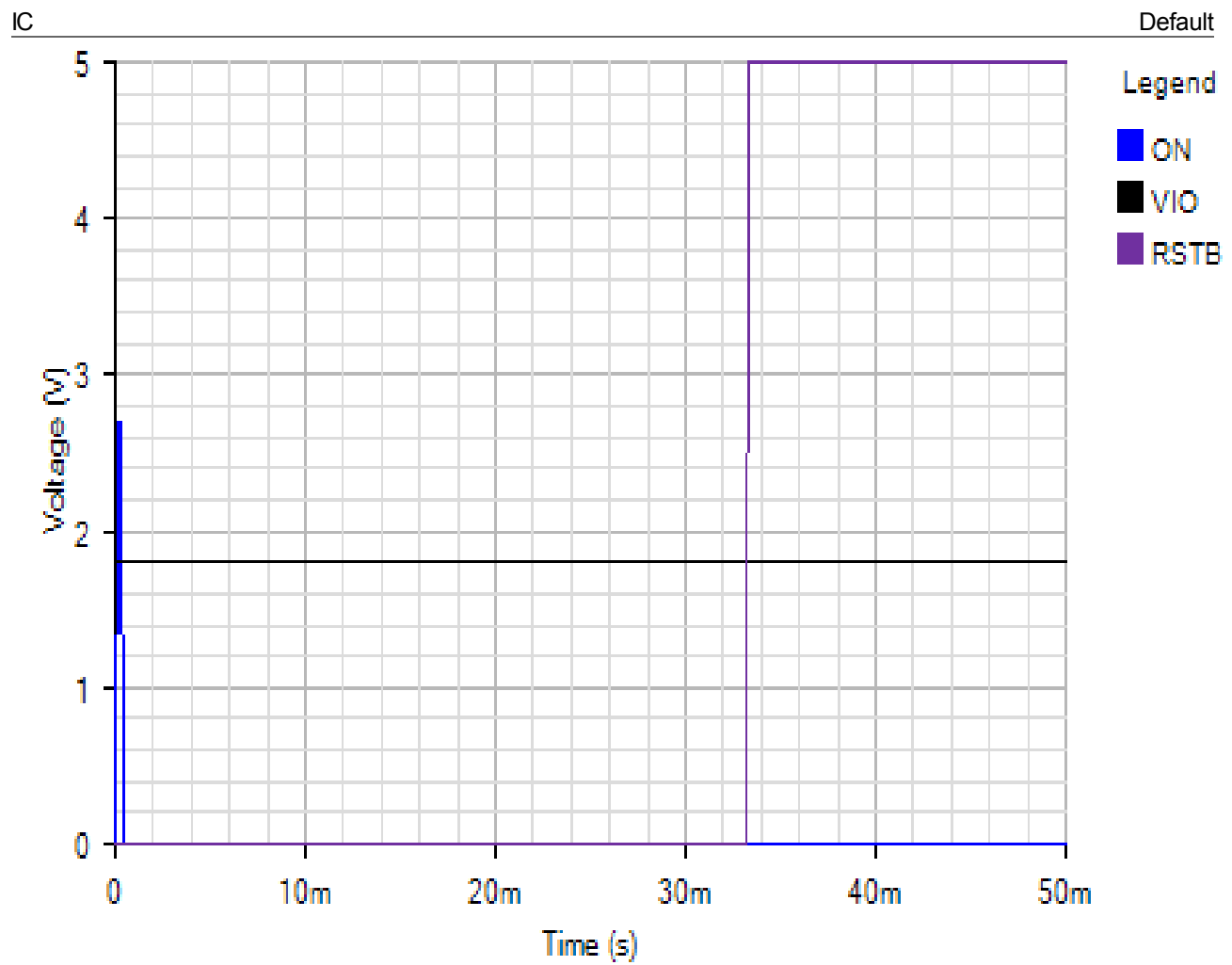
Default

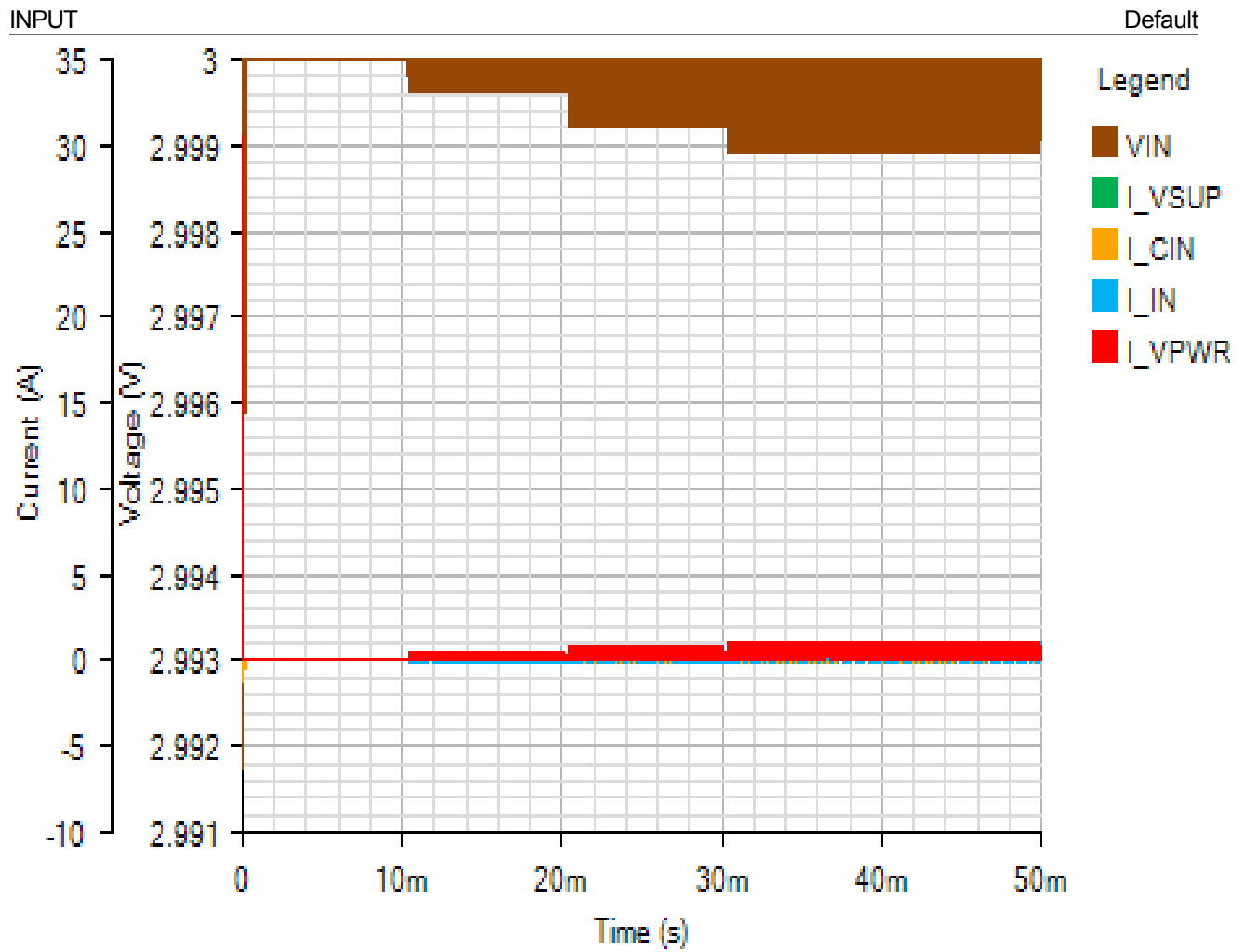


OUTPUT3

Default

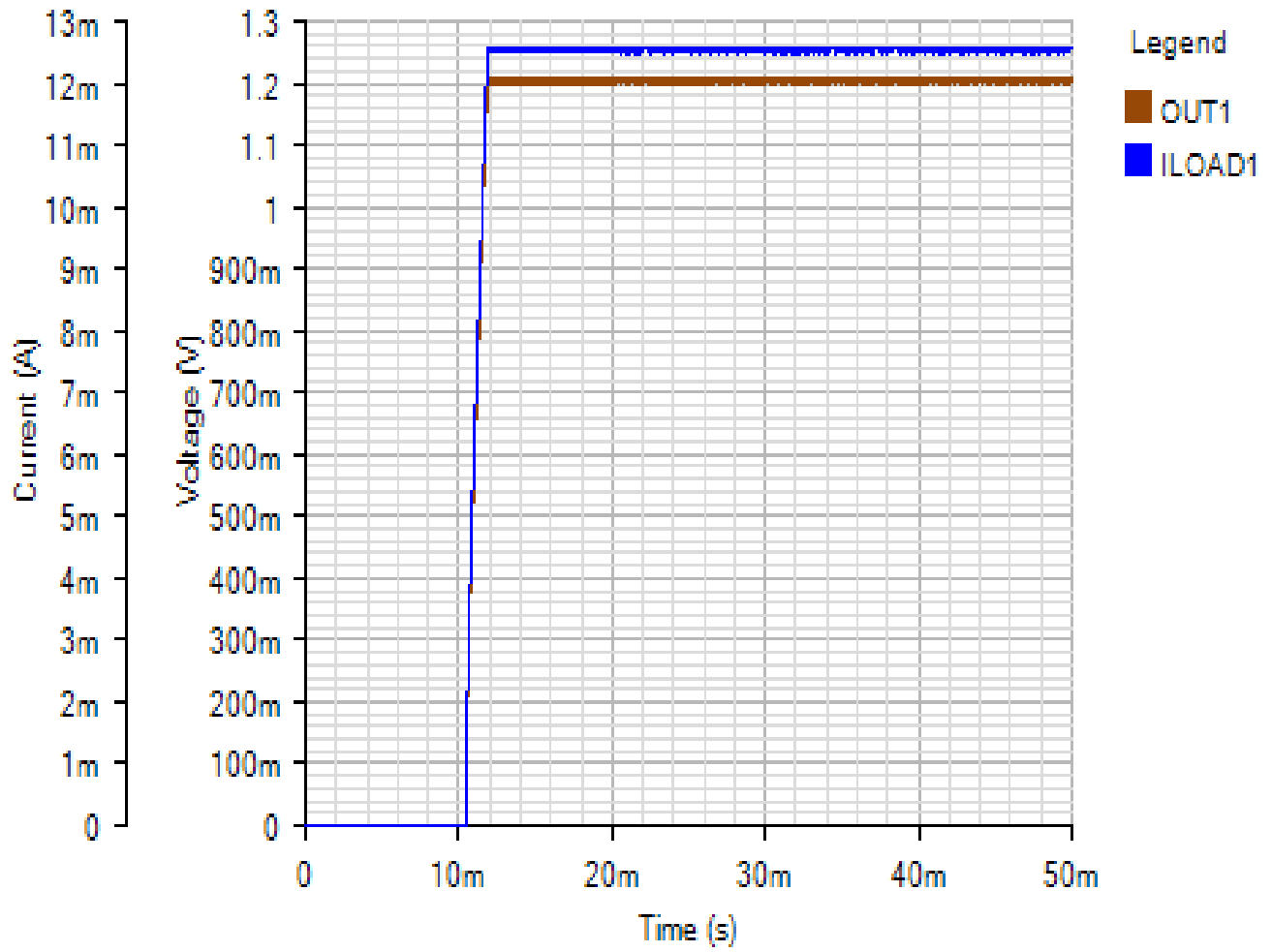






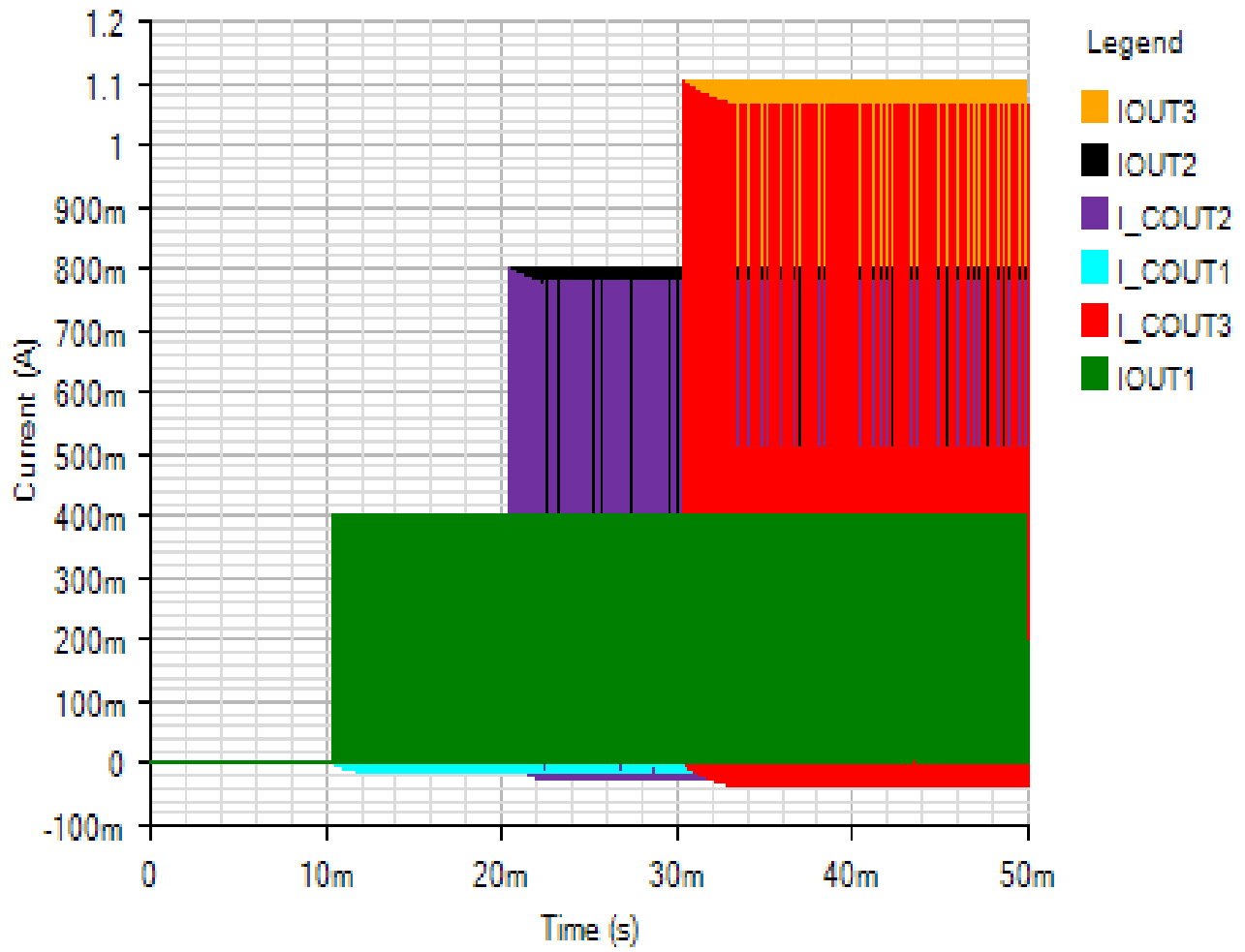
OUTPUT1

Default



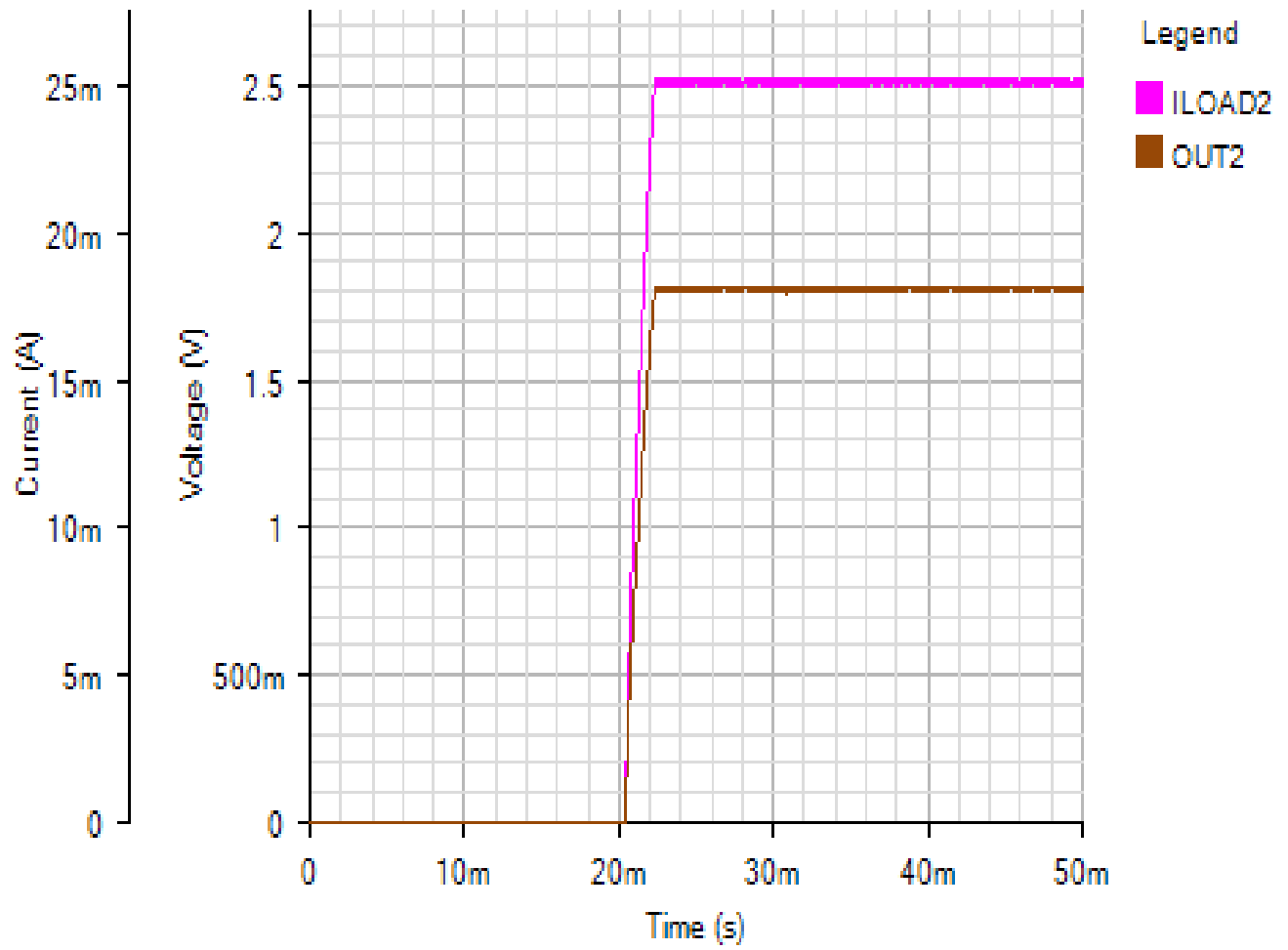
OUT_SWITCHING

Default



OUTPUT2

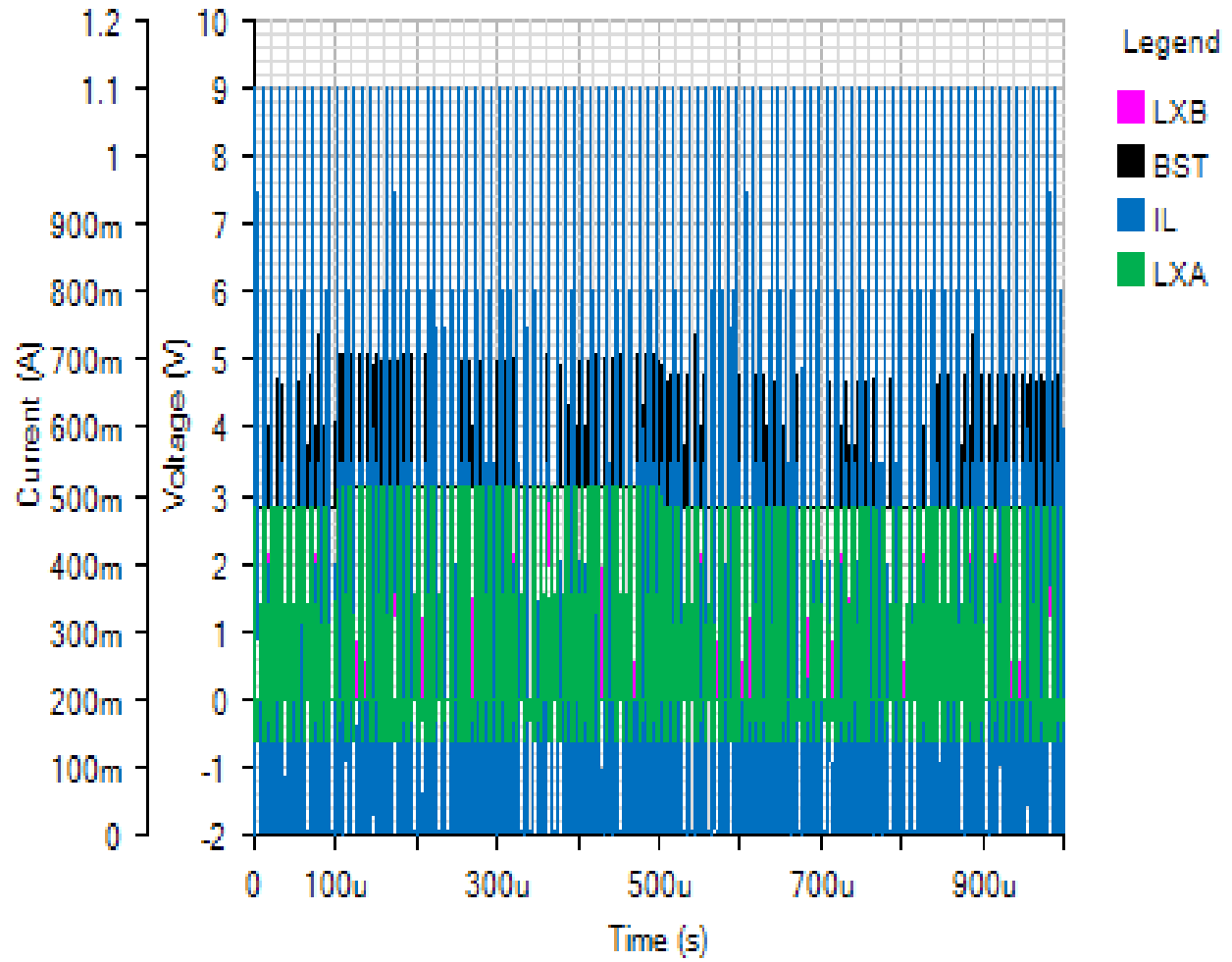
Default



Line Transient - Thu Jan 03 2019 13:48:14

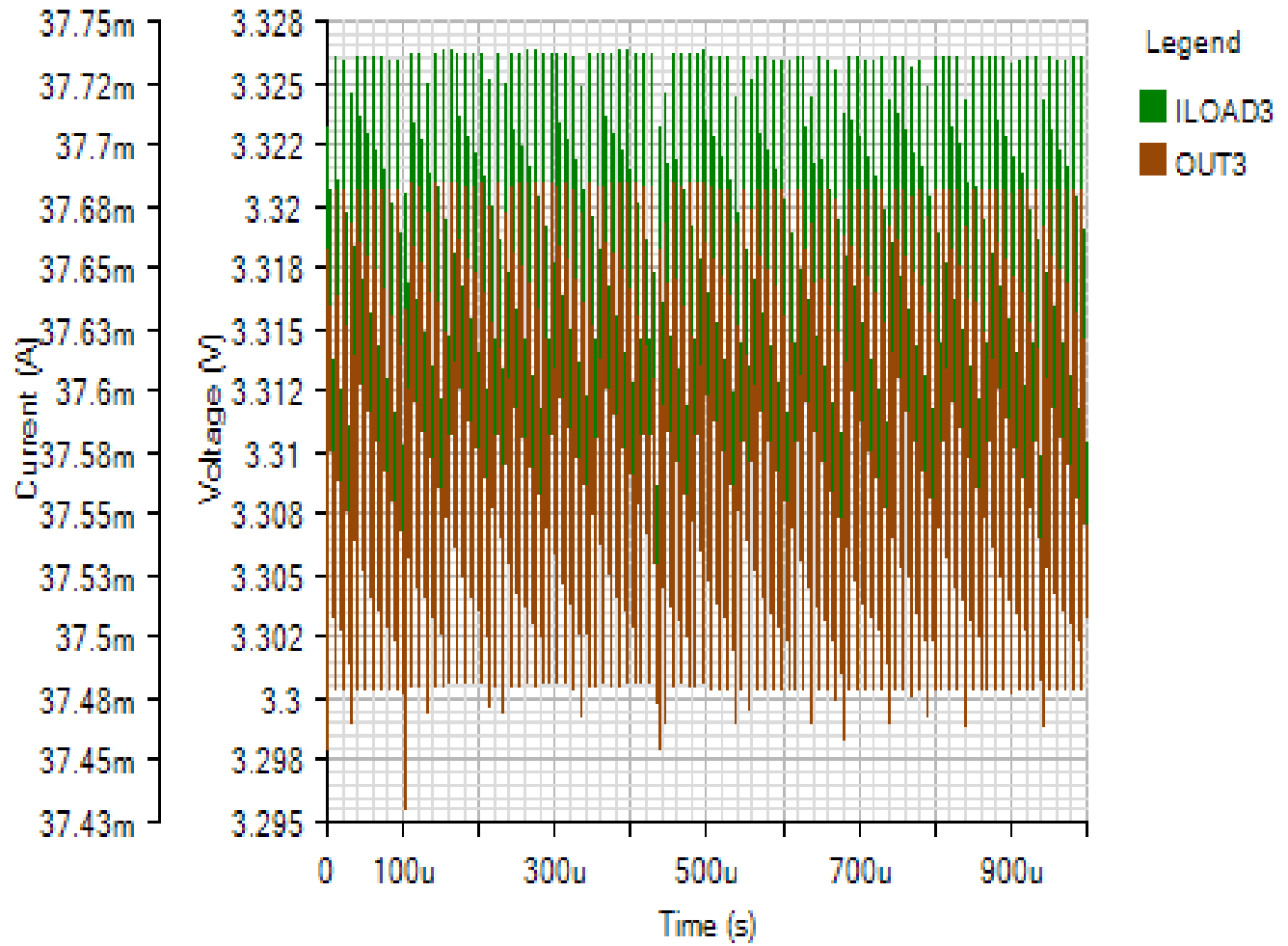
SWITCHING

Default



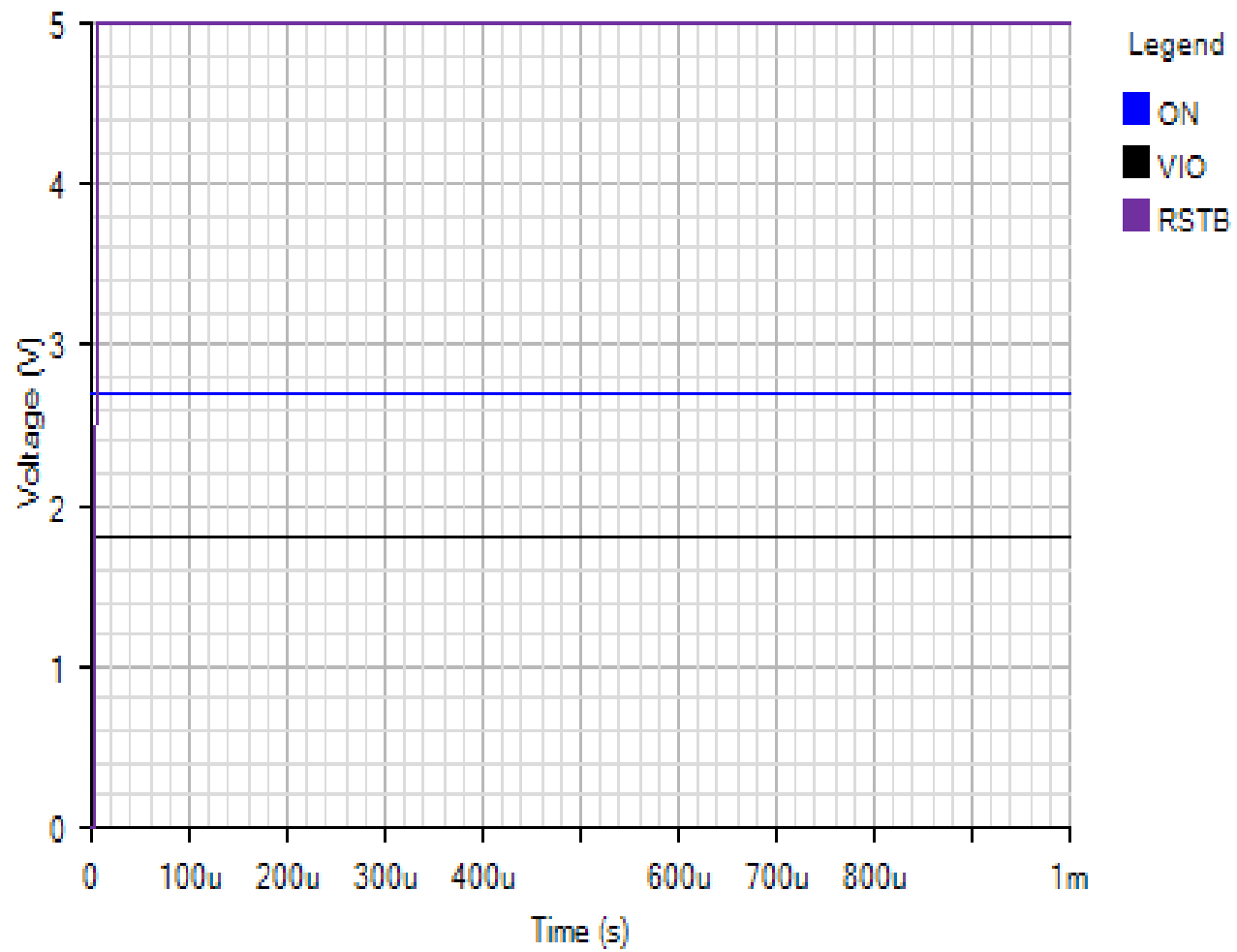
OUTPUT3

Default



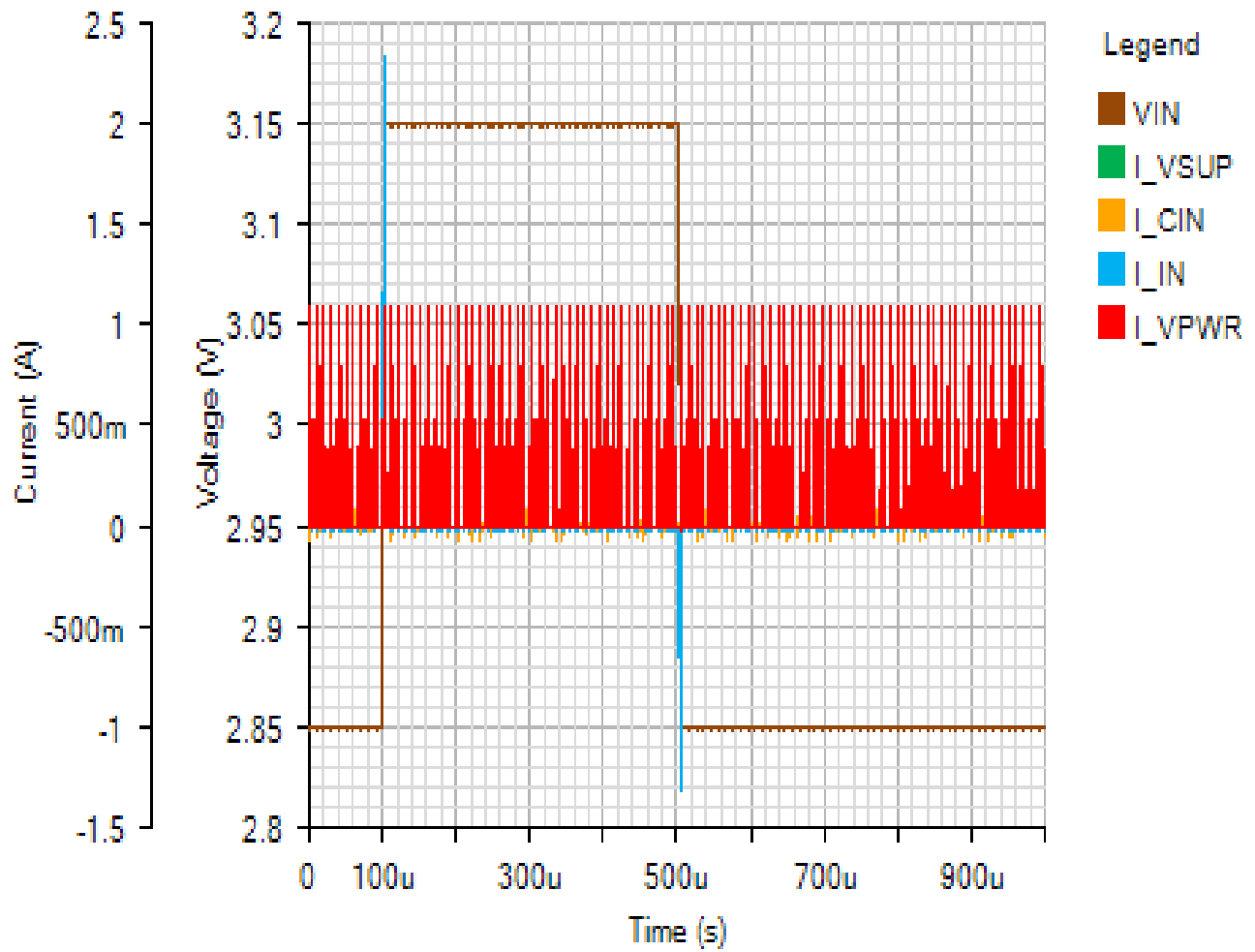
IC

Default



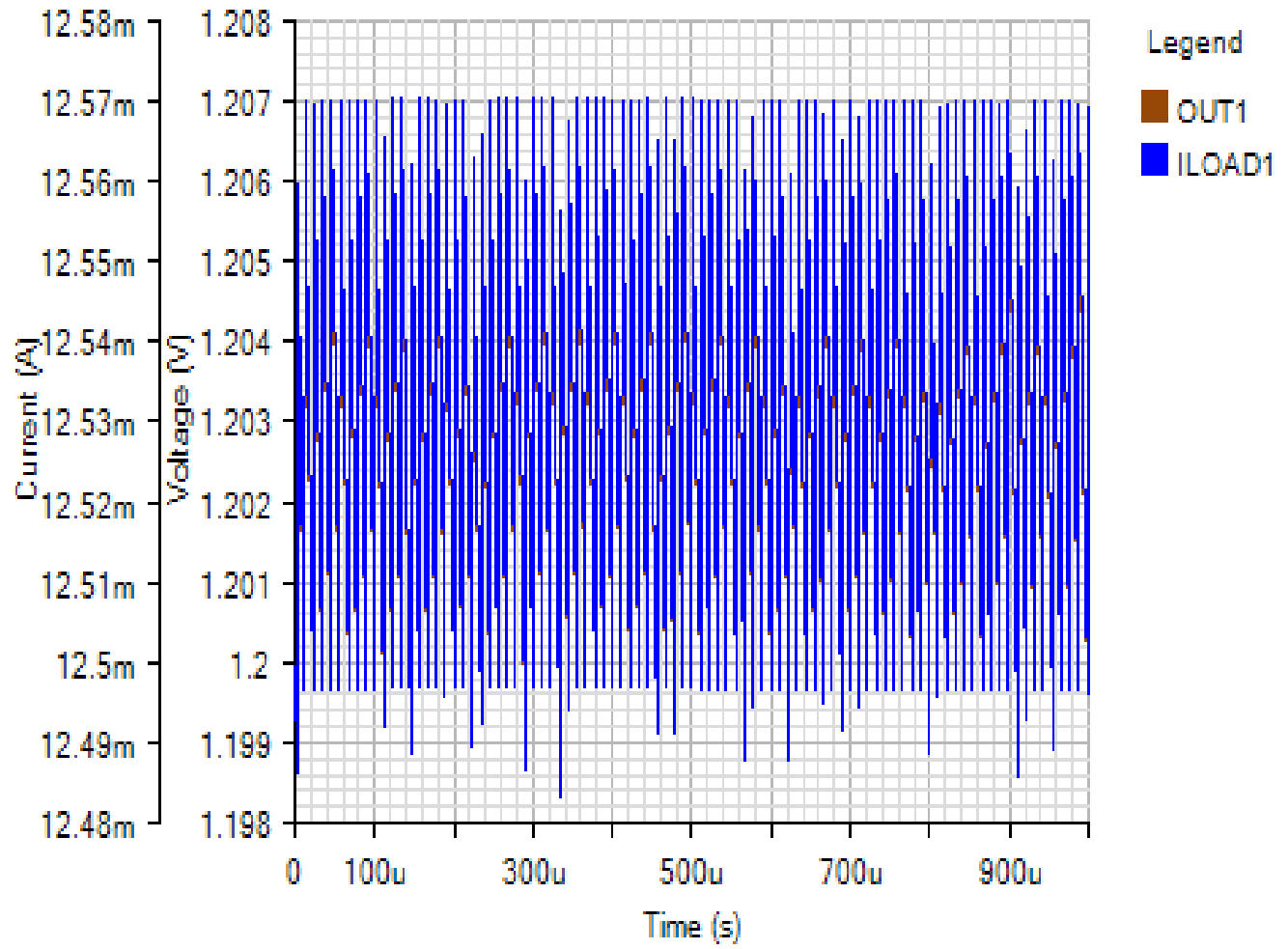
INPUT

Default



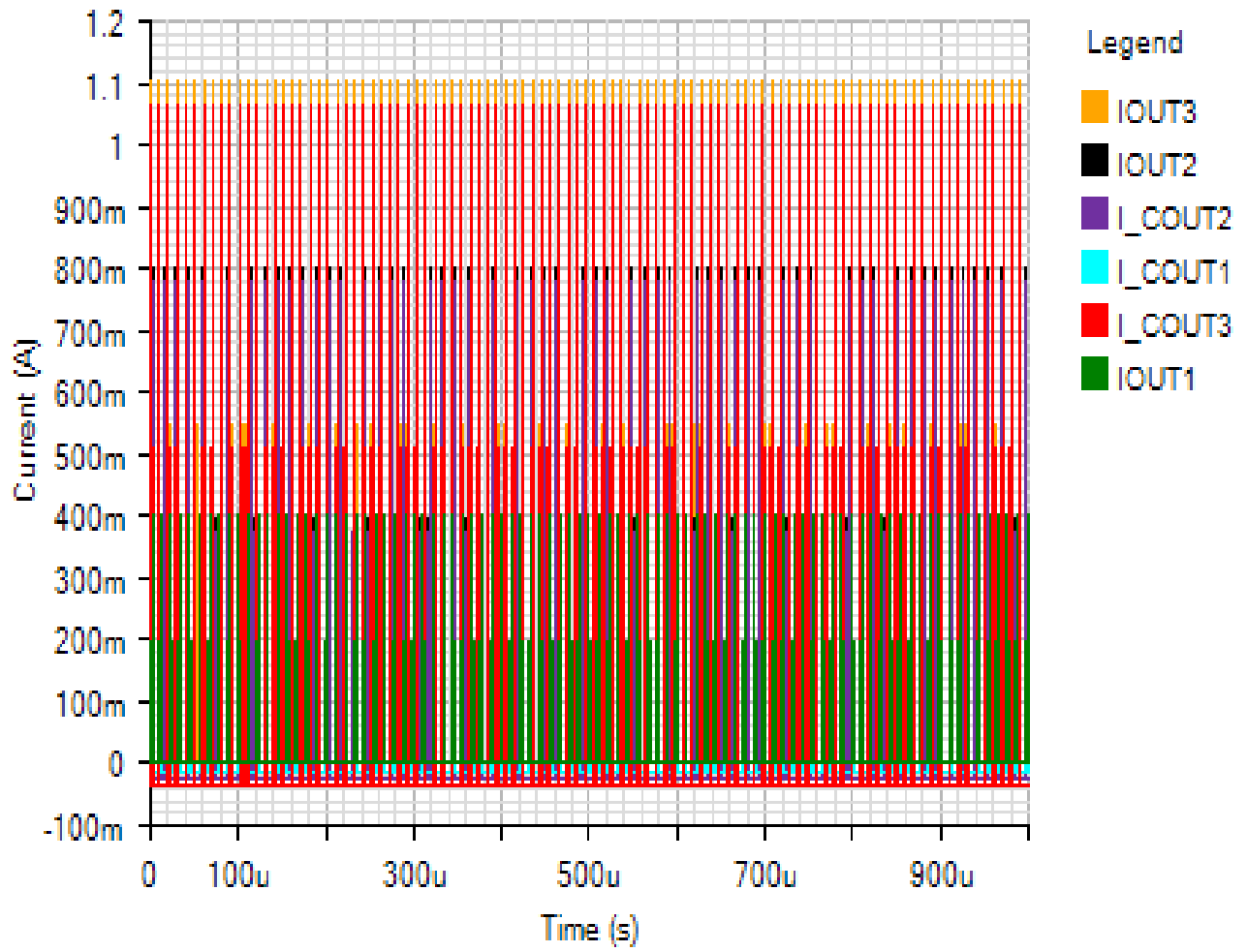
OUTPUT1

Default



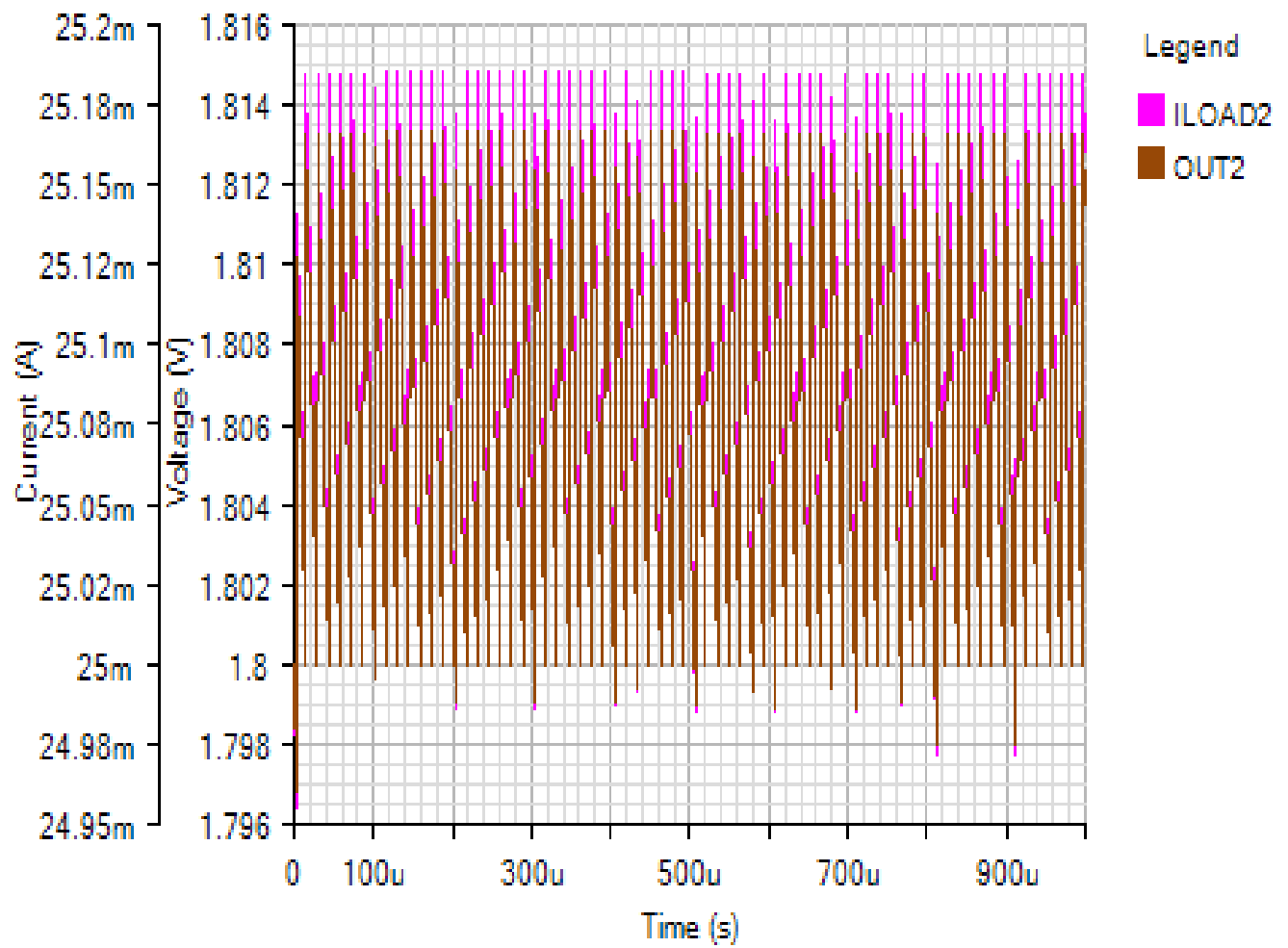
OUT_SWITCHING

Default



OUTPUT2

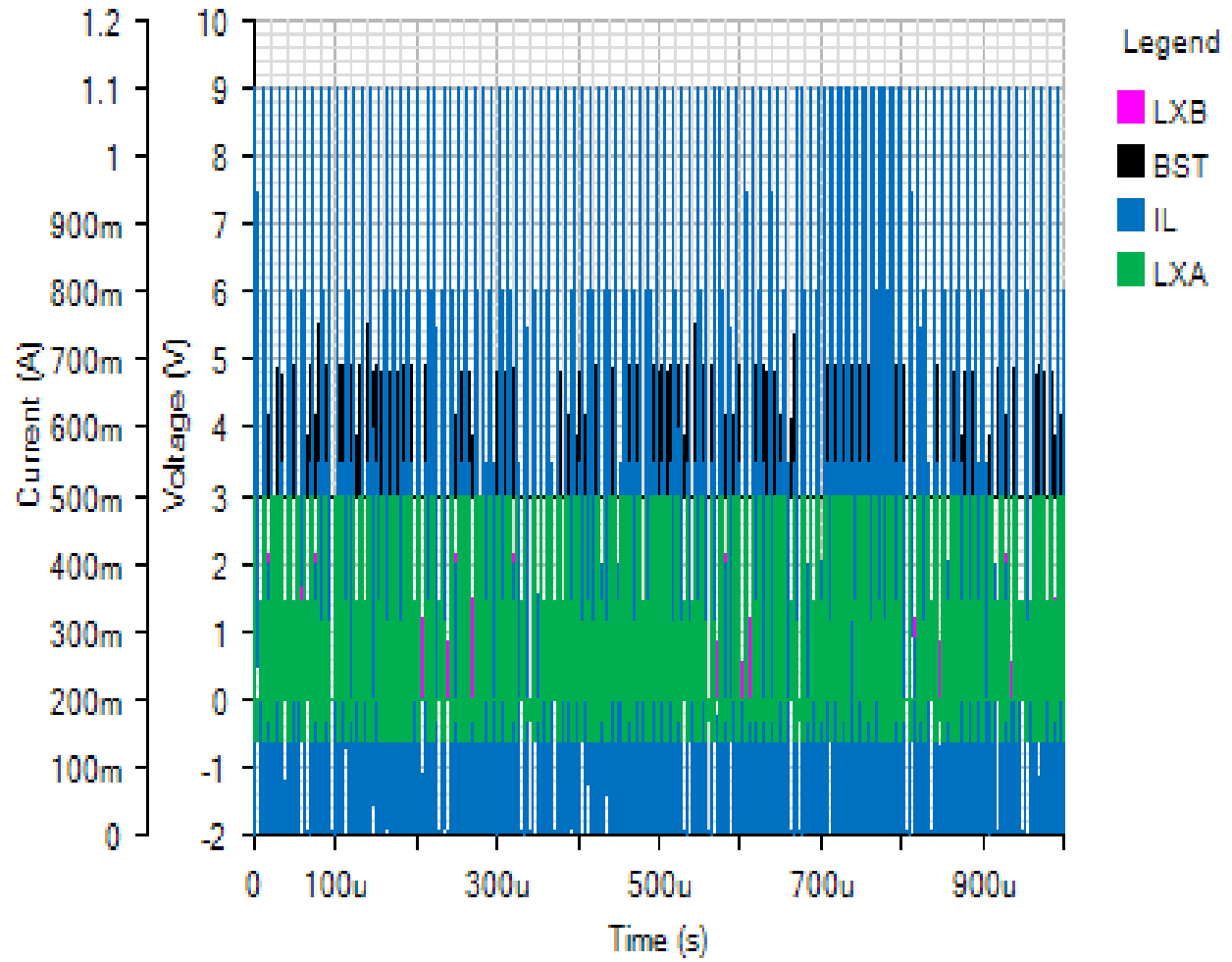
Default



Load Step - Thu Jan 03 2019 13:48:14

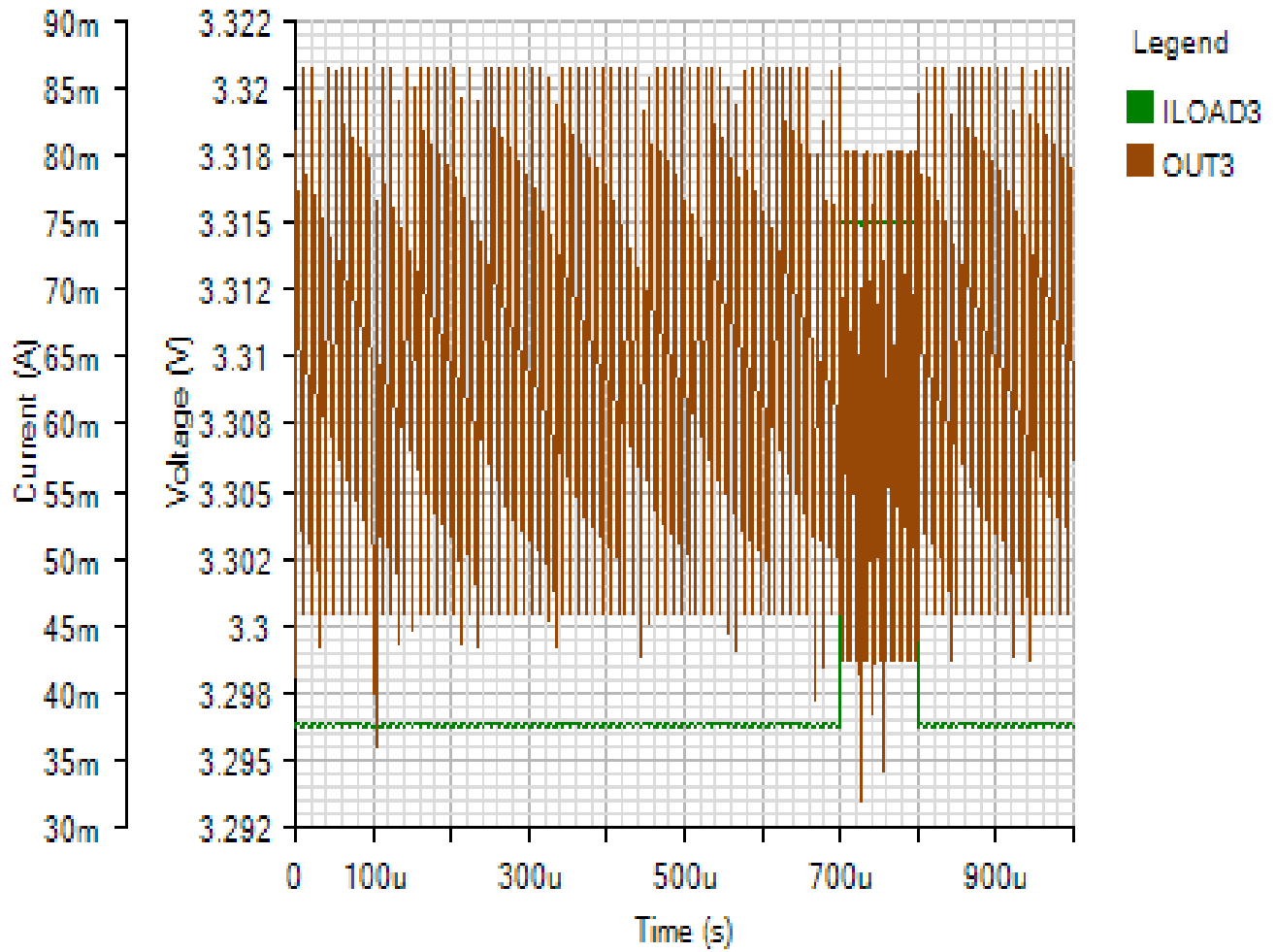
SWITCHING

Default



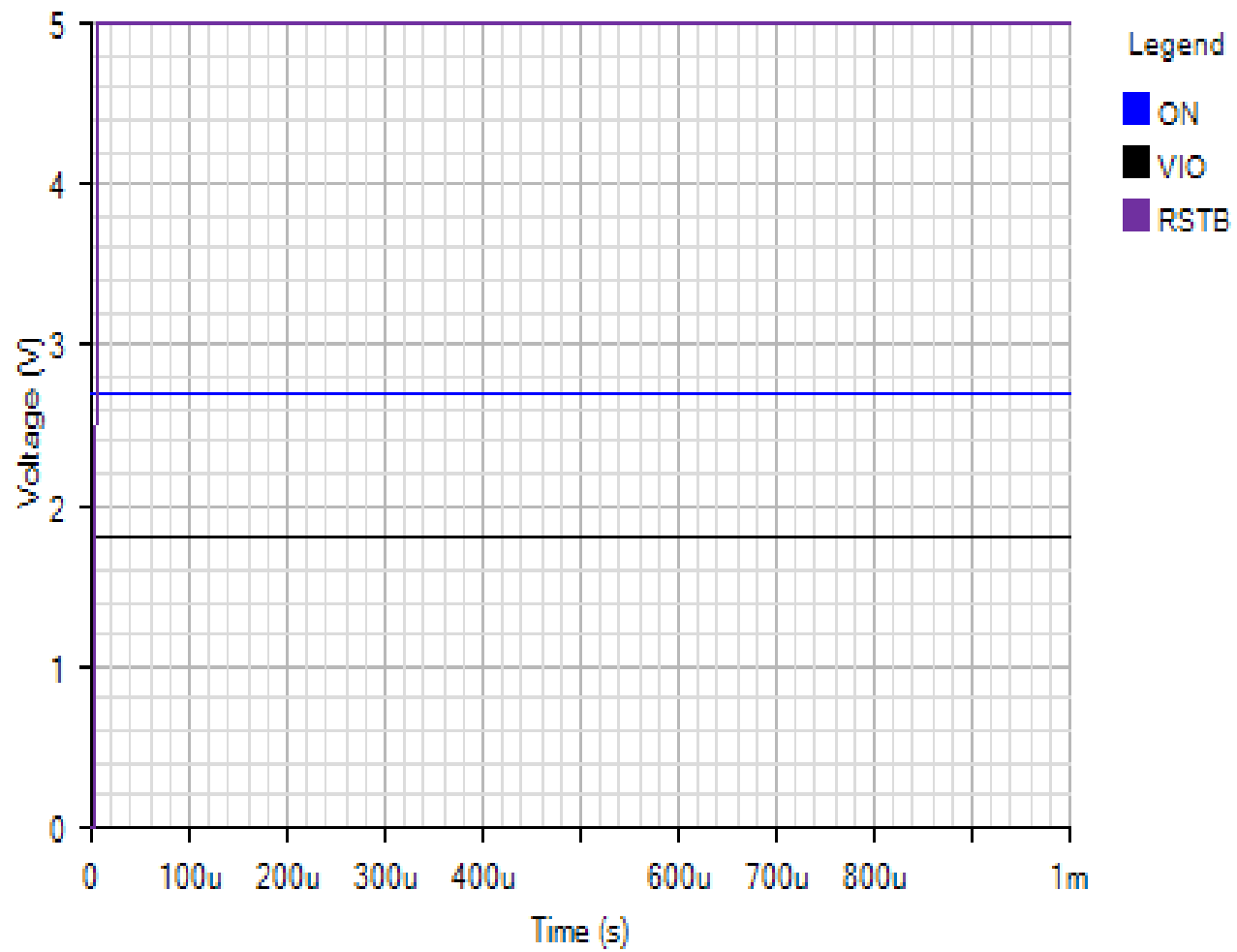
OUTPUT3

Default



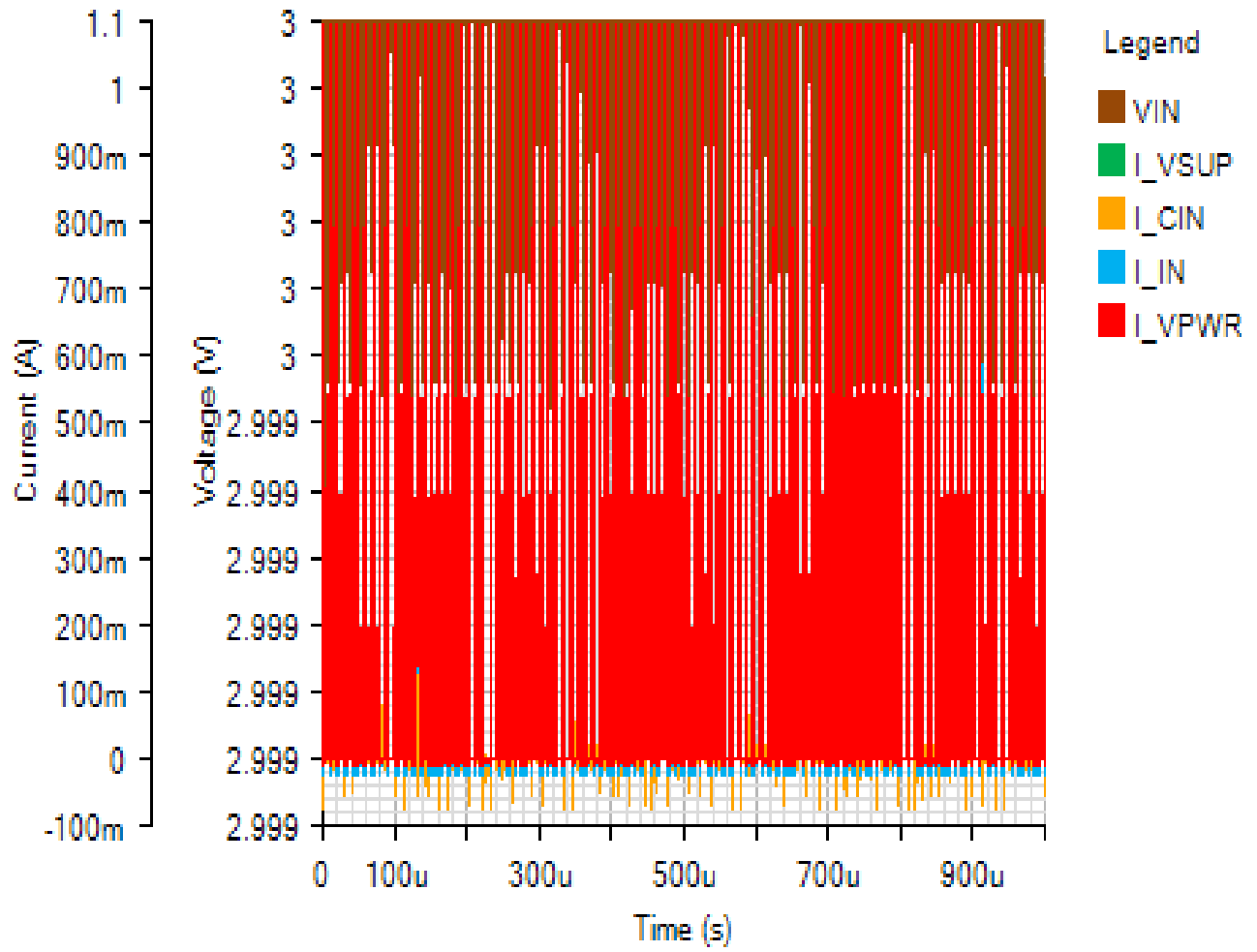
IC

Default



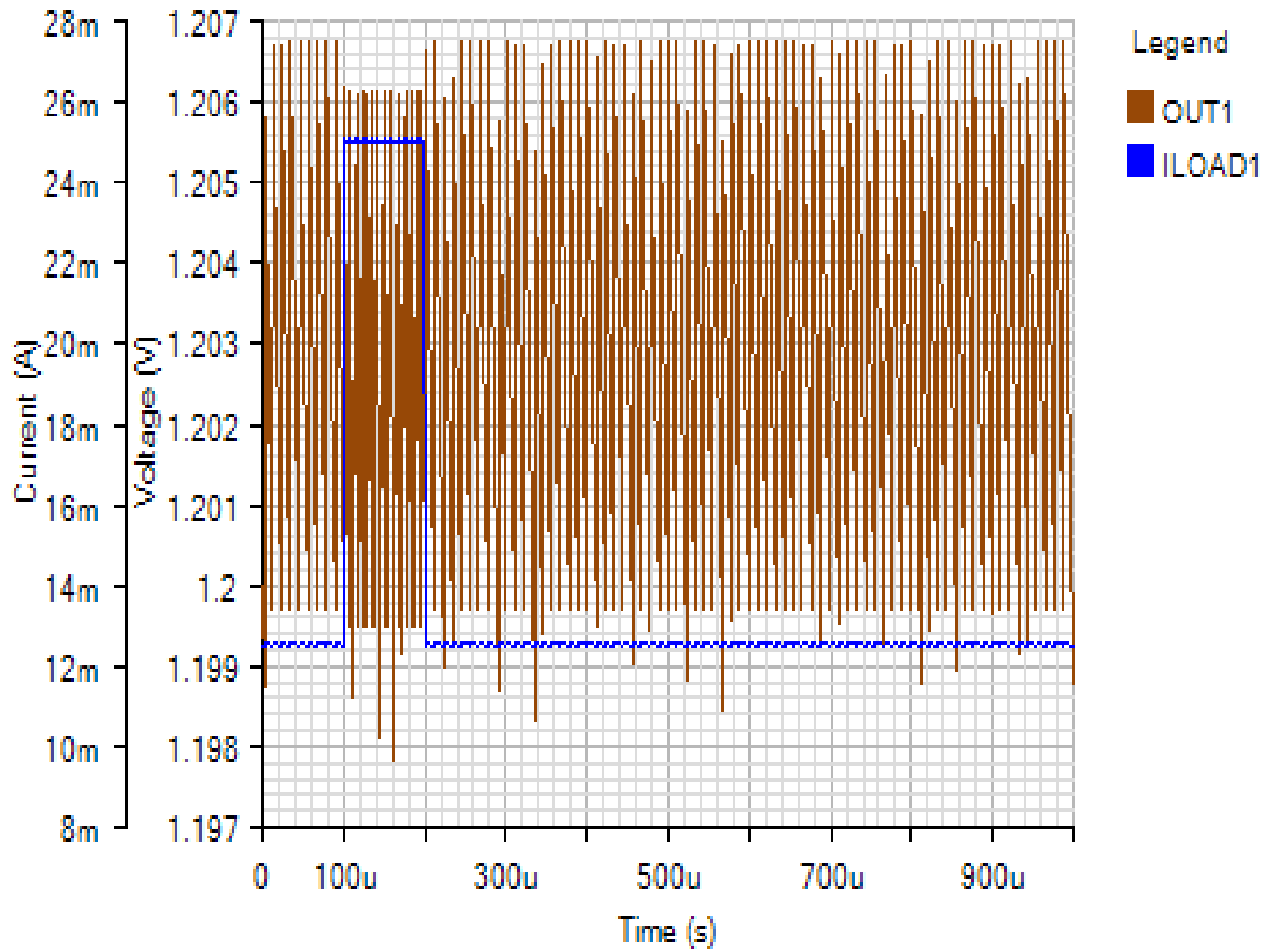
INPUT

Default



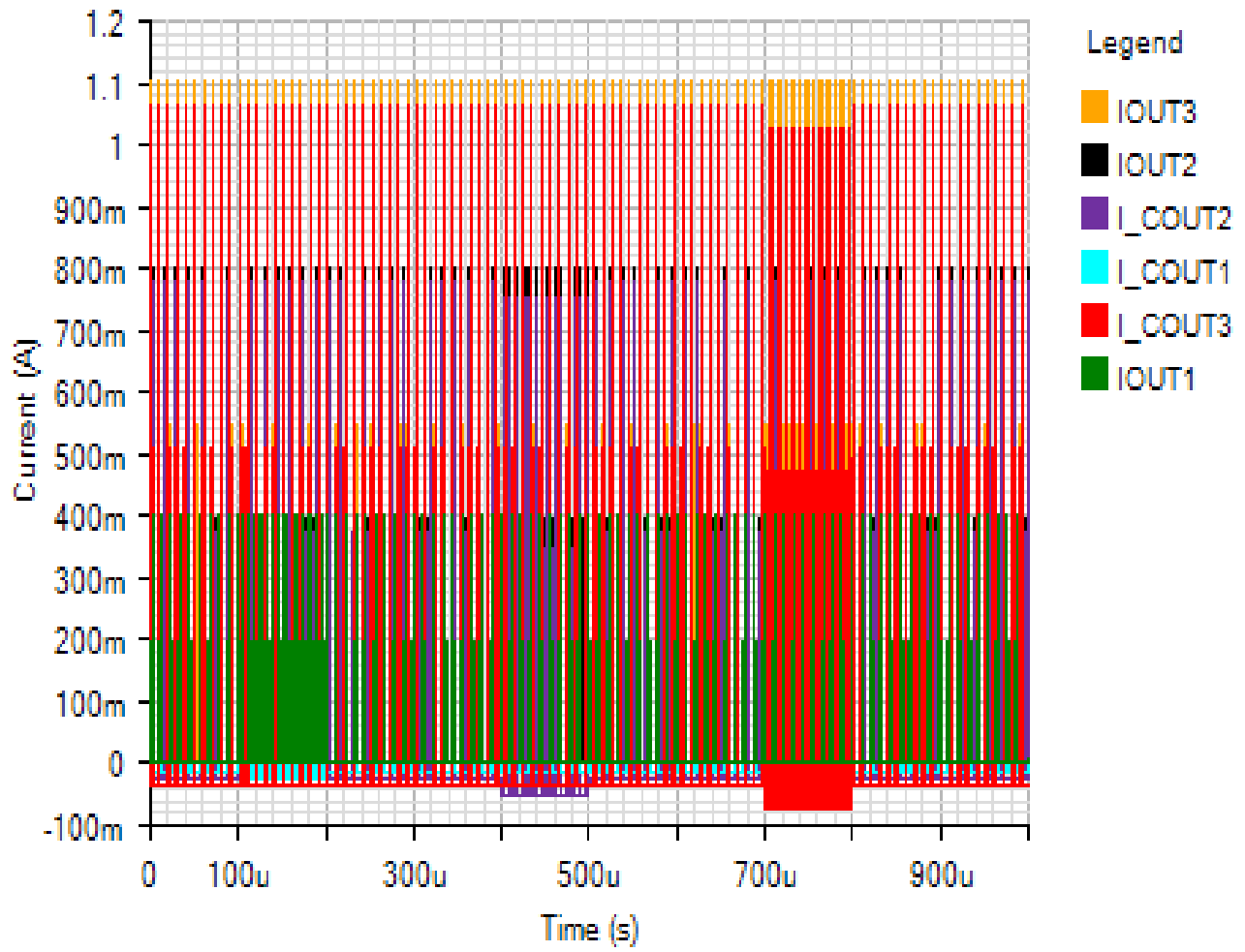
OUTPUT1

Default



OUT_SWITCHING

Default



OUTPUT2

Default

