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.

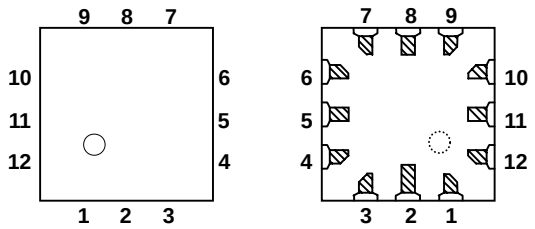
■ PACKAGE OUTLINE

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

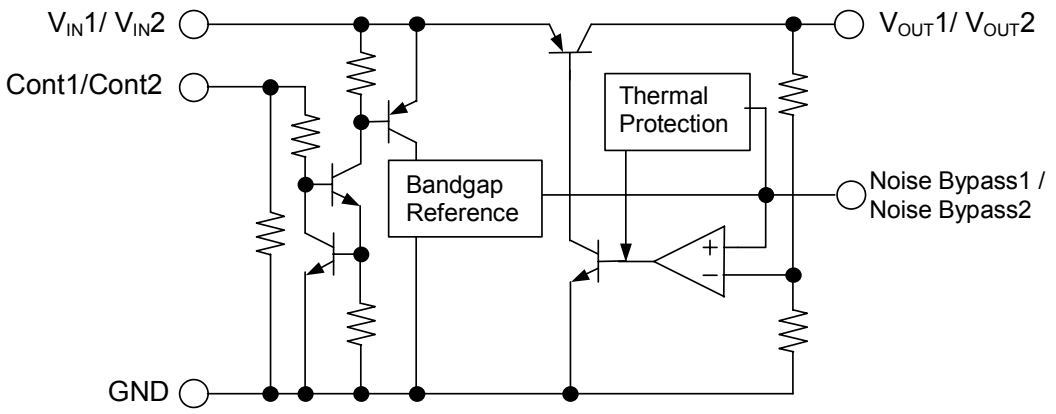


NJM2891PB1

PIN FUNCTION

1. $V_{OUT}2$	7. CONTROL1
2. $V_{OUT}2$	8. $V_{OUT}1$
3. GND	9. $V_{OUT}1$
4. CONTROL2	10. NOISE BYPASS1
5. $V_{IN}2$	11. NC
6. $V_{IN}1$	12. NOISE BYPASS2

■ EQUIVALENT CIRCUIT



■ 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	Topr	–40 ~ +85	°C
Storage Temperature	Tstg	–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=1.0uF: Vo≥2.7V (Co=2.2uF: Vo≤2.6V), Cp=0.01µF, Ta=25°C)

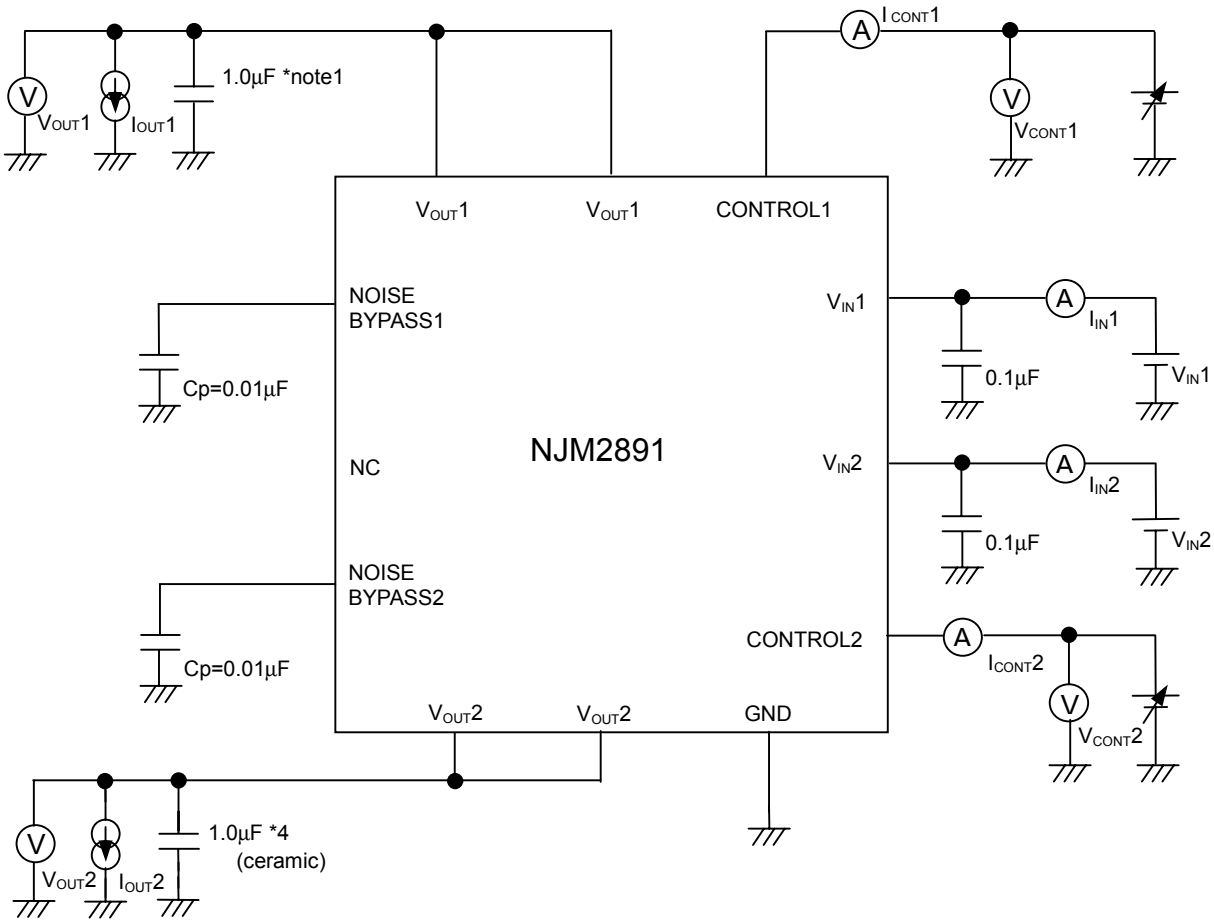
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	Vo	Io=30mA	-1.0%	–	+1.0%	V
Quiescent Current	I_Q	Io=0mA, expect Icont	–	120	180	µA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	V_{CONT}=0V	–	–	100	nA
Output Current	Io	Vo–0.3V	150	200	–	mA
Line Regulation	$\Delta Vo/\Delta V_{IN}$	V_{IN}=Vo+1V ~ Vo+6V, Io=30mA	–	–	0.10	%/V
Load Regulation	$\Delta Vo/\Delta Io$	Io=0 ~ 100mA	–	–	0.03	%/mA
Dropout Voltage	ΔV_{I-O}	Io=60mA	–	0.10	0.18	V
Ripple Rejection	RR	ein=200mVrms,f=1kHz, Io=10mA, Vo=3V Version	–	70	–	dB
Average Temperature Coefficient of Output Voltage	$\Delta Vo/\Delta Ta$	Ta=0~85°C, Io=10mA	–	±50	–	ppm/°C
Output Noise Voltage	V_{NO}	f=10Hz~80kHz, Io=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.

■ 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

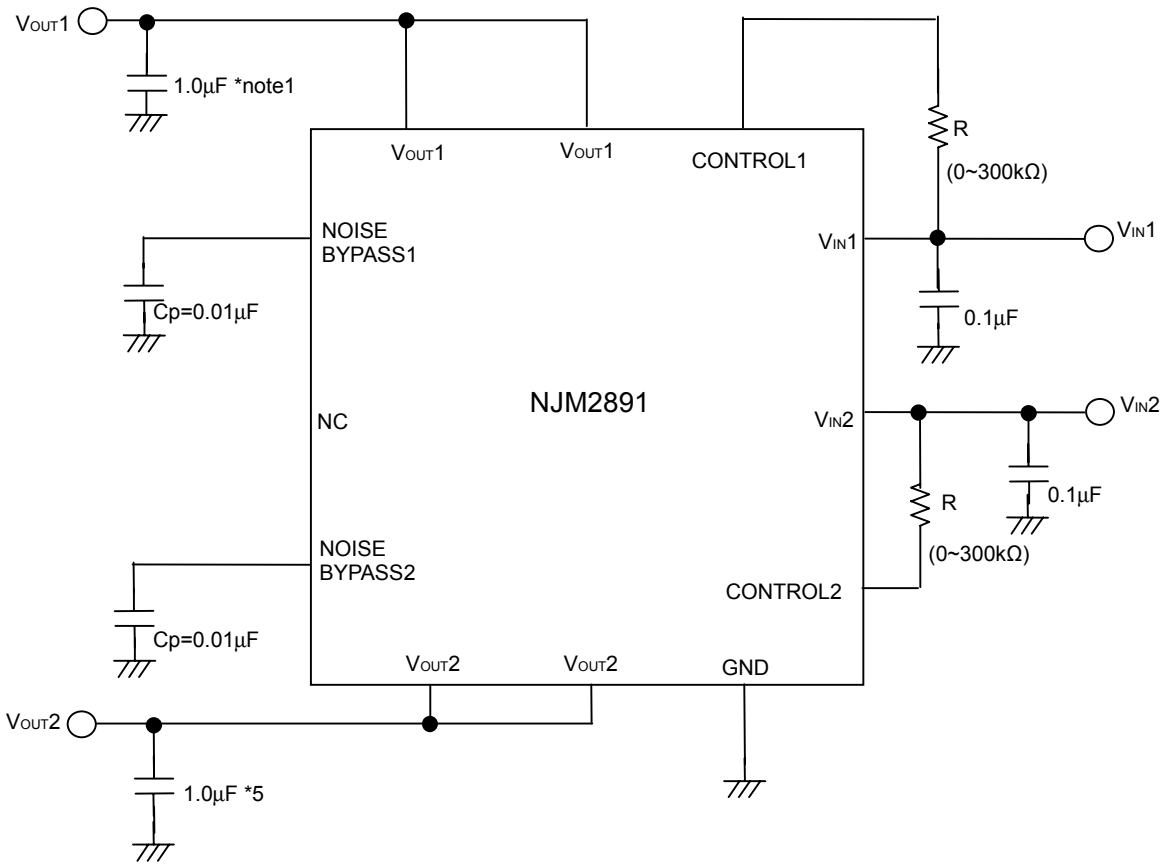
■ TEST CIRCUIT



*4 Vo≤2.6V version: Co=2.2µF(ceramic)

■ TYPICAL APPLICATION

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

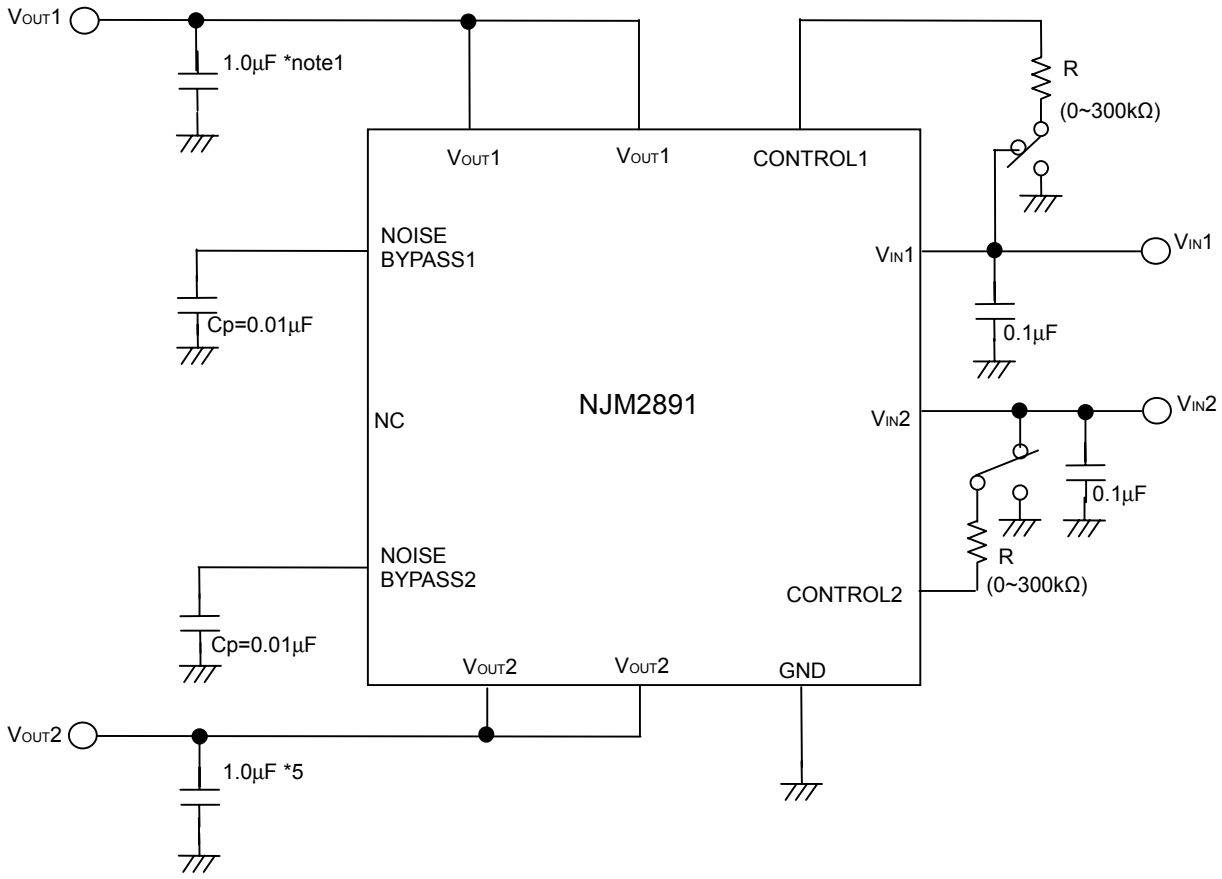


*5 Vo≤2.6V version: Co=2.2μF

Connect control terminal to V_{IN} terminal

The quiescent current can be reduced by using a resistance “R”. Instead, it increases the minimum operating voltage. For further information, please refer to Figure “Output Voltage vs. Control Voltage”.

② In use of ON/OFF CONTROL:



*5 Vo≤2.6V version: Co=2.2μF

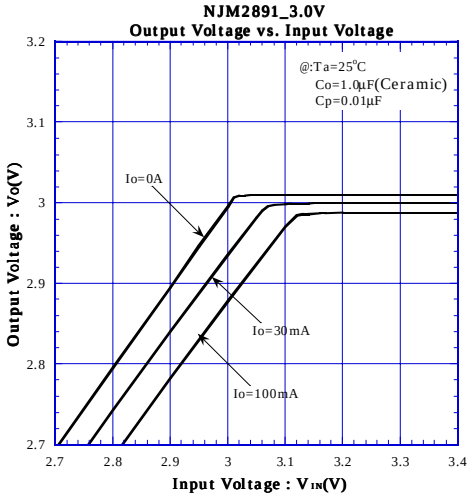
State of control terminal:

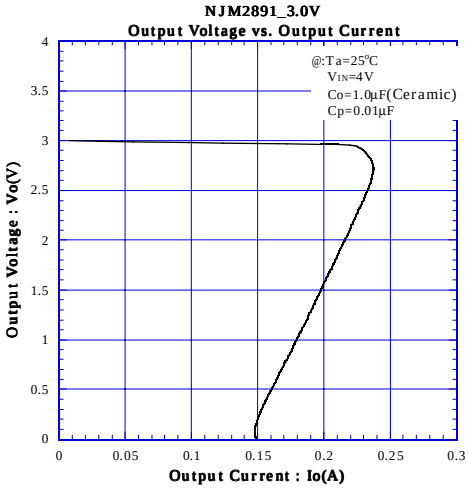
- "H"→ output is enabled.
- "L" or "open" → output is disabled.

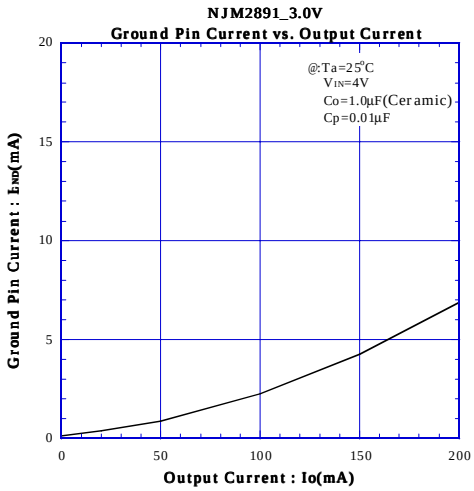
∗Noise bypass Capacitance Cp

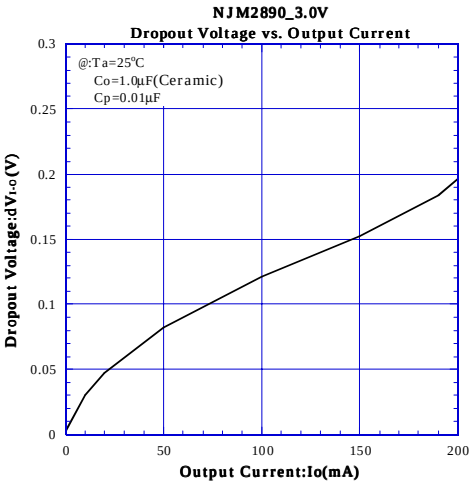
Noise bypass capacitance Cp reduces noise generated by band-gap reference circuit.
Noise level and ripple rejection will be improved when larger Cp is used.
Use of smaller Cp value may cause oscillation.
Use the Cp value of 0.01uF greater to avoid the problem.

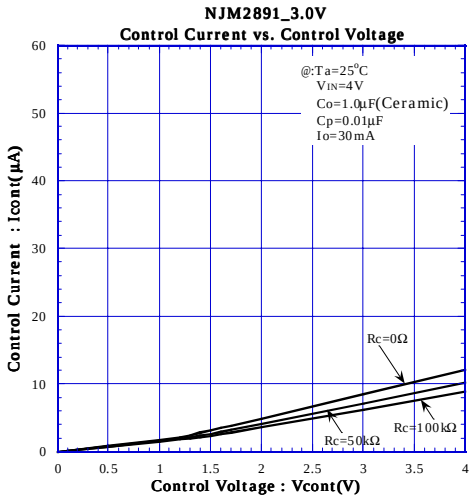
■ ELECTRICAL CHARACTERISTICS

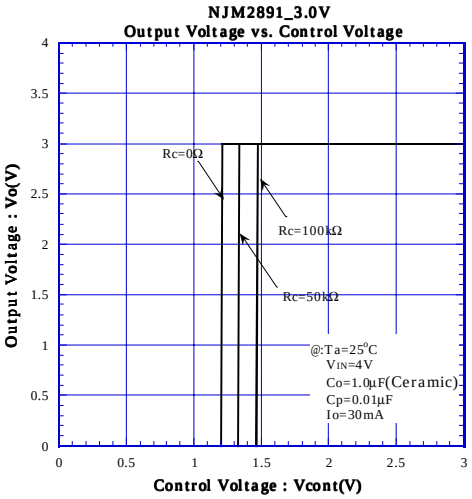




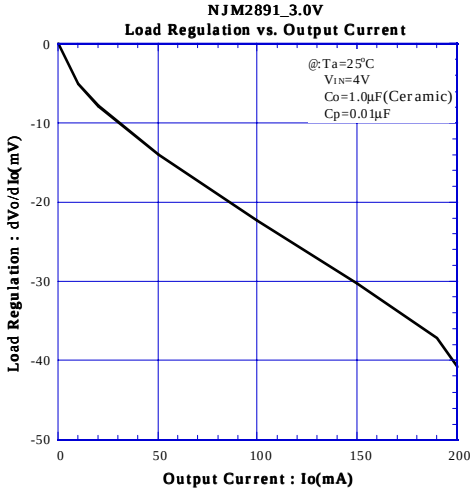


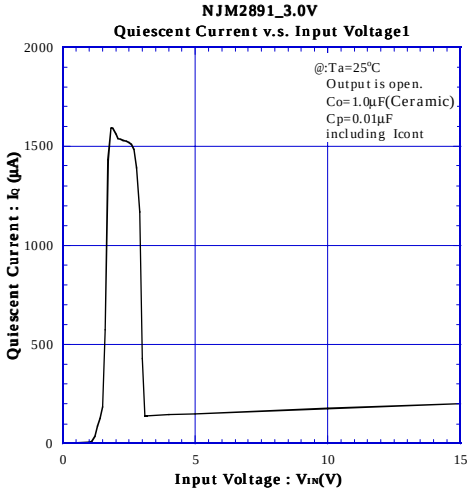


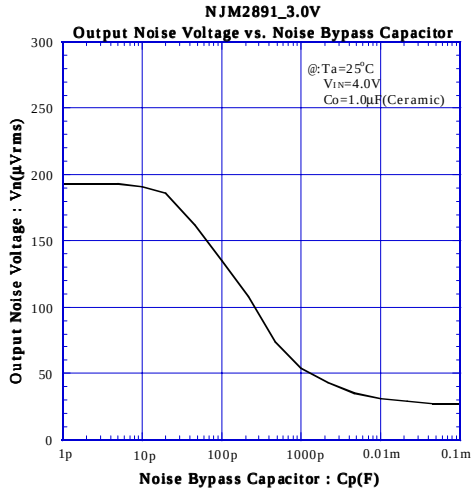


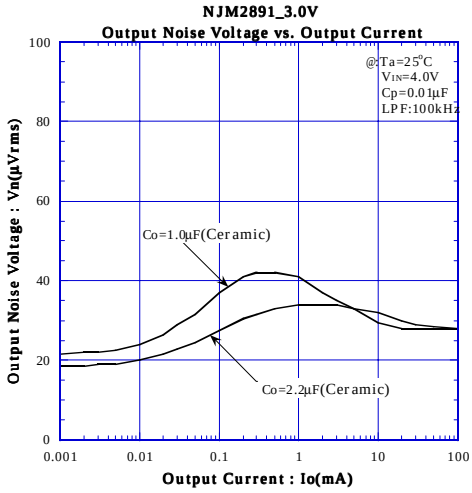


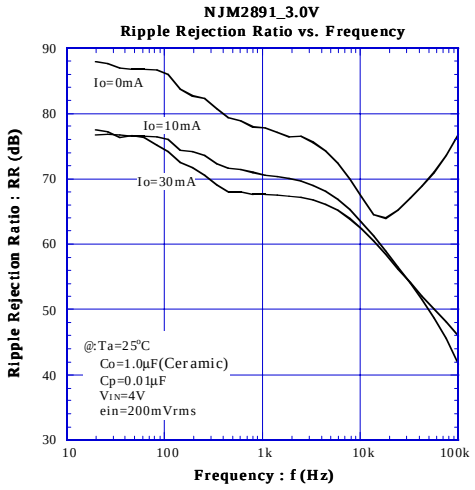
■ ELECTRICAL CHARACTERISTICS





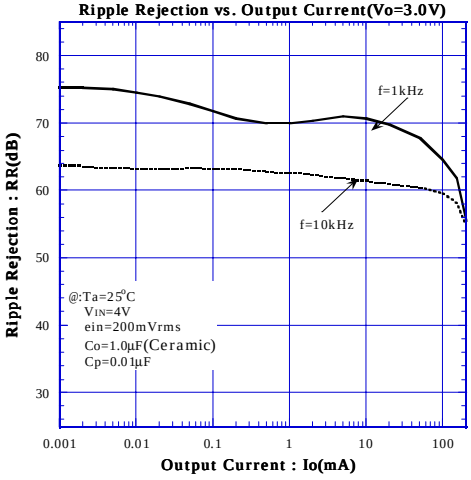




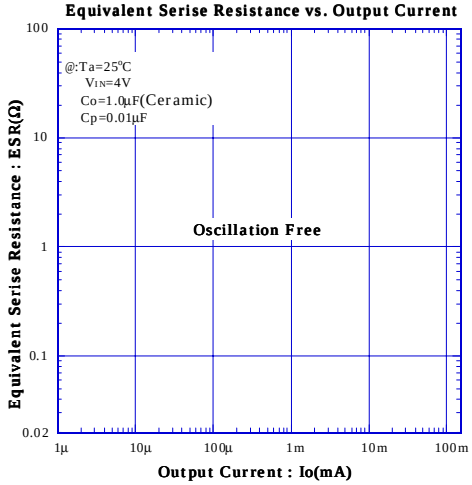


■ ELECTRICAL CHARACTERISTICS

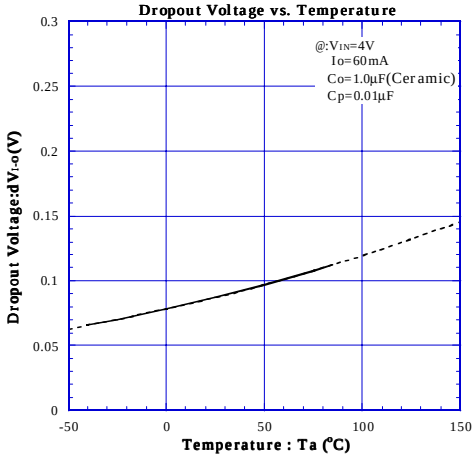
NJM2891_3.0V
Ripple Rejection vs. Output Current(Vo=3.0V)



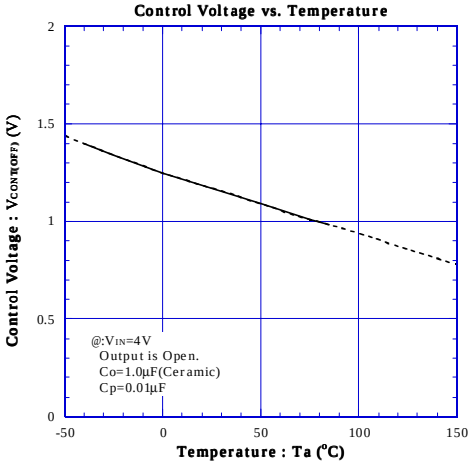
NJM2891_3.0V
Equivalent Serise Resistance vs. Output Current



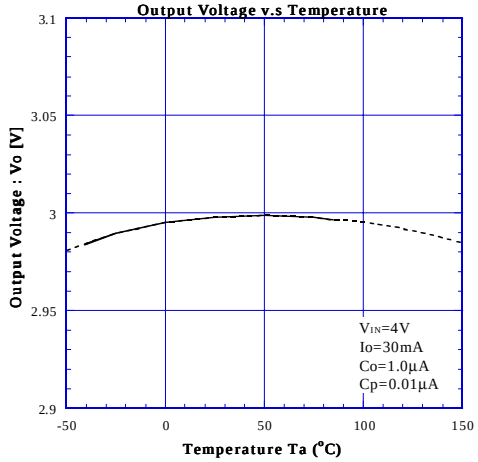
NJM2891_3.0V
Dropout Voltage vs. Temperature



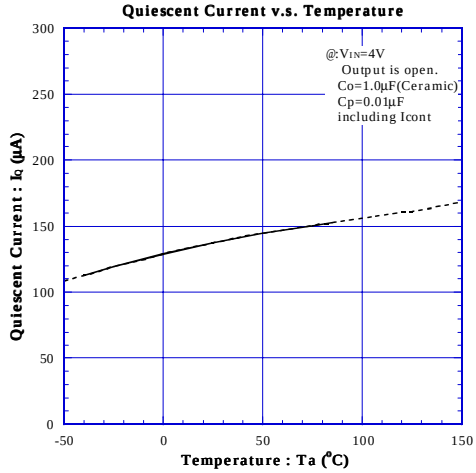
NJM2891_3.0V
Control Voltage vs. Temperature



NJM2891_3.0V
Output Voltage v.s Temperature

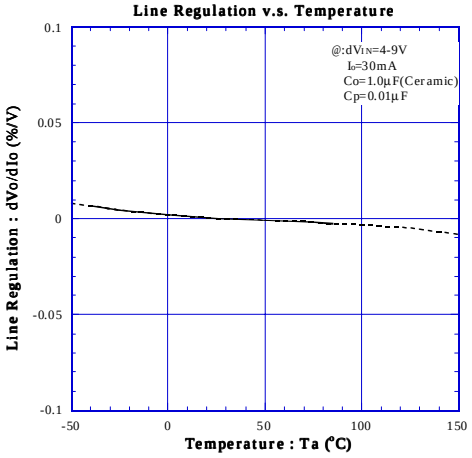


NJM2891_3.0V
Quiescent Current v.s. Temperature

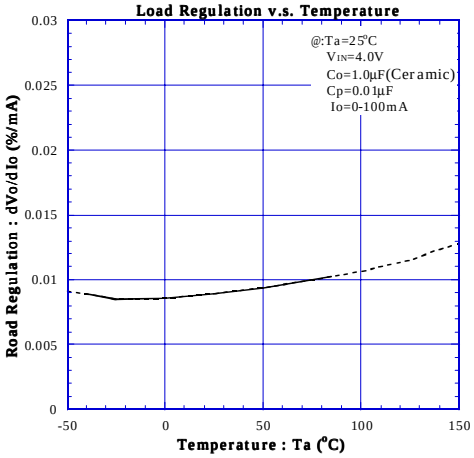


■ ELECTRICAL CHARACTERISTICS

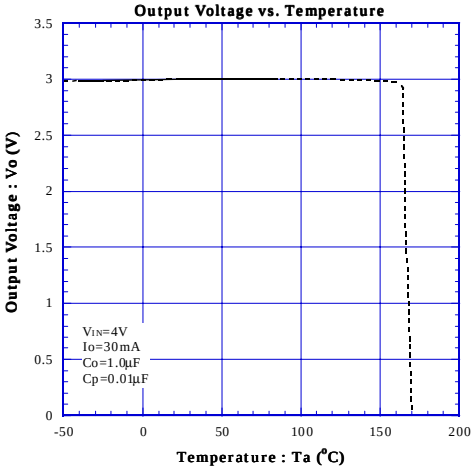
NJM2891_3.0V
Line Regulation v.s. Temperature



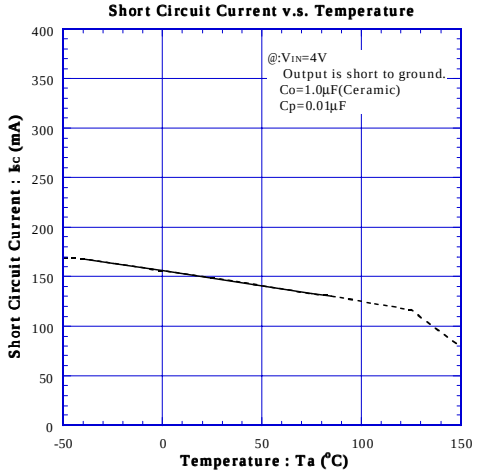
NJM2891_3.0V
Load Regulation v.s. Temperature



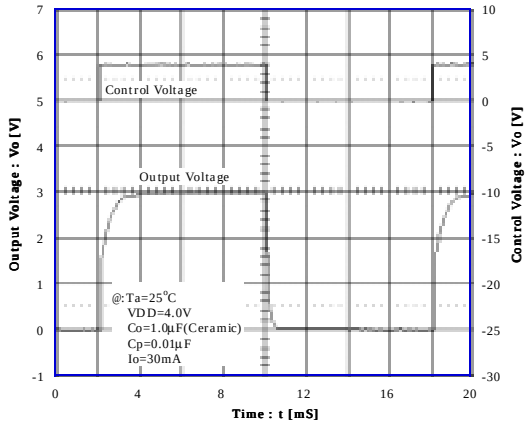
NJM2891_3.0V
Output Voltage vs. Temperature



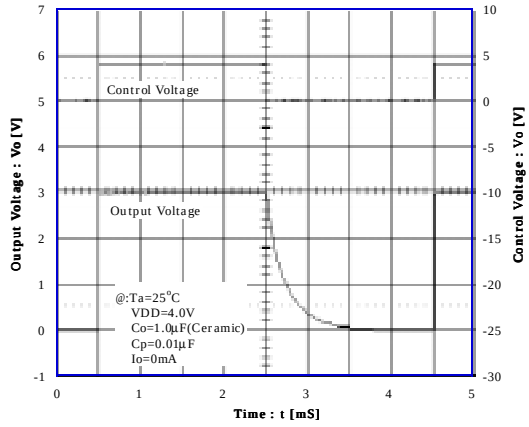
NJM2891_3.0V
Short Circuit Current v.s. Temperature



NJM2891_3.0V
ON/OFF Transient Response



NJM2891_3.0V
ON/OFF Transient Response without load



■ ELECTRICAL CHARACTERISTICS