NISSHINBO

RP130x501x

SPICE Modeling Report

No. SPM-RP130x501x_C,YC-210902

Terms of Use for SPICE Model

1. Introduction
   - This SPICE MODEL is a simulation model and not for use in actual product operation.(“Purpose”)
     It is not an alternative to the actual product.
     Please use this SPICE MODEL to assist in the actual product operation check.
   - Reference information on simulation execution and operating condition for each model may be listed in each net list file, therefore please check before using the SPICE MODEL.

2. Terms of Use
   - This SPICE MODEL is a model for the typical characteristics under the ambient temperature condition of 25°C.

3. No licensed
   - NISD does not grant any rights, including but not limited to patent or mask works with regards to circuits described in relevant documents.
   - The SPICE MODEL shall be duplicated for the Purpose only.

4. Disclaimer
   - NISD shall not be responsible for any changes and inaccuracies caused by the SPICE MODEL.
   - Although NISD strives to ensure that SPICE MODEL works properly, NISD shall not guarantee that the SPICE MODEL operates under all conditions, Computers and simulators.

※ NISD is an abbreviation for Nisshinbo Micro Devices Inc.

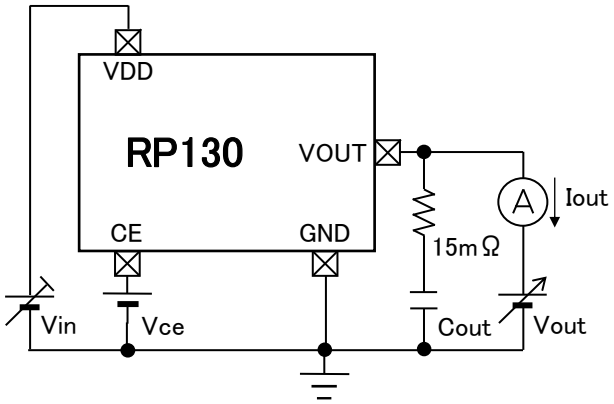
SPICE Model

- Library file name..... RP130x501x_C.txt, RP130x501x_YC.lib
- Terminal information

Device Pin No.				Device Symbol	Description	Model Symbol
DFN(PL) 1010-4	DFN 1212-4	SC-82AB	SOT-23-5			
1	1	3	5	V_{OUT}	Output Pin	VOUT
2	2	2	2	GND	Ground Pin	GND
3	3	1	3	CE	Chip Enable Pin ("H" Active)	CE
4	4	4	1	V_{DD}	Input Pin	VDD
–	–	–	4	NC	No Connection	–

Characteristic Data

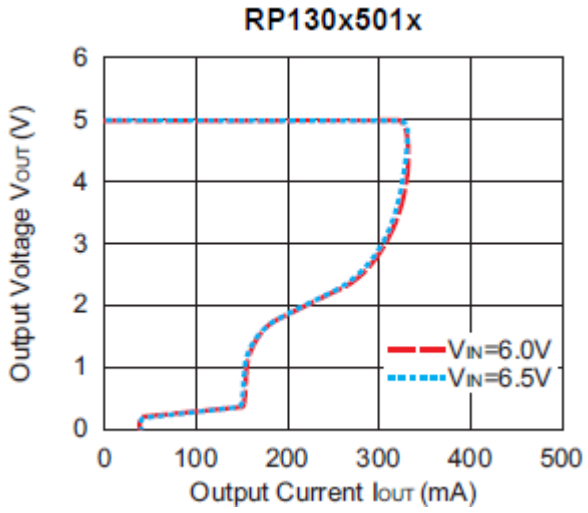
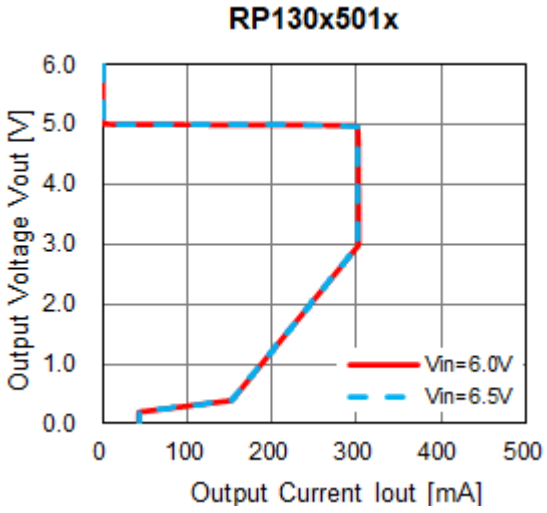
Output Voltage vs. Output Current



Condition

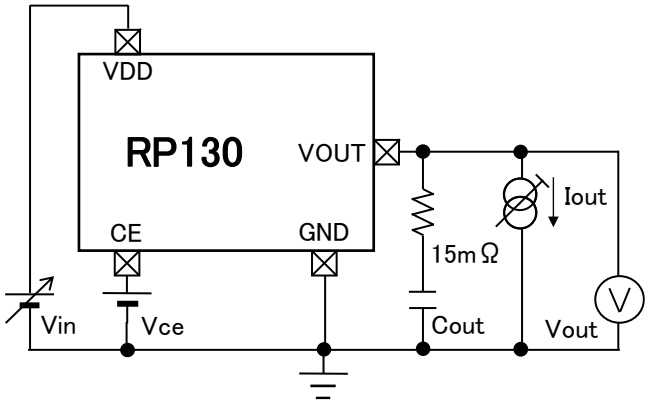
Vin = 6.0, 6.5 [V]
Vce = 1.0 [V]
Cout = 0.47 [µF]
Vout = 0 to 6.0 [V] DC Sweep

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

Output Voltage vs. Input Voltage

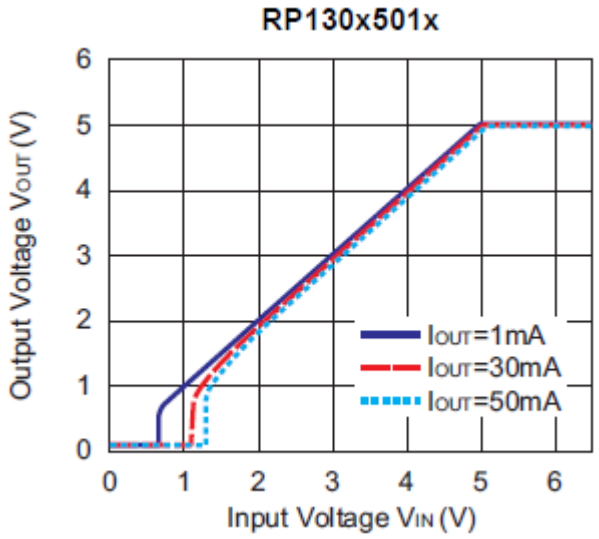
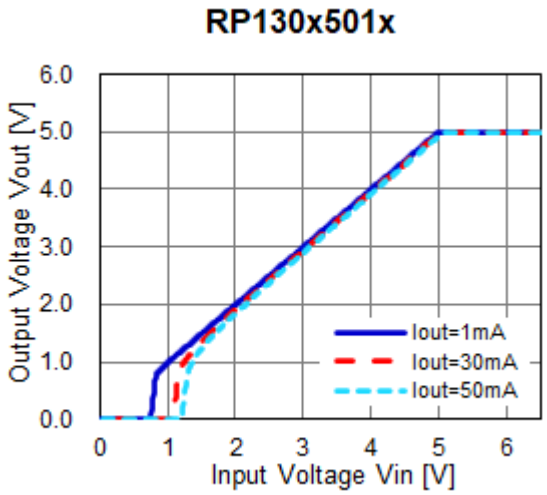


Condition

Vin = 0 to 6.5 [V] DC Sweep
Vce = 1.0 [V]
Cout = 0.47 [µF]
Iout = 1, 30, 50 [mA]

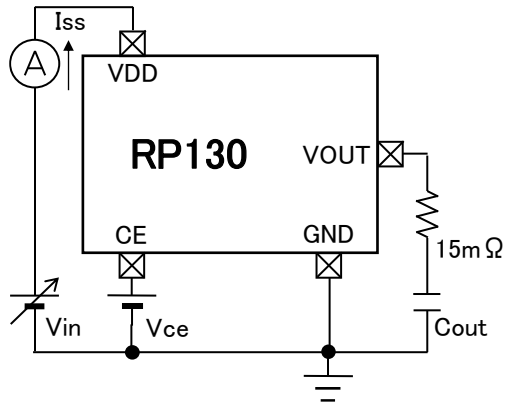
Execute transient simulation with a very slow Vin sweep for stable results.

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

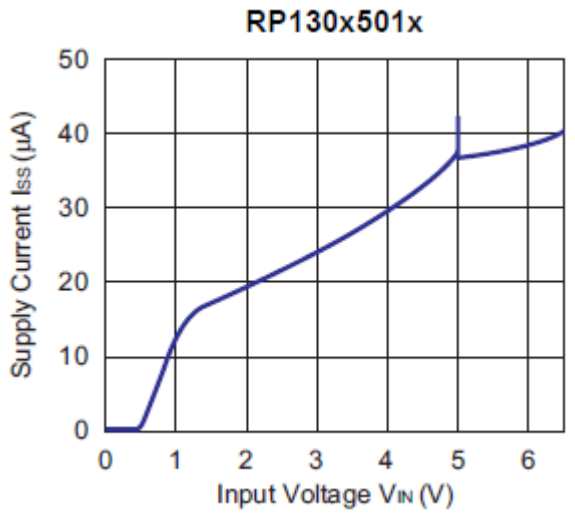
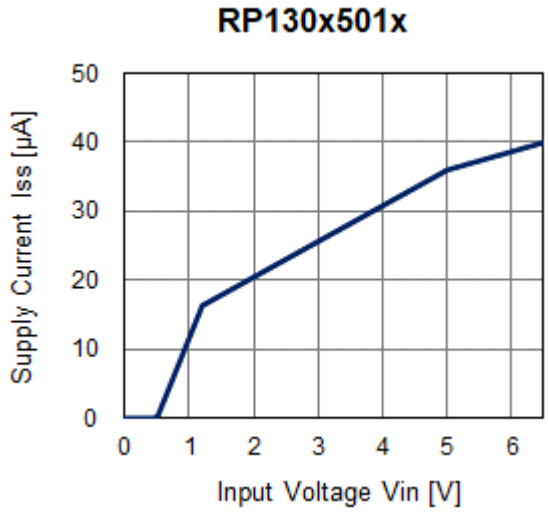
Supply Current vs. Input Voltage



Condition

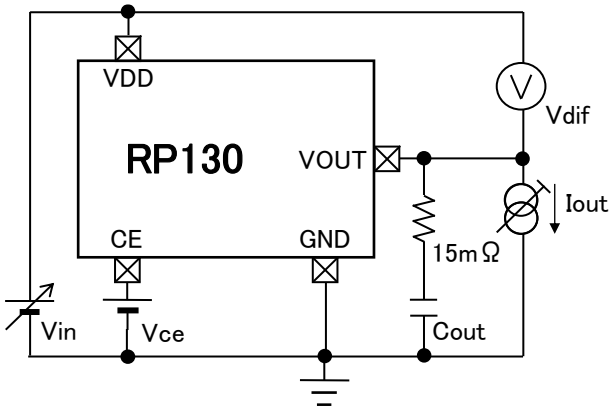
Vin = 0.0 to 6.5 [V] DC Sweep
Vce = 1.0 [V]
Cout = 0.47 [µF]

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

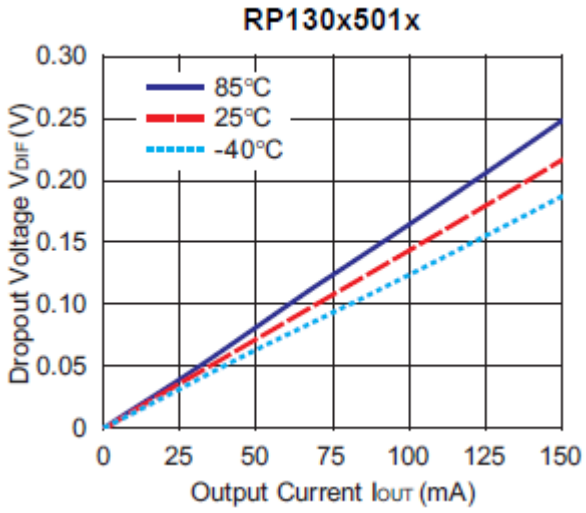
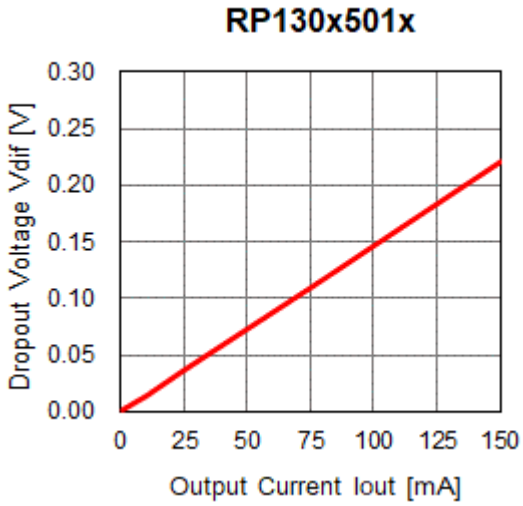
Dropout Voltage vs. Output Current



Condition

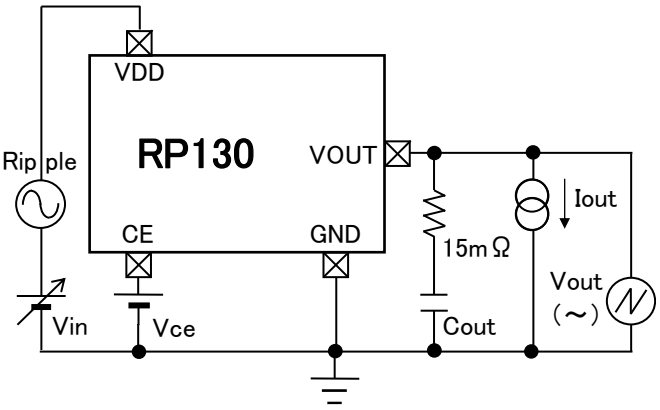
Vin = 0 to 6.5 [V] DC Sweep
for each Iout (0 to 150[mA])
Vce = 1.0 [V]
Cout = 0.47 [µF]

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

Ripple Rejection vs. Input Bias Voltage

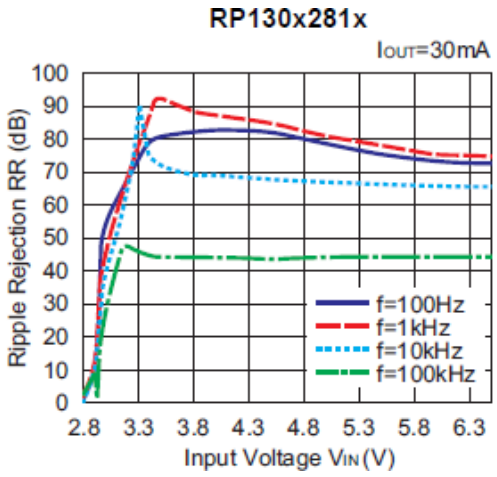
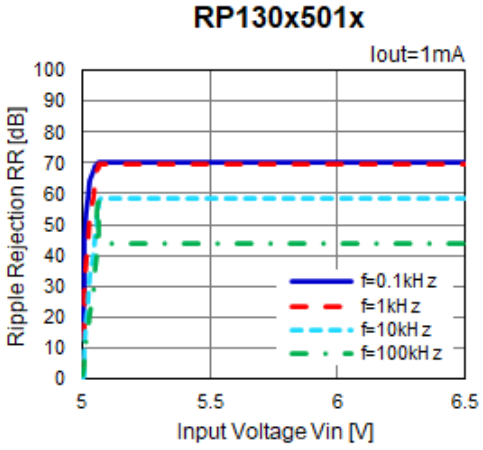
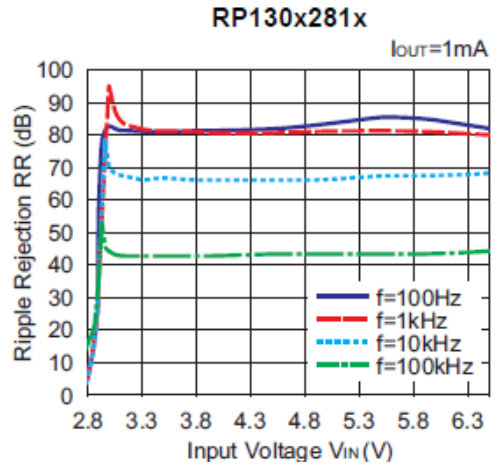
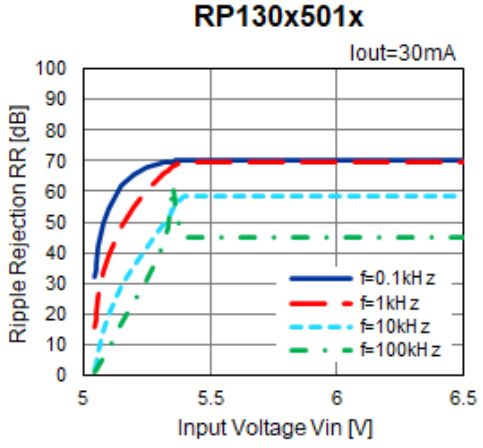


Condition

Vin = 5.0 to 6.5 [V] DC Sweep
Vce = 1.0 [V]
Cout = 0.47 [µF]
Iout = 1, 30 [mA]
Ripple Freq.= 0.1, 1, 10, 100 [kHz]
AC(small signal) sim. was executed.

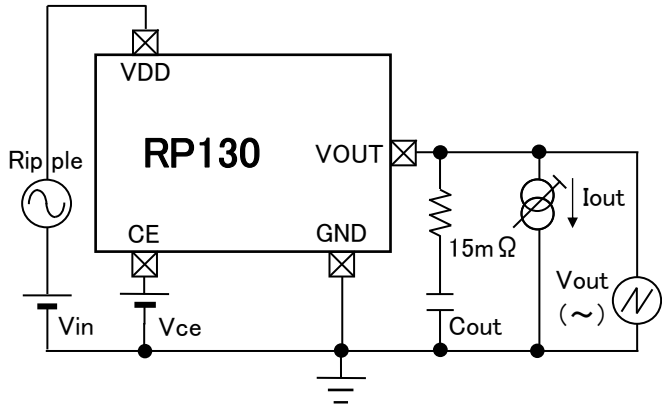
Notice; The graph of Typical Characteristics (datasheet) is for the different version from this model.

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	
	

Characteristic Data

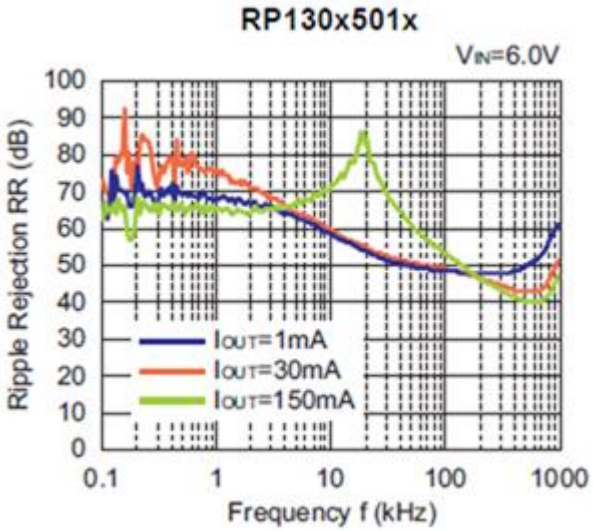
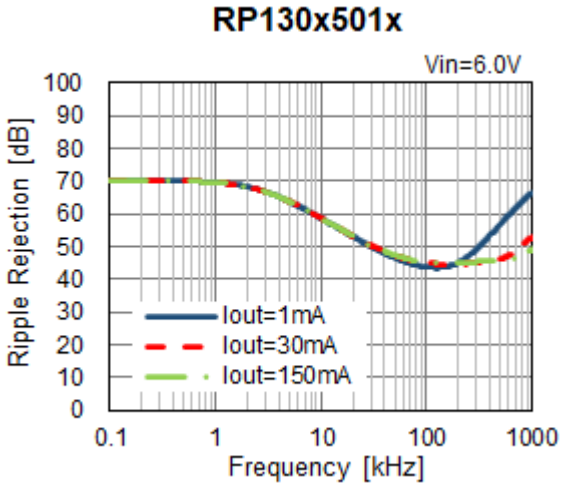
Ripple Rejection vs. Frequency



Condition

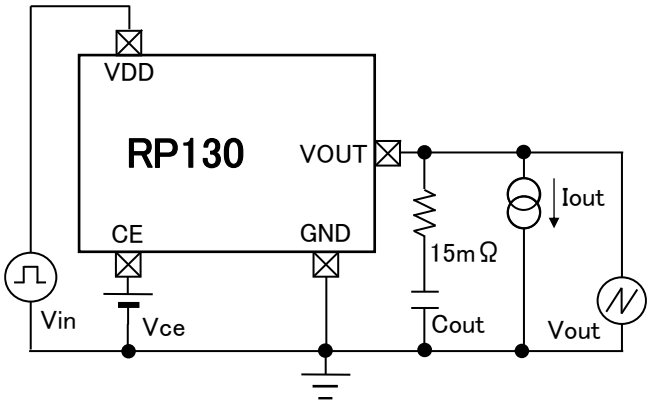
Vin =6.0 [V]
Vce = 1.0 [V]
Cout = 0.47 [µF]
Iout = 1, 30, 150 [mA]
Ripple Freq.= 0.1 to 1000 [kHz]
AC(small signal) sim. was executed.

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

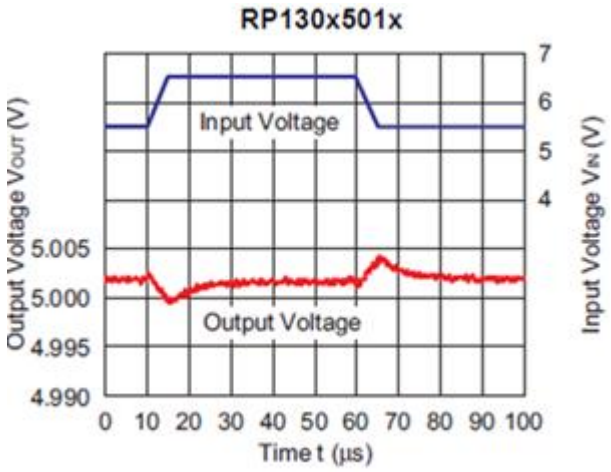
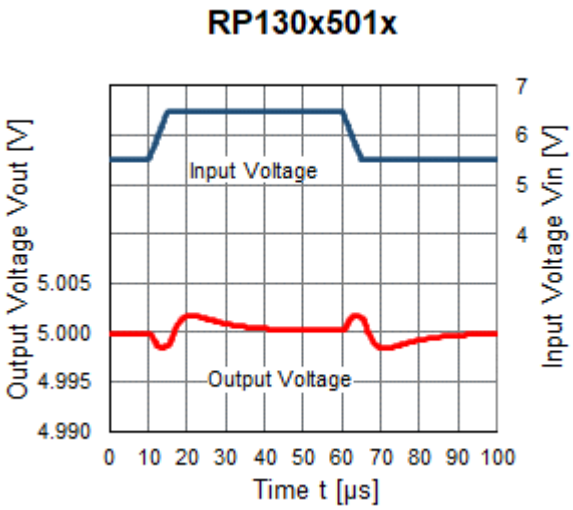
Input Transient Response



Condition

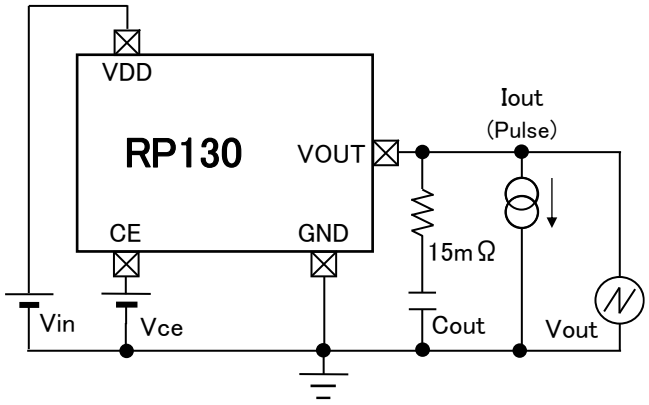
Vin = 5.5 → 6.5 → 5.5 [V]
tr = tf = 5 [µs]
Vce = 1.0 [V]
Cout = 0.47 [µF]
Iout = 30 [mA]

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

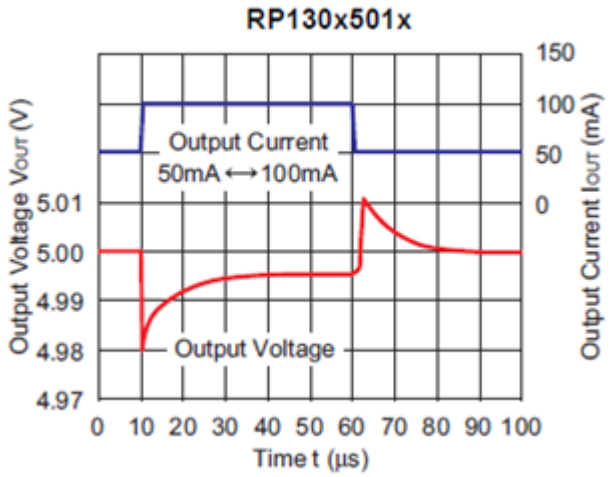
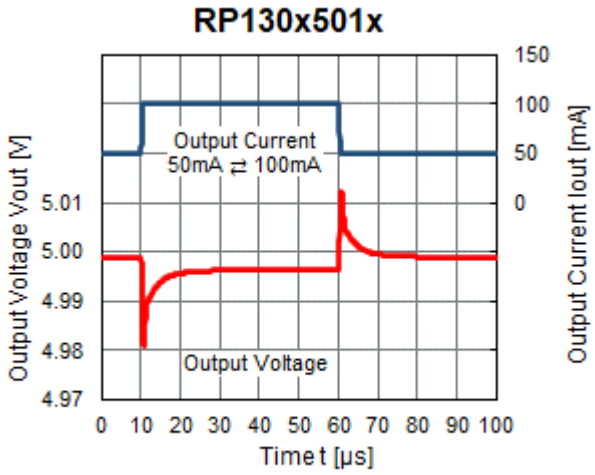
Load Transient Response



Condition

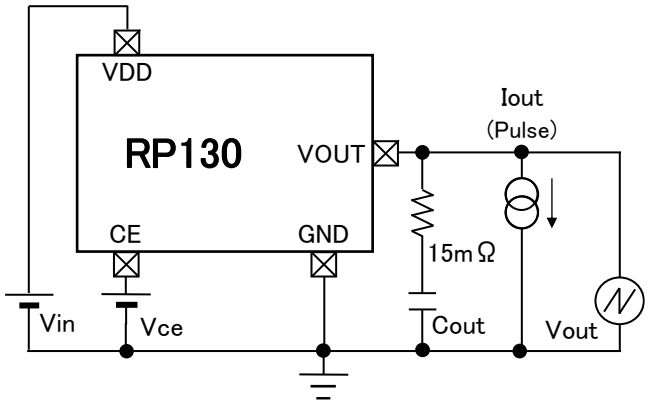
Vin =6.0 [V]
Vce = 1.0 [V]
Cout = 0.47 [µF]
Iout = 50 → 100 → 50 [mA]
tr = tf = 0.5 [µs]

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

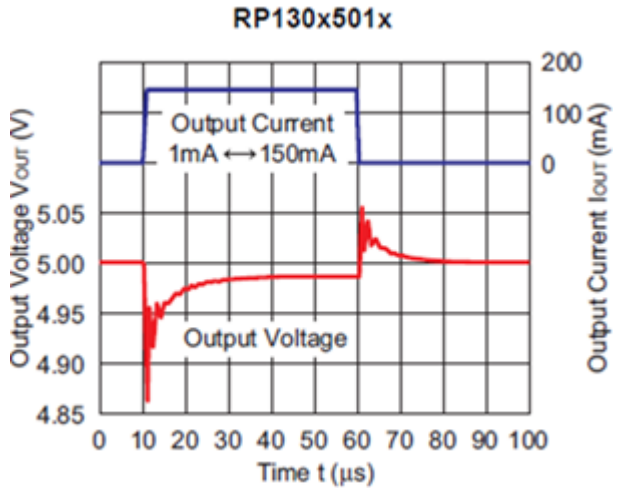
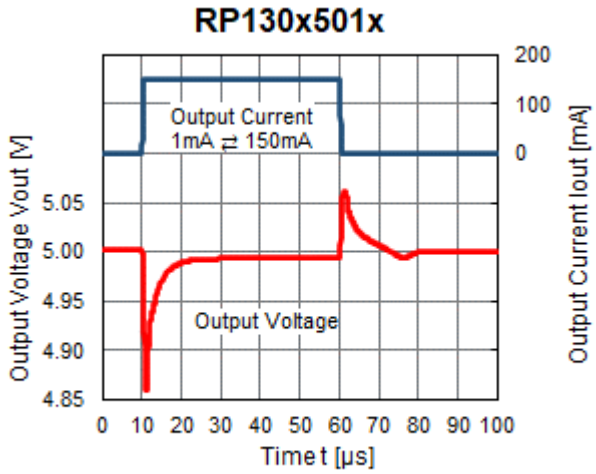
Load Transient Response



Condition

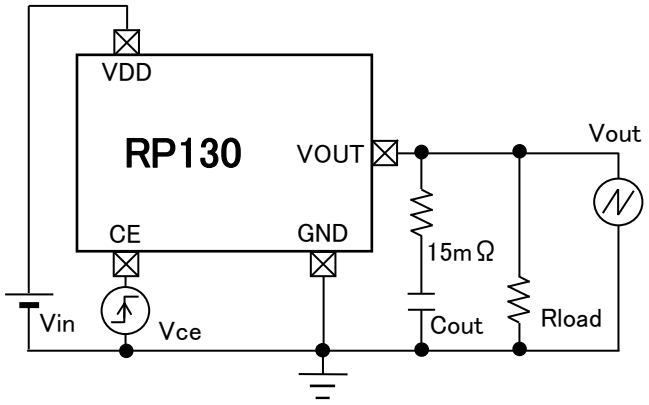
Vin =6.0 [V]
Vce = 1.0 [V]
Cout = 0.47 [µF]
Iout = 1 → 150 → 1 [mA]
tr = tf = 0.5 [µs]

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

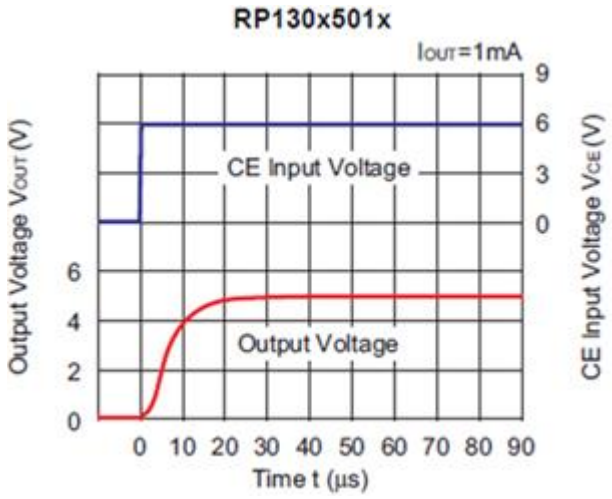
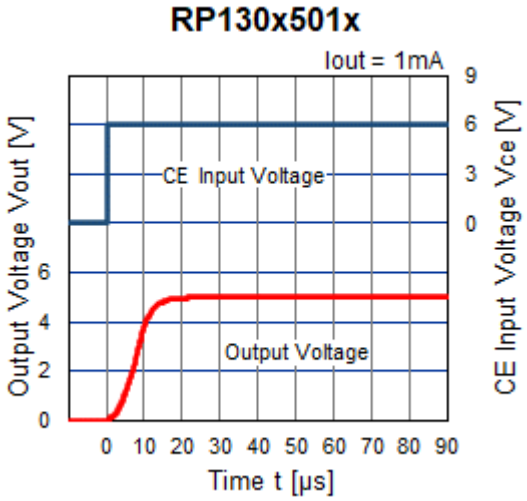
Load Transient Response



Condition

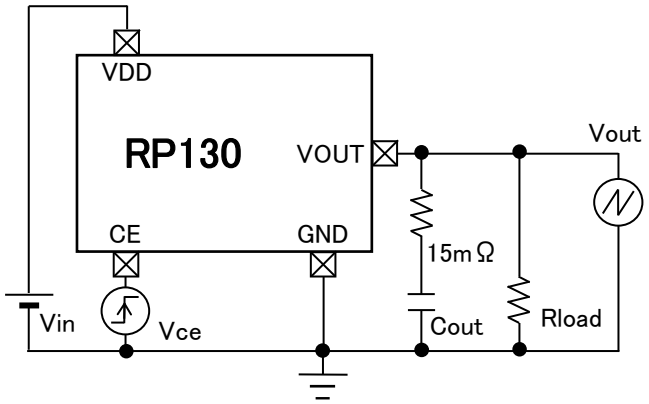
Vin =6.0 [V]
Vce = 0 → 6.0 [V]
Cout = 0.47 [µF]
Rload = 5000 [Ω]
(Iout = 1 [mA])

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

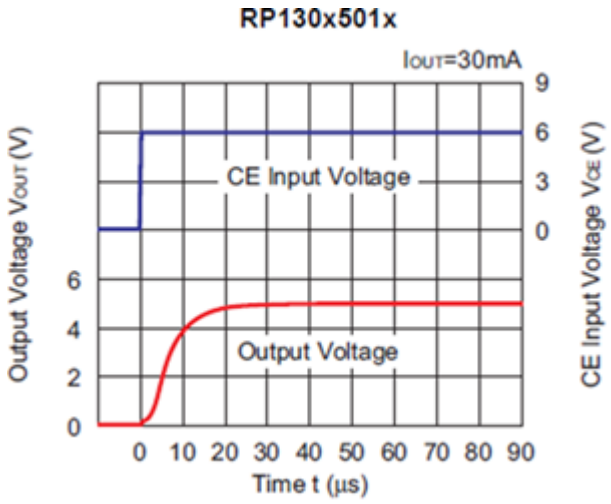
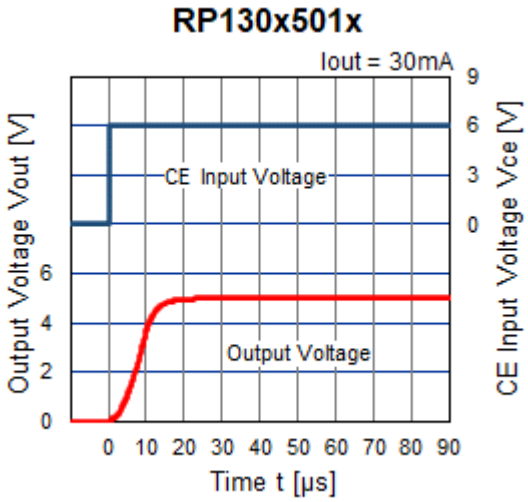
Turn On Speed with CE pin



Condition

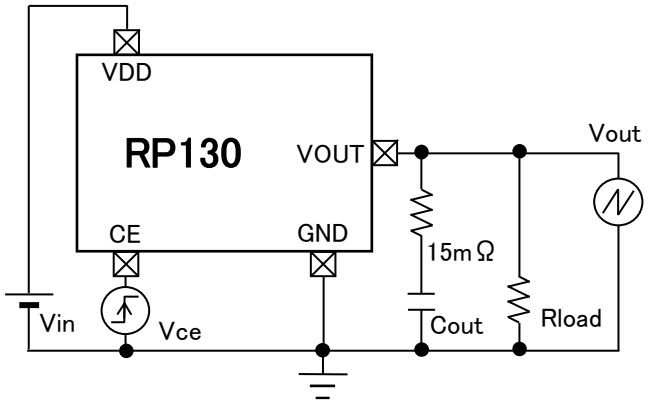
Vin =6.0 [V]
Vce = 0 → 6.0 [V]
Cout = 0.47 [µF]
Rload = 166.67 [Ω]
(Iout = 30 [mA])

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

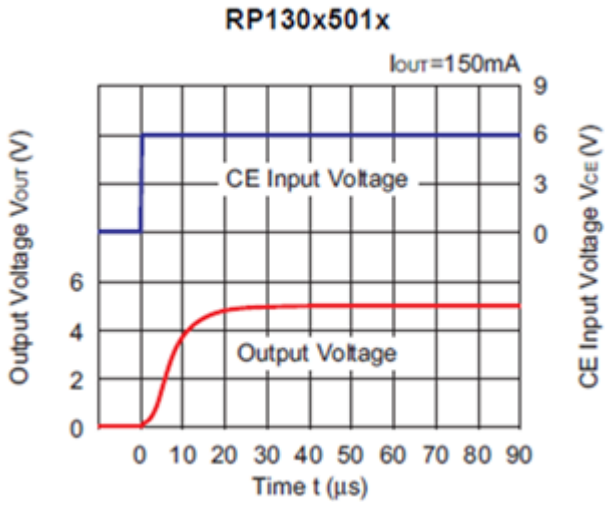
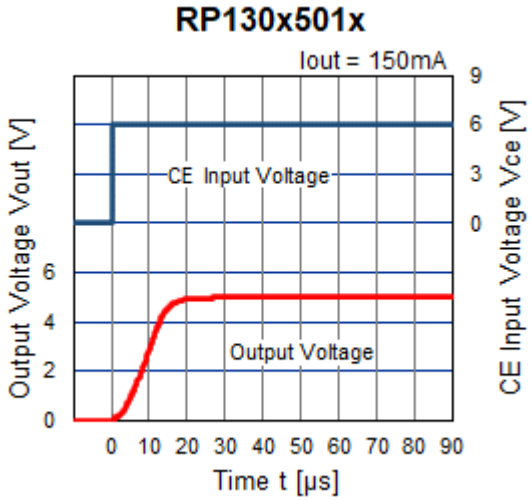
Turn On Speed with CE pin



Condition

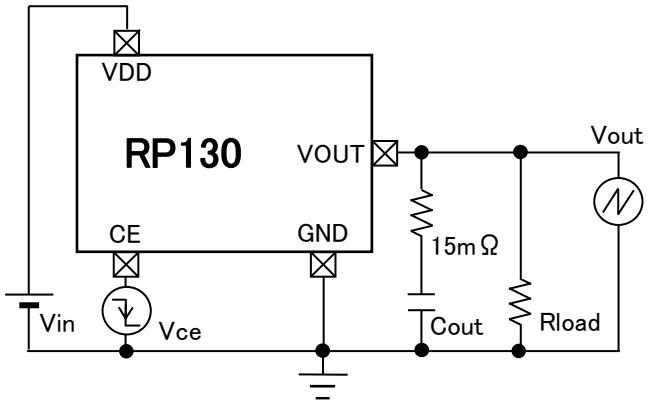
Vin =6.0 [V]
Vce = 0 → 6.0 [V]
Cout = 0.47 [µF]
Rload = 33.33 [Ω]
(Iout = 150 [mA])

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

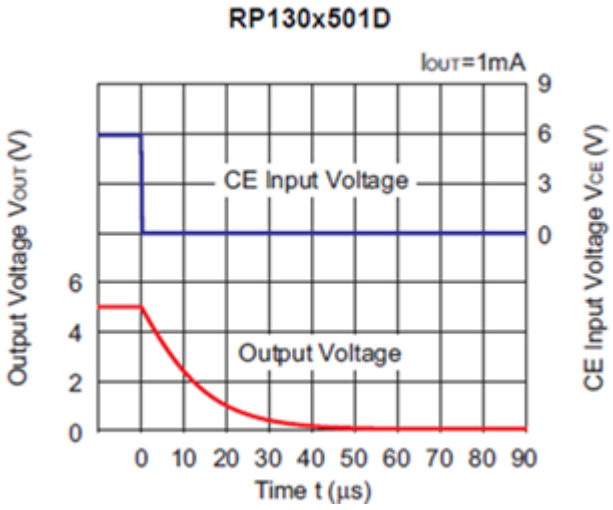
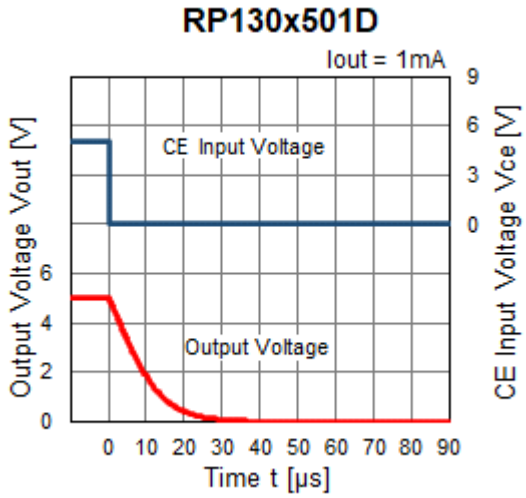
Turn Off Speed with CE pin



Condition

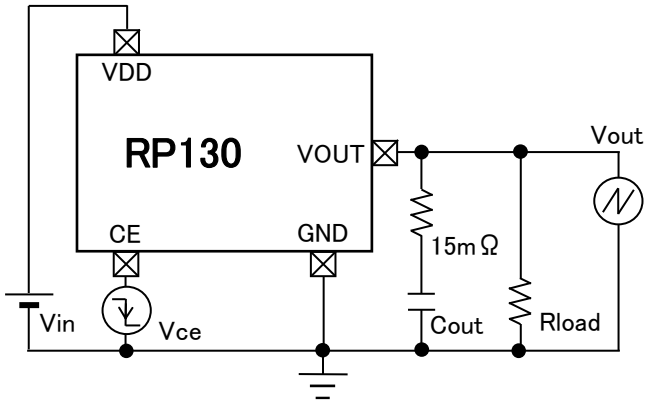
Vin =6.0 [V]
Vce =6.0 → 0 [V]
Cout = 0.47 [µF]
Rload = 5000 [Ω]
(Iout = 1 [mA])

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

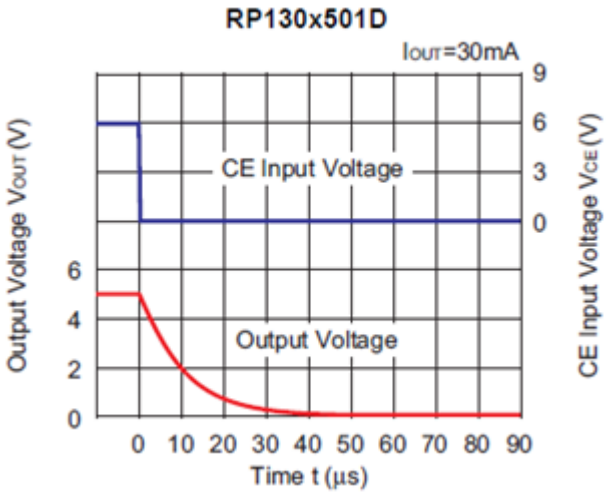
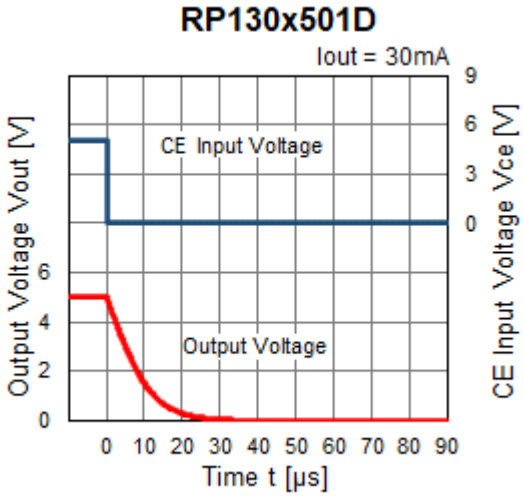
Turn Off Speed with CE pin



Condition

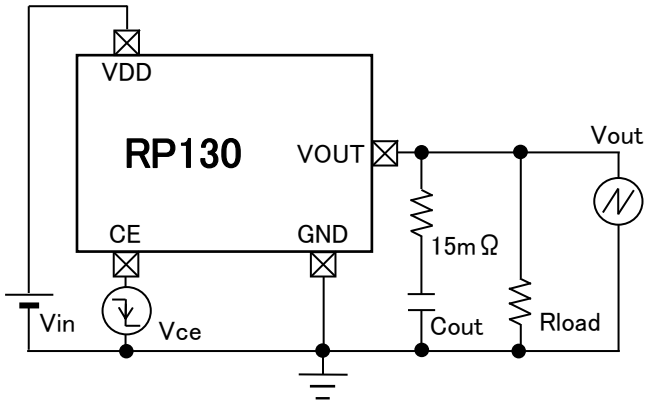
Vin =6.0 [V]
Vce =6.0 → 0 [V]
Cout = 0.47 [µF]
Rload = 166.67 [Ω]
(Iout = 30 [mA])

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)
	

Characteristic Data

Turn Off Speed with CE pin



Condition

Vin =6.0 [V]
Vce =6.0 → 0 [V]
Cout = 0.47 [µF]
Rload = 33.33 [Ω]
(Iout = 150 [mA])

・Simulation Result

Typical Characteristics (Datasheet)	Simulation Result (Spice Model)