

2ch LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The NJM2891 is low dropout voltage regulator designed for cellular phone application. Advanced Bipolar technology achieves low noise, high ripple rejection and low quiescent current.

■ PACKAGE OUTLINE

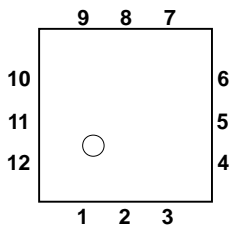


NJM2891PB1

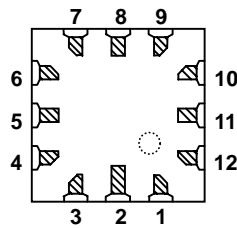
■ FEATURES

- High Ripple Rejection 70dB typ. (f=1kHz , Vo=3V Version)
- Output Noise Voltage Vno=30μVrms typ.(Cp=0.01μF)
- Output capacitor with 1.0μF ceramic capacitor (Vo≥2.7V)
- Output Current Io(max.)=150mA × 2ch
- High Precision Output Vo±1.0%
- Low Dropout Voltage 0.10V typ. (Io=60mA)
- ON/OFF Control (Active High)
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline FFP12-B1 (2.0×2.0×0.85mm)

■ PIN CONFIGURATION



TOP



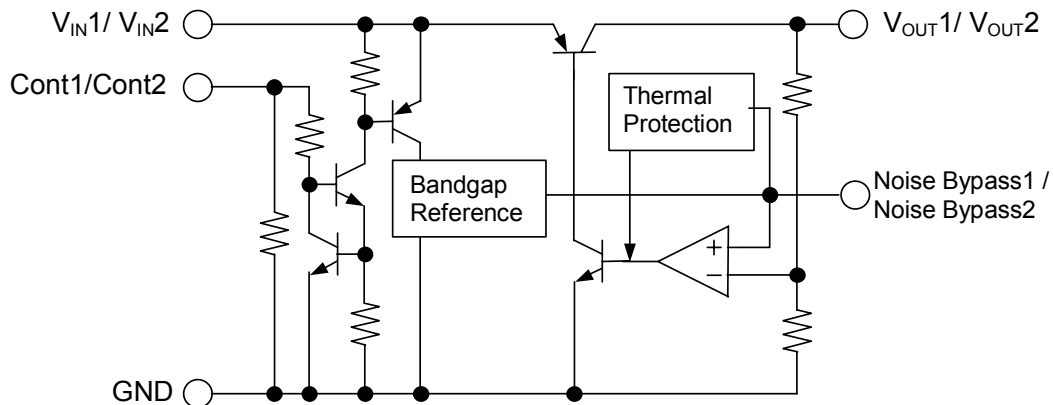
BOTTOM

NJM2891PB1

PIN FUNCTION

- | | |
|----------------------|----------------------|
| 1. V _{OUT2} | 7. CONTROL1 |
| 2. V _{OUT2} | 8. V _{OUT1} |
| 3. GND | 9. V _{OUT1} |
| 4. CONTROL2 | 10. NOISE BYPASS1 |
| 5. V _{IN2} | 11. NC |
| 6. V _{IN1} | 12. NOISE BYPASS2 |

■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE RANK LIST

Device Name	Vout	
	CH1	CH2
NJM2891PB1-2121	2.1V	2.1V
NJM2891PB1-2725	2.7V	2.5V
NJM2891PB1-2727	2.7V	2.7V
NJM2891PB1-2825	2.8V	2.5V
NJM2891PB1-2828	2.8V	2.8V
NJM2891PB1-J18	2.85V	1.8V
NJM2891PB1-2929	2.9V	2.9V
NJM2891PB1-0328	3.0V	2.8V
NJM2891PB1-0303	3.0V	3.0V
NJM2891PB1-3332	3.3V	3.2V
NJM2891PB1-0521	5.0V	2.1V

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V _{IN}	+14	V
Control Voltage	V _{CONT}	+14(*1)	V
Power Dissipation	P _D	300(*2)	mW
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +125	°C

(*1):When input voltage is less than +14V, the absolute maximum control voltage is equal to the input voltage.

(*2):On board. (25mm×25mm×0.2mm)

■ Operating Voltage

V_{IN}=+2.5V ~ +14.0V (In case of Vo<2.1V)

■ ELECTRICAL CHARACTERISTICS

(1CH/2CH : V_{IN}=Vo+1V, C_{IN}=0.1μF, Co=1.0μF: Vo≥2.7V (Co=2.2μF: Vo≤2.6V), Cp=0.01μF, Ta=25°C)

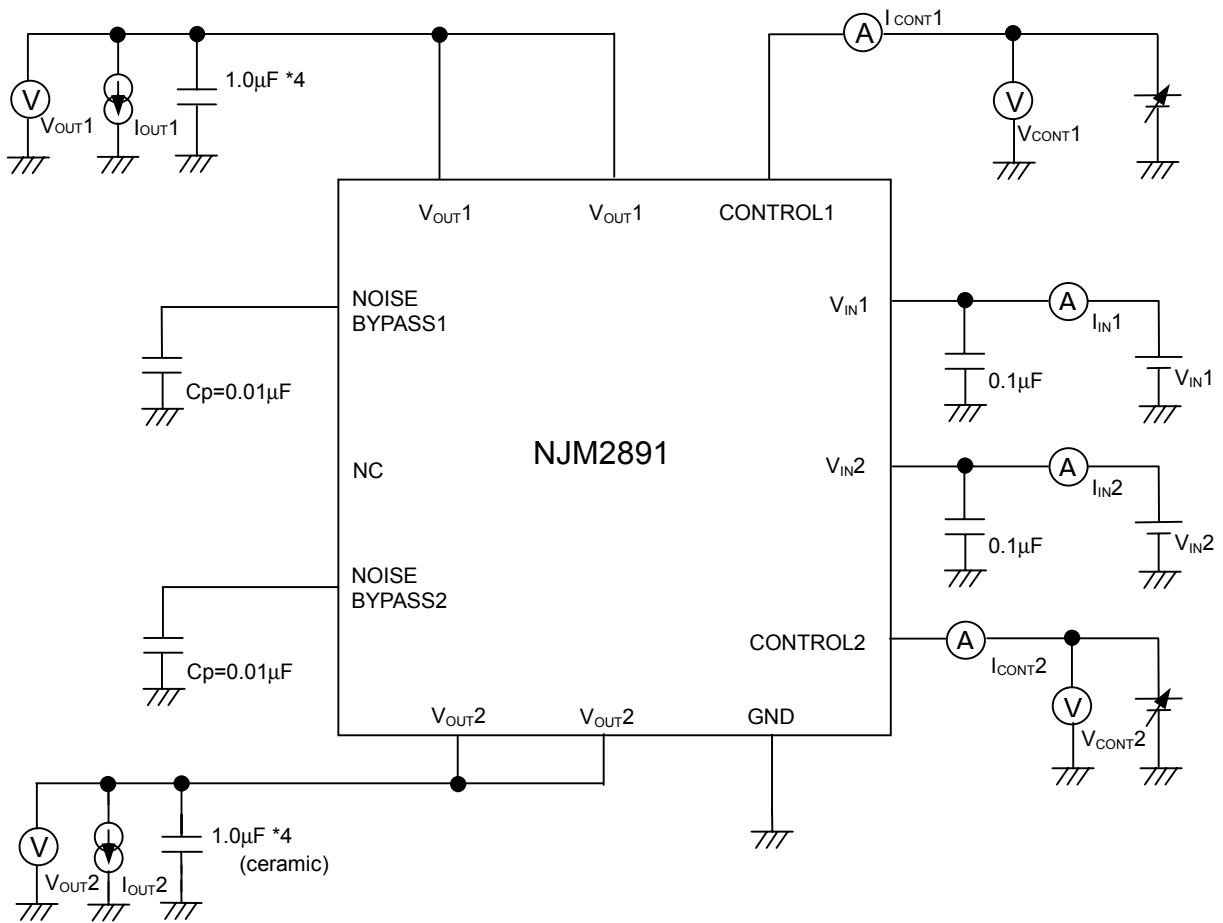
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	Vo	I _o =30mA	-1.0%	-	+1.0%	V
Quiescent Current	I _Q	I _o =0mA, expect I _{cont}	-	120	180	μA
Quiescent Current at Control OFF	I _{Q(OFF)}	V _{CONT} =0V	-	-	100	nA
Output Current	I _o	Vo-0.3V	150	200	-	mA
Line Regulation	ΔVo/ΔV _{IN}	V _{IN} =Vo+1V ~ Vo+6V, I _o =30mA	-	-	0.10	%/V
Load Regulation	ΔVo/ΔI _o	I _o =0 ~ 100mA	-	-	0.03	%/mA
Dropout Voltage(*3)	ΔV _{I-O}	I _o =60mA	-	0.10	0.18	V
Ripple Rejection	RR	e _{in} =200mVrms, f=1kHz, I _o =10mA, Vo=3V Version	-	70	-	dB
Average Temperature Coefficient of Output Voltage	ΔVo/ΔTa	Ta=0~85°C, I _o =10mA	-	±50	-	ppm/°C
Output Noise Voltage	V _{NO}	f=10Hz~80kHz, I _o =10mA, Vo=3V Version	-	30	-	μVrms
Control Voltage for ON-state	V _{CONT(ON)}		1.6	-	-	V
Control Voltage for OFF-state	V _{CONT(OFF)}		-	-	0.6	V

(*3):The output voltage excludes under 2.1V.

The above specification is a common specification for all output voltages.

Therefore, it may be different from the individual specification for a specific output voltage.

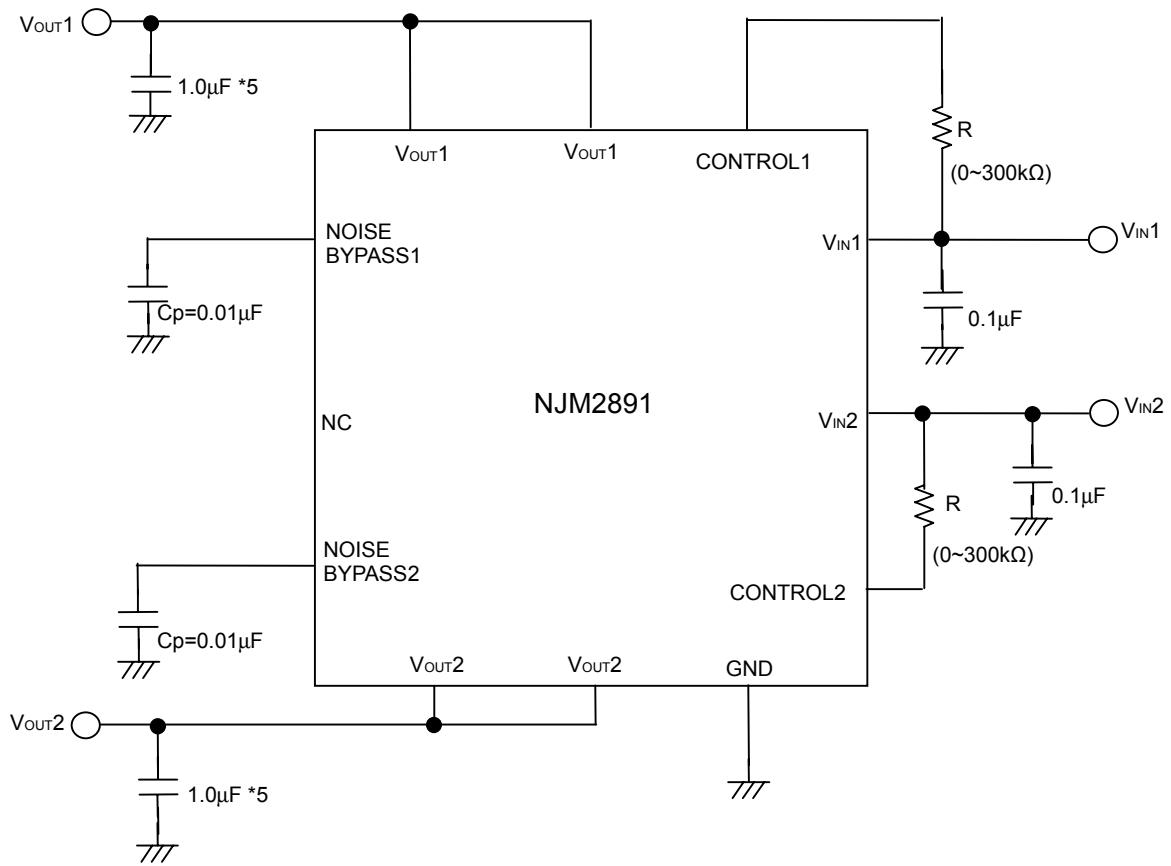
■ TEST CIRCUIT



*4 $V_o \leq 2.6V$ version: $C_o = 2.2\mu F$ (ceramic)

■ TYPICAL APPLICATION

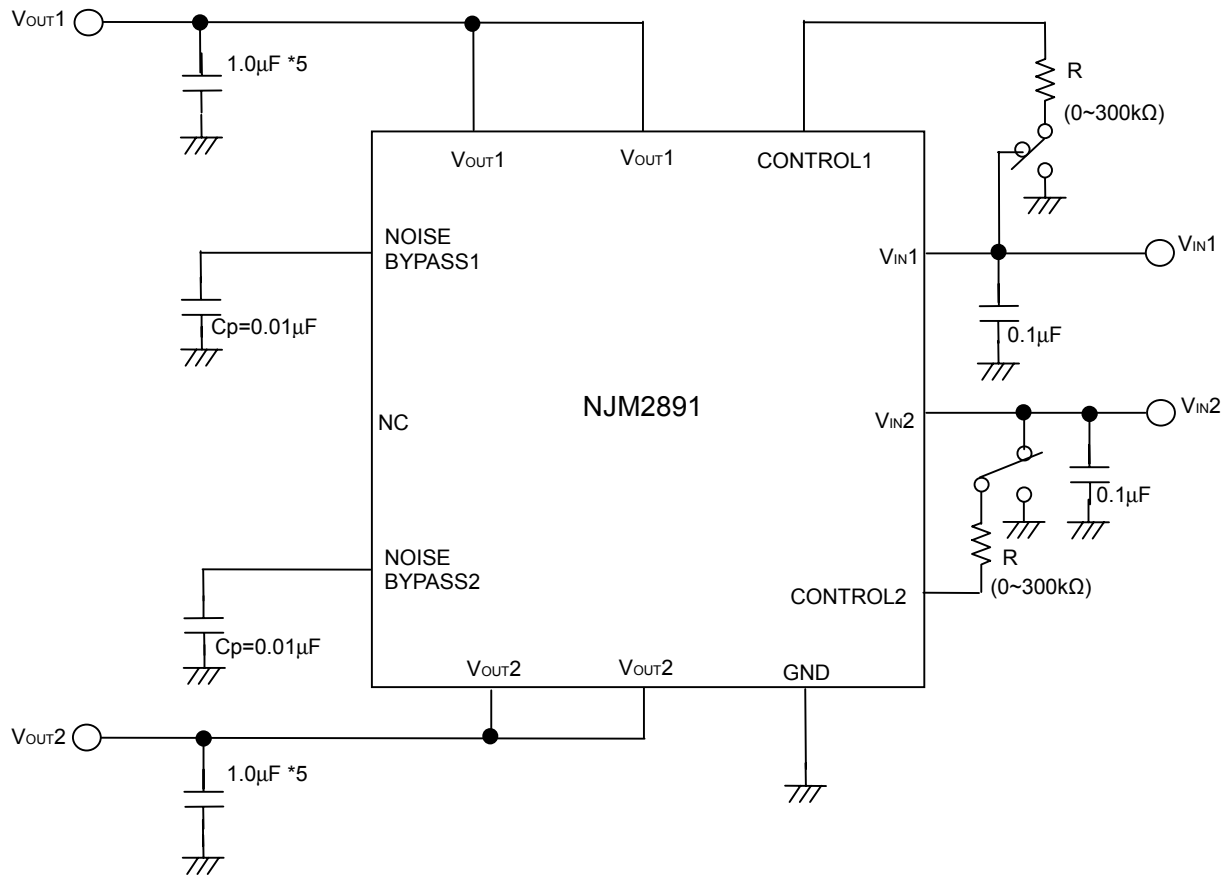
① In the case where ON/OFF Control is not required:



*5 $V_o \leq 2.6V$ version: $C_o = 2.2\mu F$

Connect control terminal to V_{IN} terminal

② In use of ON/OFF CONTROL:



*5 $V_{o} \leq 2.6V$ version: $C_o = 2.2\mu F$

State of control terminal:

- “H” → output is enabled.
- “L” or “open” → output is disabled.

***Noise bypass Capacitance C_p**

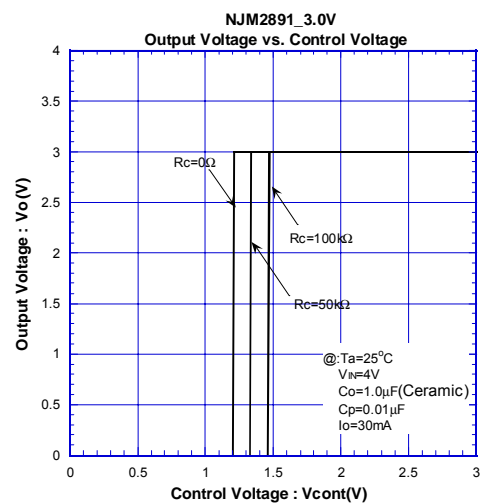
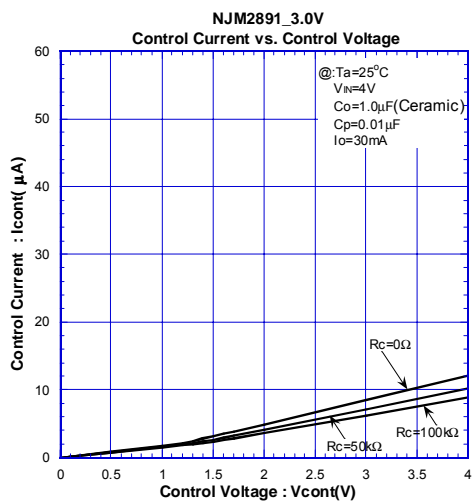
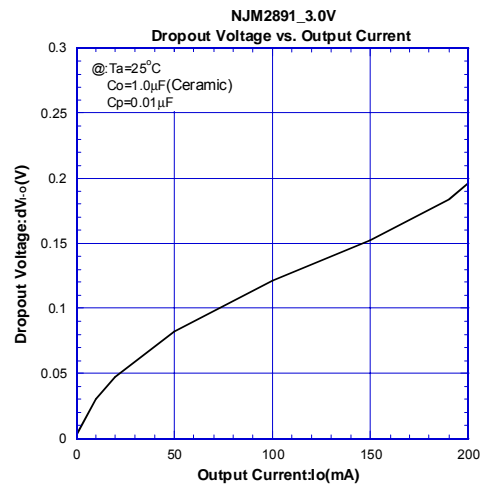
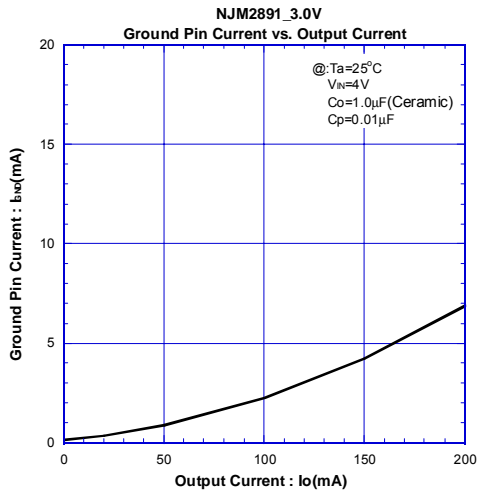
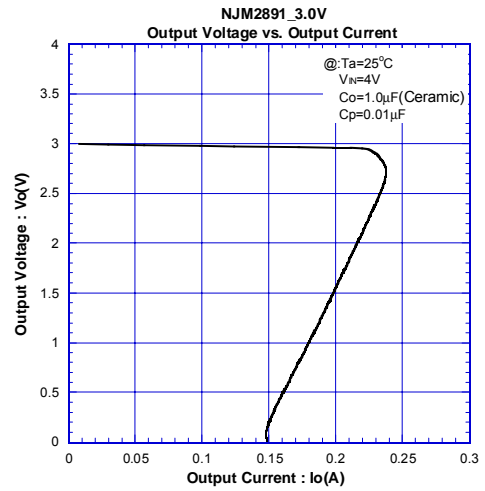
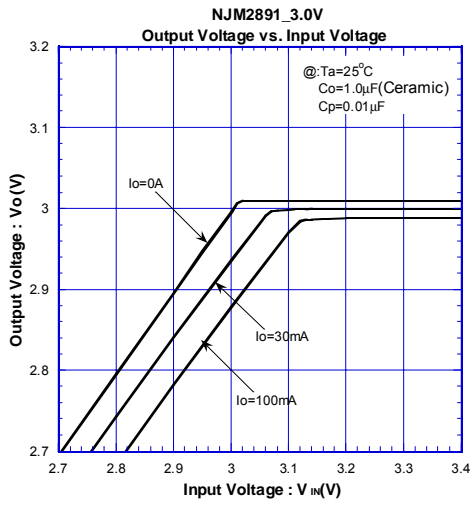
Noise bypass capacitance C_p reduces noise generated by band-gap reference circuit. Noise level and ripple rejection will be improved when larger C_p is used. Use of smaller C_p value may cause oscillation. Use the C_p value of $0.01\mu F$ greater to avoid the problem.

***In the case of using a resistance "R" between V_{IN} and control.**

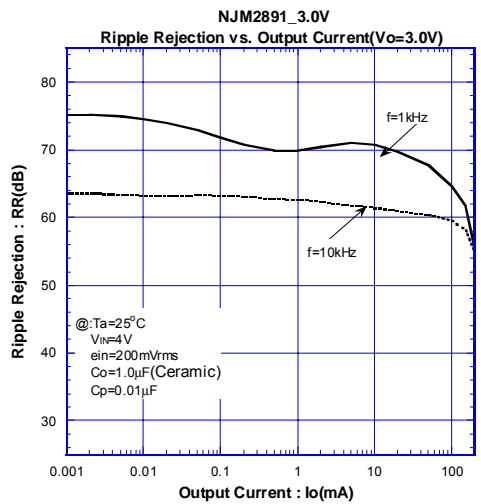
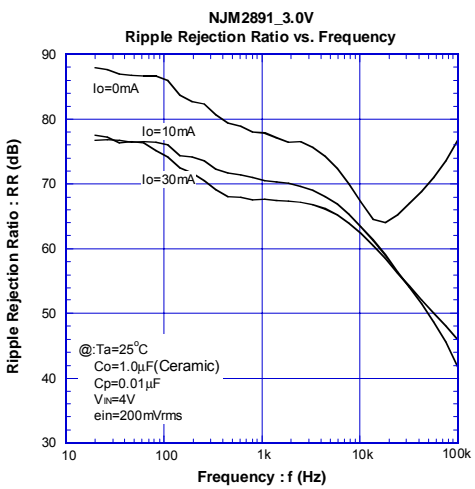
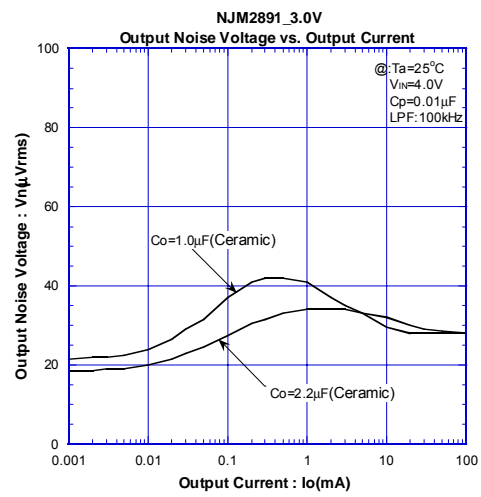
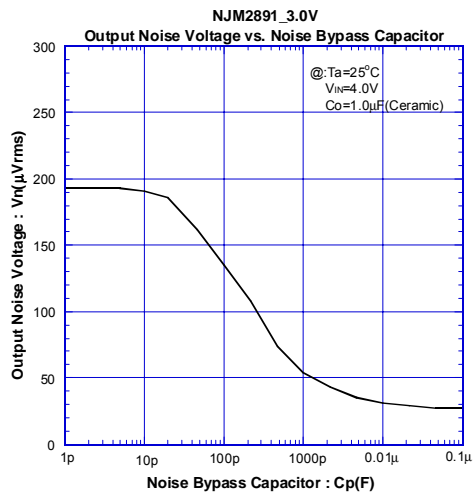
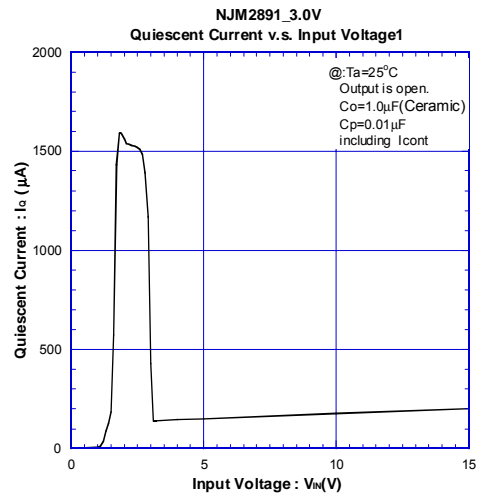
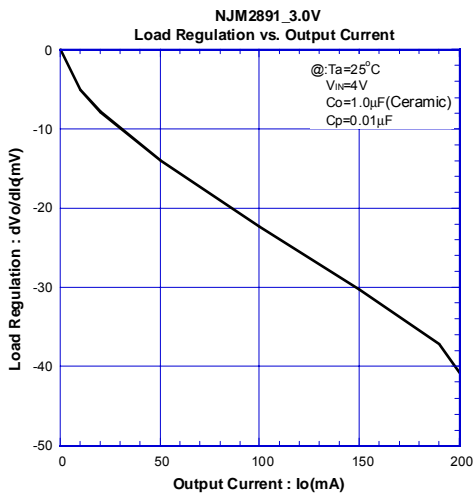
The current flow into the control terminal while the IC is ON state (I_{CONT}) can be reduced when a pull up resistance "R" is inserted between V_{IN} and the control terminal.

The minimum control voltage for ON state ($V_{CONT(ON)}$) is increased due to the voltage drop caused by I_{CONT} and the resistance "R". The I_{CONT} is temperature dependence as shown in the "Control Current vs. Temperature" characteristics. Therefore, the resistance "R" should be carefully selected to ensure the control voltage exceeds the $V_{CONT(ON)}$ over the required temperature range.

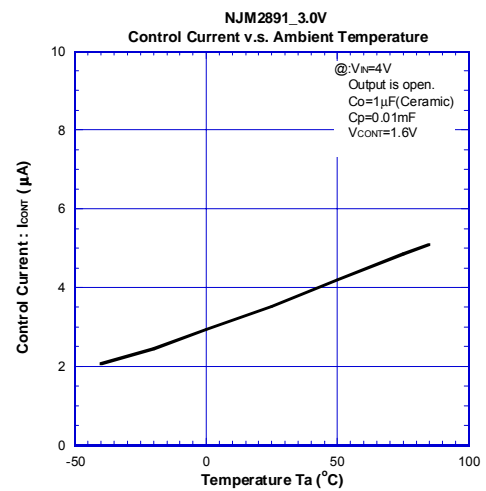
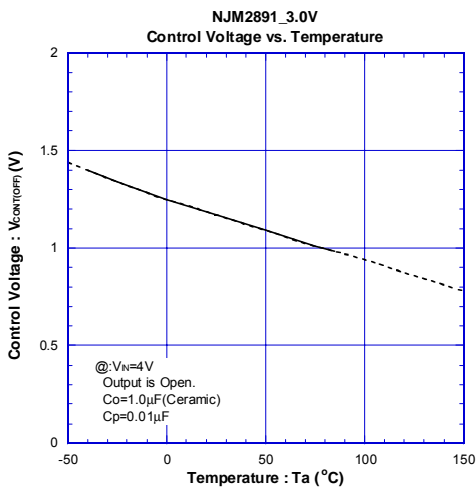
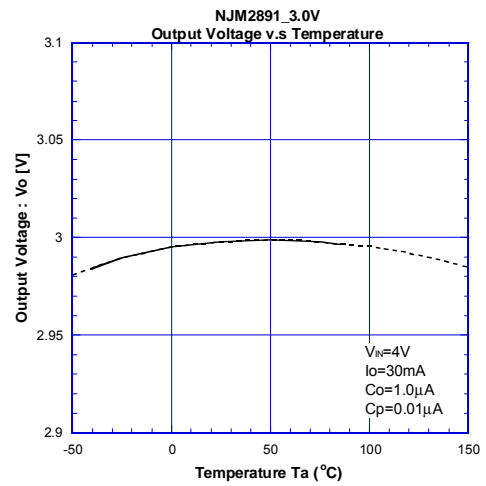
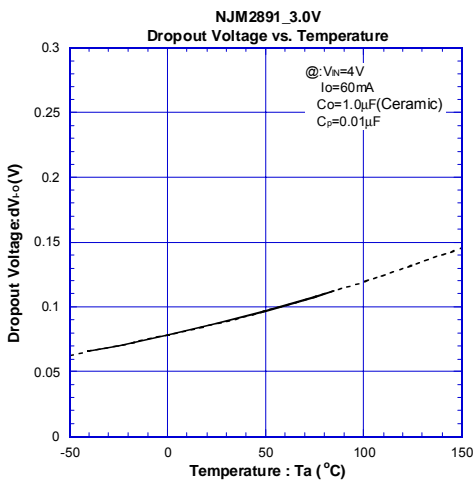
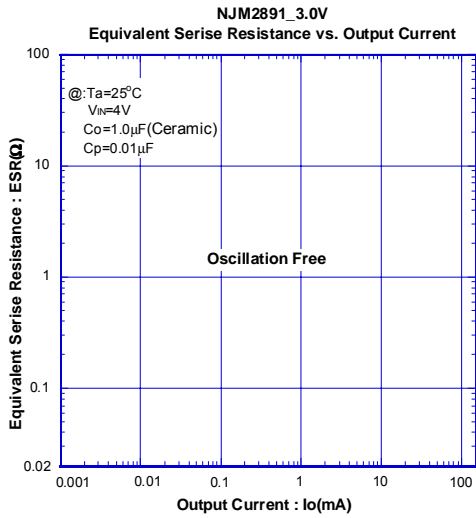
■ ELECTRICAL CHARACTERISTICS



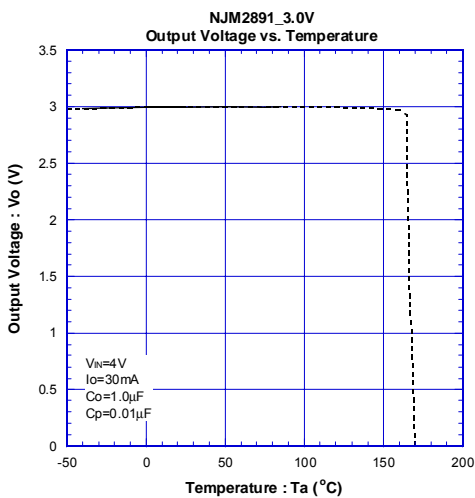
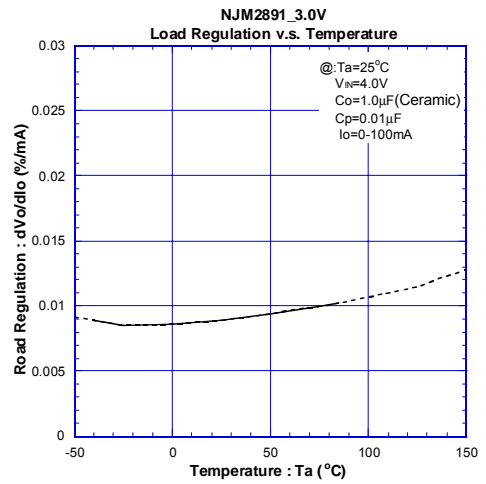
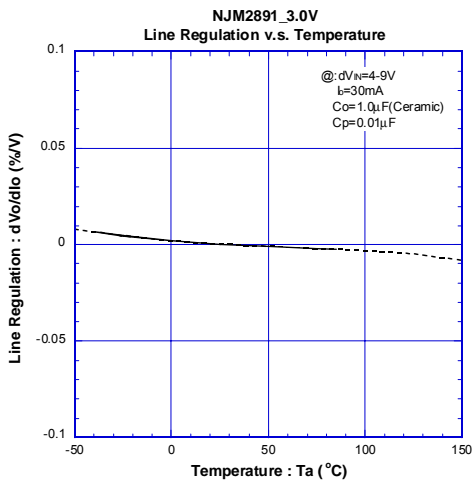
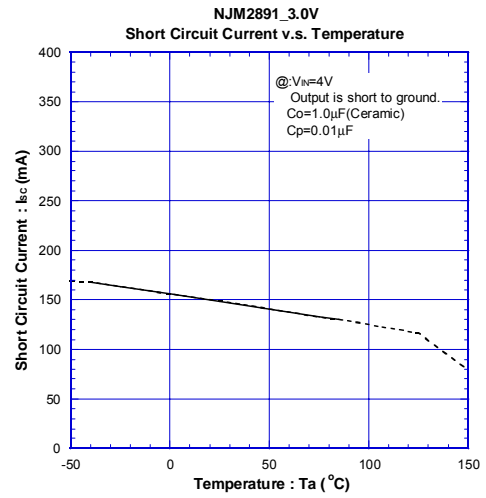
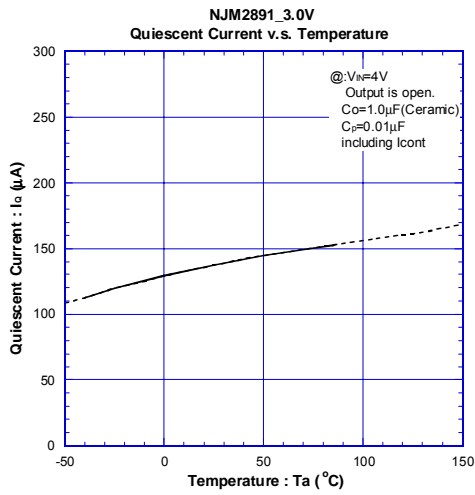
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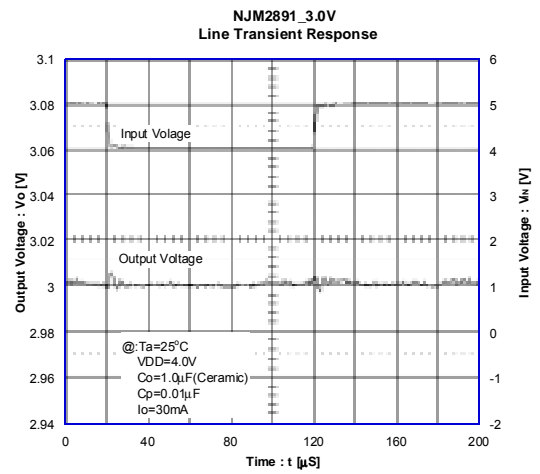
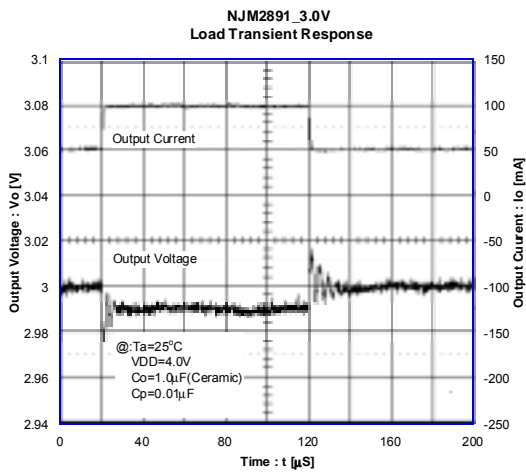
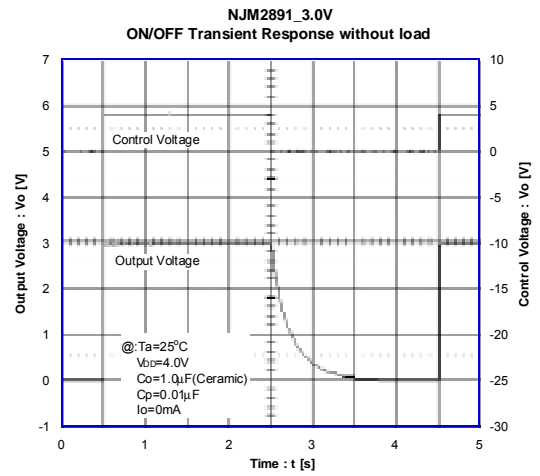
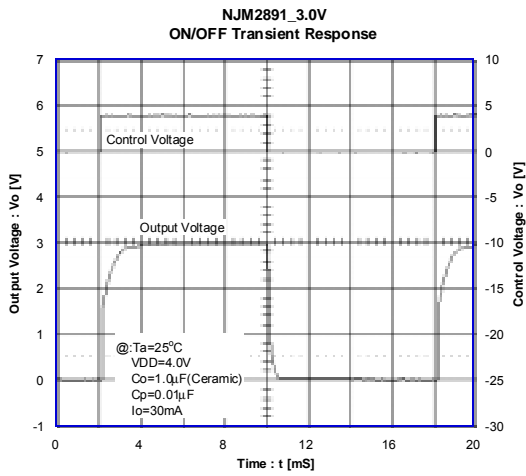
ELECTRICAL CHARACTERISTICS



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ELECTRICAL CHARACTERISTICS



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