

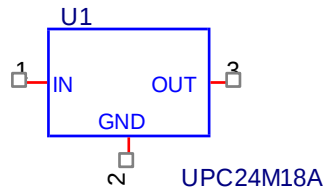
Device Modeling Report

COMPONENTS : VOLTAGE REGULATOR
PART NUMBER : uPC24M18A
MANUFACTURER : NEC Electronics Corporation



Bee Technologies Inc.

SPICE MODEL



```

*$
*PART NUMBER: uPC24M18A
*MANUFACTURER: NEC Electronics Corporation
*ALL Rights Reserved Copyright (c) Bee Technologies Inc. 2004
.SUBCKT uPC24M18A  IN GND OUT
JADJ IN ADJ ADJ JADJMOD
VREF 4 ADJ 1.250
DBK IN 13 DMOD
CBC 13 15 800.0E-12
RBC 15 5 1.000E3
QPASS 13 5 OUT QPASSMOD
RB1 7 6 1
RB2 6 5 128.3
DSC 6 11 DMOD
ESC 11 OUT VALUE={2.823-.227*V(6,5)*V(13,5)}
DFB 6 12 DMOD
EFB 12 OUT VALUE={2.823-7.948E-3*V(13,5)-3.271E-3*V(13,5)*V(13,5)
+ -20.00E-3*V(13,5)*V(6,5)}
EB 7 OUT 8 OUT 3.406
RP 9 8 100
CPZ 10 OUT 1.592E-6
DPU 10 OUT DMOD
RZ 8 10 .1
EP 9 OUT 4 OUT 100
RI OUT 4 100MEG
RADJ ADJ GND 3193
ROUT OUT ADJ 240
CADJ ADJ GND 0.1u
.MODEL QPASSMOD NPN (IS=30F BF=50 VAF=4.406 NF=.7906)
.MODEL JADJMOD NJF (BETA=50.00E-6 VTO=-1)
.MODEL DMOD D (IS=30F N=.7906)
.ENDS
*$

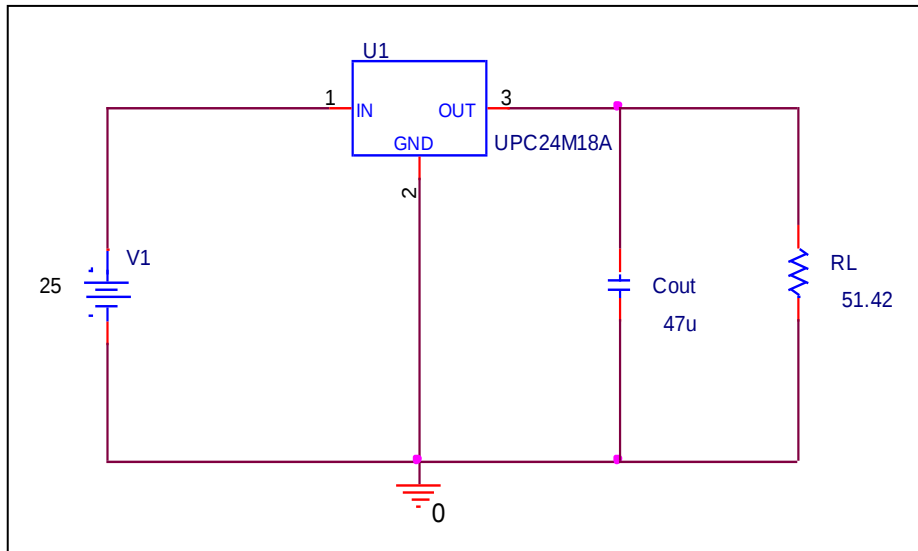
```

MODEL PARAMETER

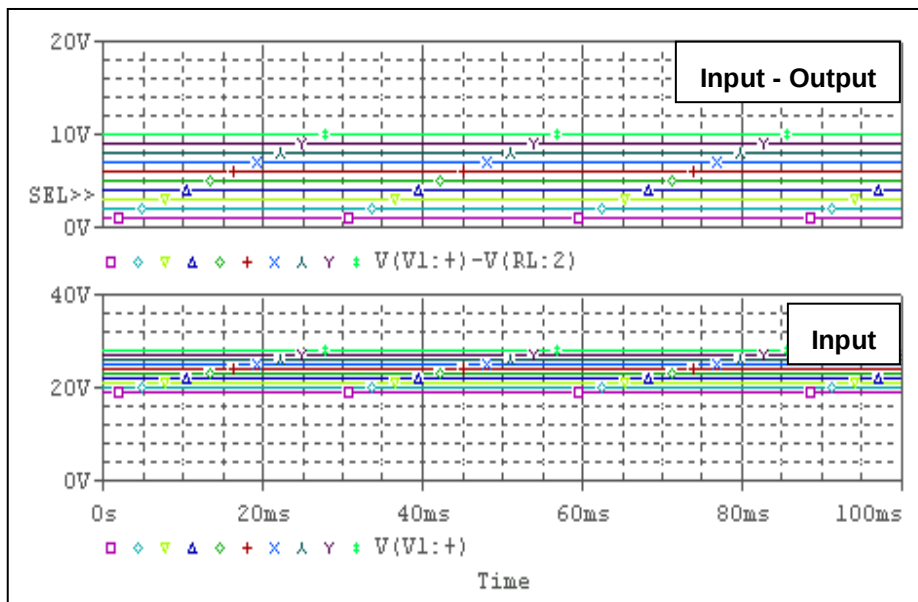
Pspice model parameter	Model description
VREF	Reference Voltage
N	Emission Coefficient
BETA	Tranconductance of JFET Transistor
VAF	Early Voltage of Output Pass Transistor
CPZ	Output Impedance Zero Capacitor
RB2	Base Resistance of Output Limit Voltage Source
ESC1	Coefficient of Current Limit Voltage Source
ESC2	Coefficient of Current Limit Voltage Source
EFB1	Coefficient of Foldback Current Voltage Source
EFB2	Coefficient of Foldback Current Voltage Source
EFB3	Coefficient of Foldback Current Voltage Source
EB	Non-ideal Base-Collector Diode Saturation Current

Input-Output Voltage Differential Characteristic

Evaluation Circuit



Simulation result

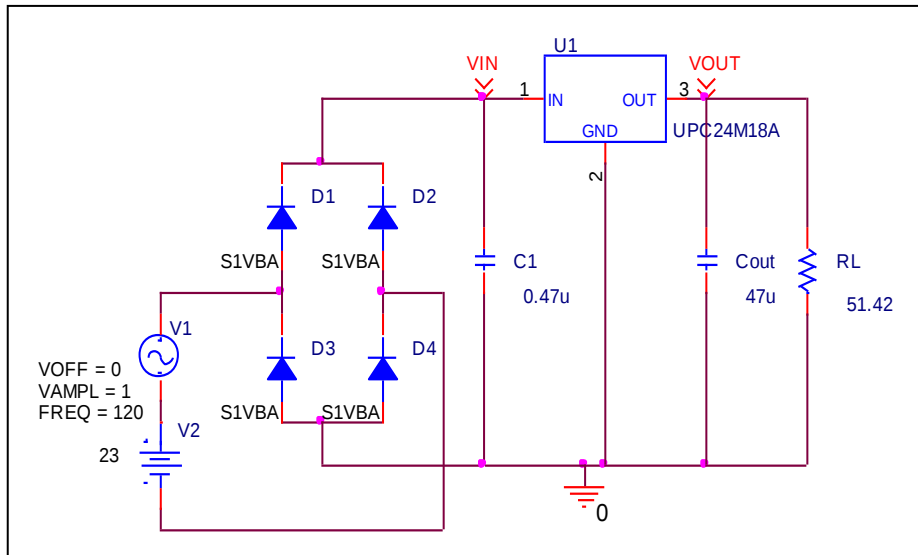


Example

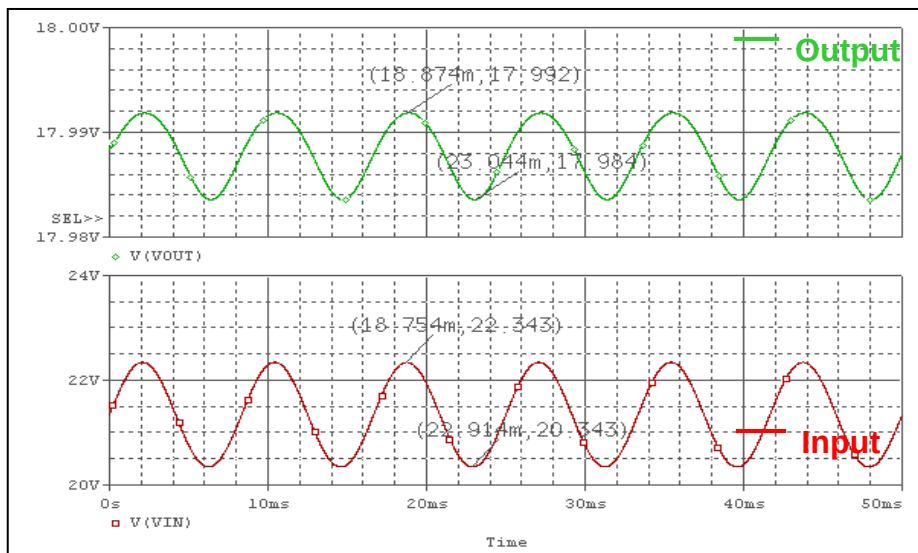
$V_{IN} - V_{OUT}$	Measurement	Simulation	% Error
25 (V) – 18 (V)	7 (V)	7.0020 (V)	0.029

Ripple Rejection (R•R) Characteristic

Evaluation Circuit



Simulation result

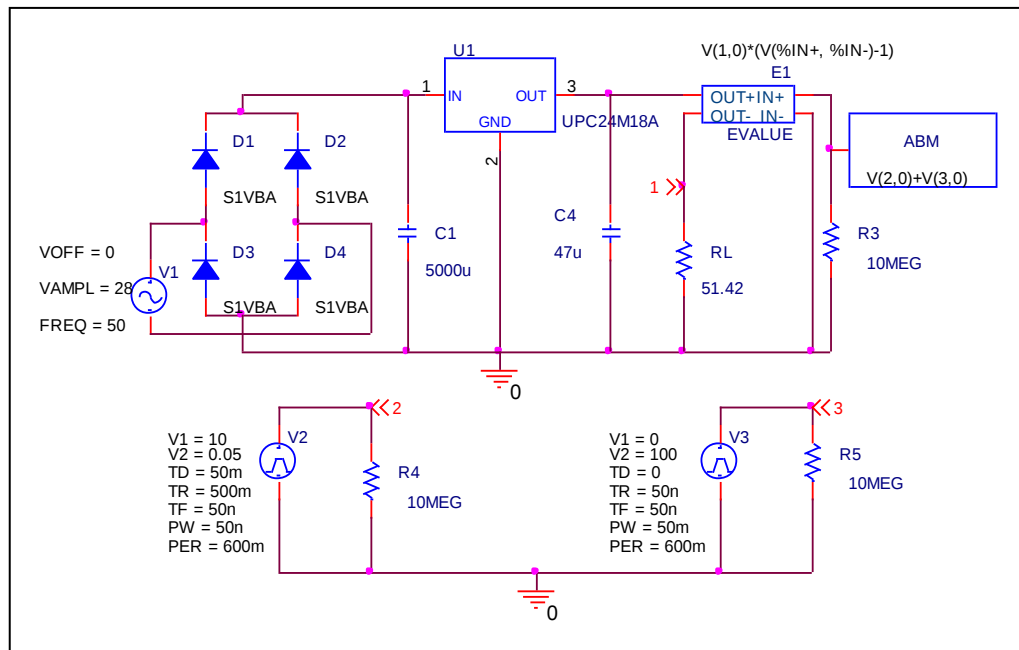


Comparison Table

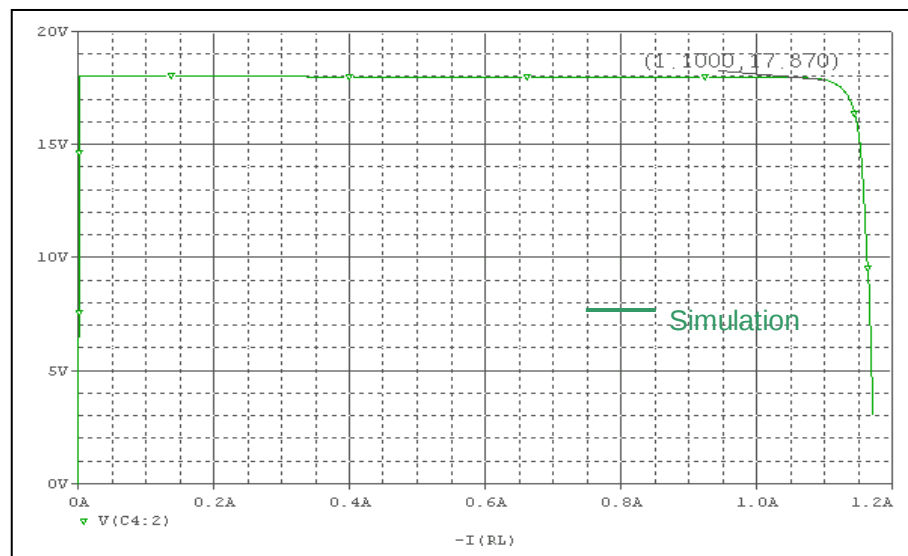
Ripple rejection ratio (dB)	Measurement	Simulation	% Error
	49	47.959	-2.125

Output Characteristic

Evaluation Circuit



Simulation result



Comparison Table

Output Voltage (V)	Measurement	Simulation	% Error
	18	17.870	-0.722