Device Modeling Report

COMPONENTS: VOLTAGE REGULATOR
PART NUMBER: LM7815
MANUFACTURER: FAIRCHILD SEMICONDUCTOR
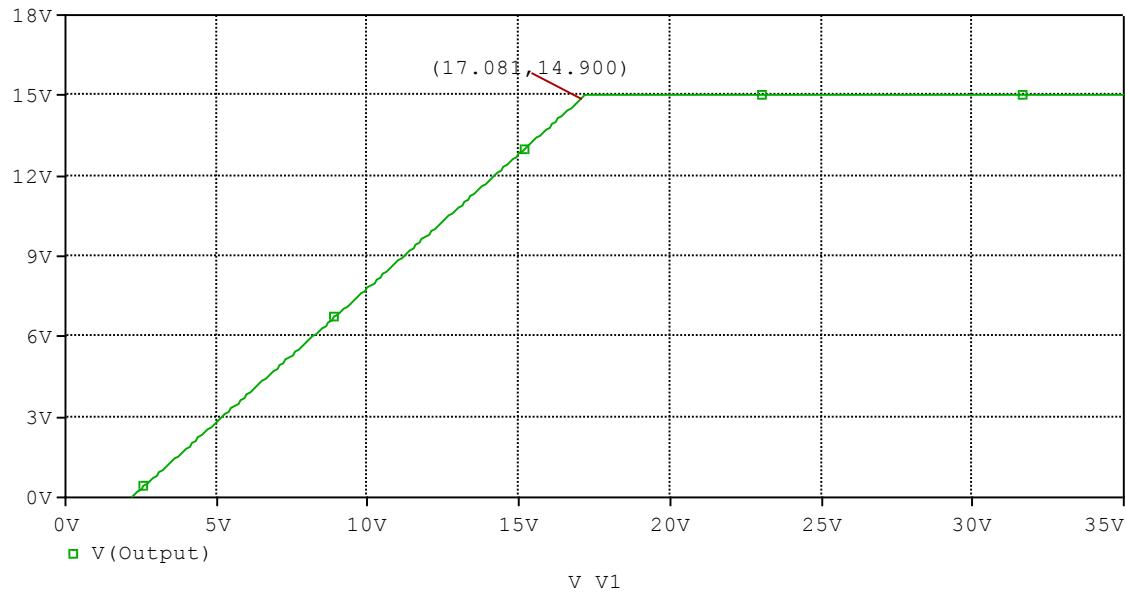

Bee Technologies Inc.

## MODEL PARAMETER
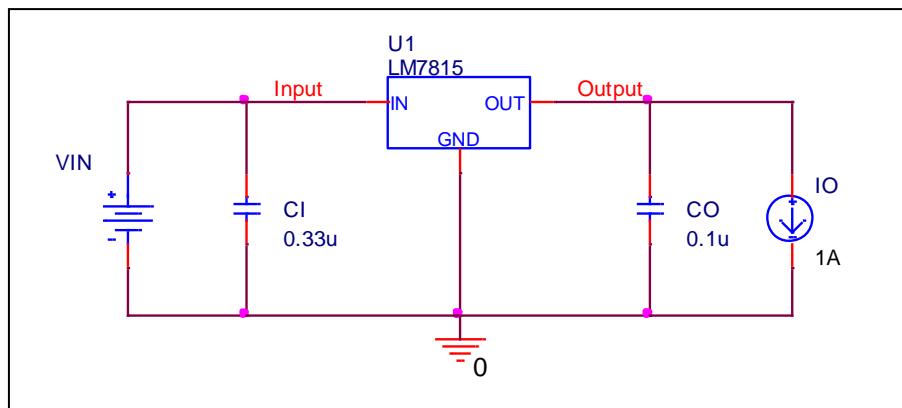
Pspice model parameter	Model description
VREF	Reference Voltage
N	Emission Coefficient
BETA	Tranconductance of JFET Transistor
VAF	Early Voltage of Output Pass Transistor
CPZ	Output Impedance Zero Capacitor
RB2	Base Resistance of Output Limit Voltage Source
ESC1	Coefficient of Current Limit Voltage Source
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

18V

(17.081,14.900)

15V

12V

9V

6V

3V

0V

0V   5V   10V   15V   20V   25V   30V   35V

□ V(Output)

V_V1

Evaluation Circuit

U1
LM7815

Input   IN   OUT   Output

GND

VIN

CI   CO   IO
0.33u   0.1u
+   1A
-

0
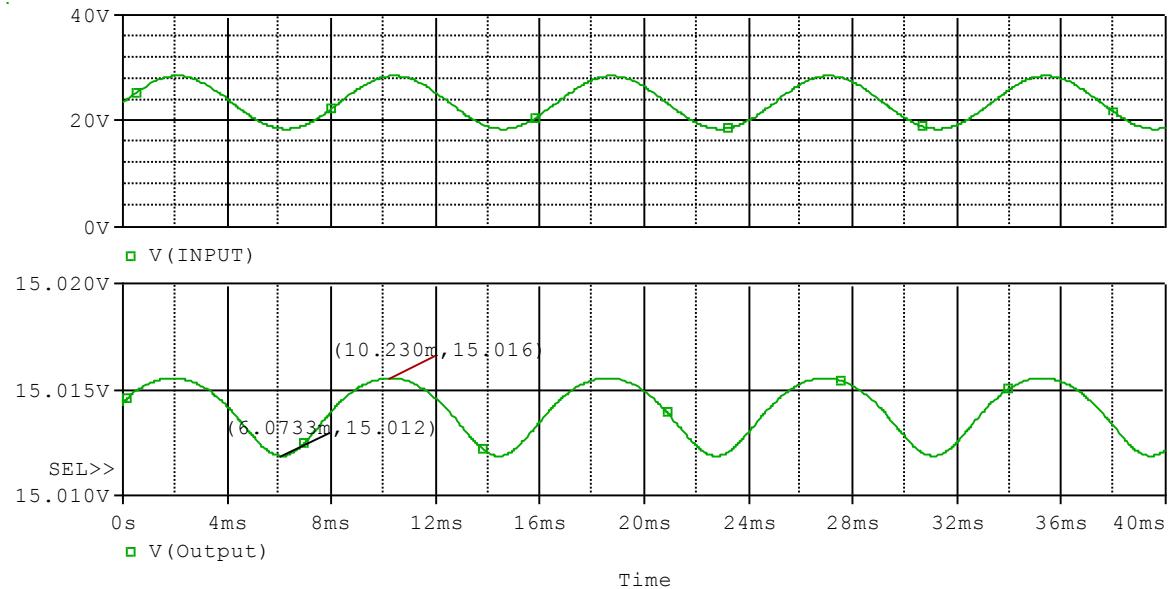
Comparison Table

Condition: I_O = 1A, V_I = 23V, C_I = 0.33µF, C_O = 0.1µF,
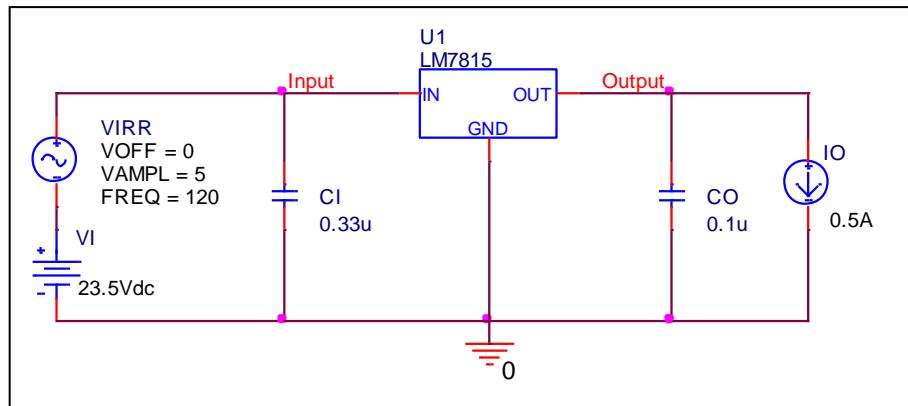
Parameter	Measurement	Simulation	%Error
$V_{DROP}(V)$	2.000	2.081	4.05

Ripple Rejection (R·R) Characteristic

Simulation Result

Evaluation Circuit
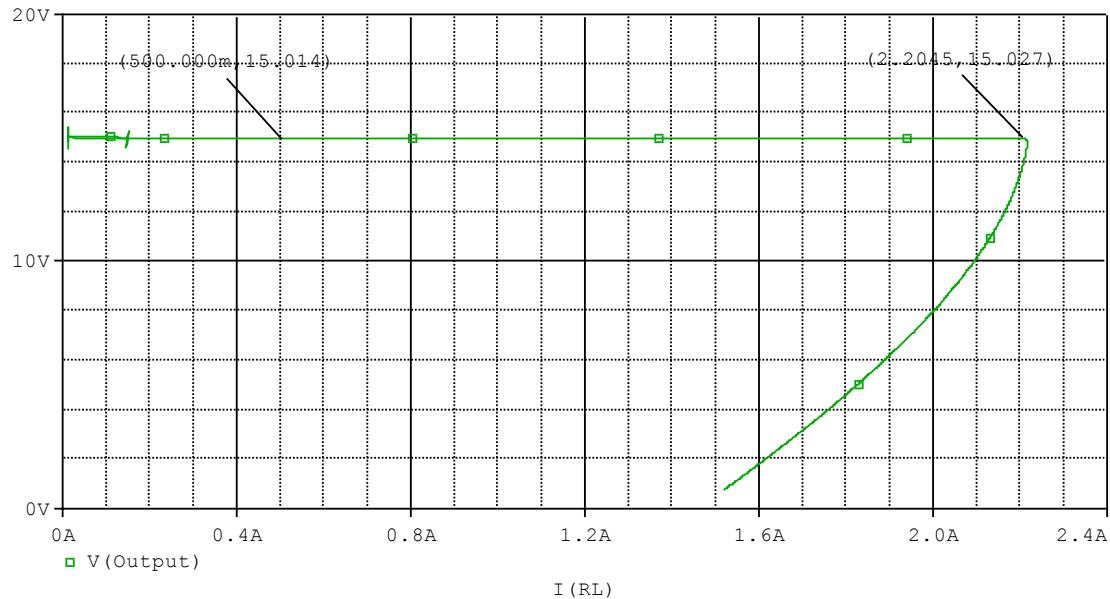
Comparison Table

Condition: I_O = 500mA, V_I = 23V, C_I = 0.33μF, C_O = 0.1μF, f = 120Hz, V_I = 18.5V to 28.5V
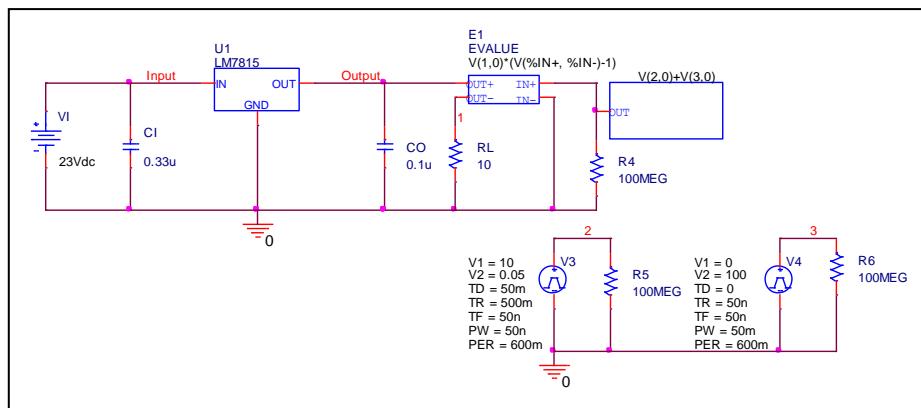
Parameter	Measurement	Simulation	%Error
RR(dB)	70.000	68.712	-1.84

Output Characteristic

Simulation Result

Evaluation Circuit

Comparison Table

Condition: I_O = 250mA to 750mA, V_I = 23V, C_I = 0.33µF, C_O = 0.1µF,

Parameter	Measurement	Simulation	%Error
V_O(V)	15.000	15.014	0.09
I_{PK}(A)	2.200	2.205	0.20