

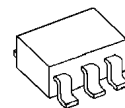
Low Dropout Voltage Regulator

■ GENERAL DESCRIPTION

The NJM2871B/72B are low dropout voltage regulator designed for cellular phone applications.

Advanced Bipolar technology achieves low noise, high ripple rejection and low quiescent current.

■ PACKAGE OUTLINE

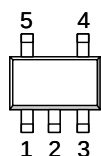


NJM2871BF/72BF

■ FEATURES

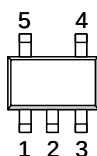
- High Ripple Rejection 75dB typ. (f=1kHz Vo=3V version)
- Output Noise Voltage Vno=30μVrms typ. (Cp=0.01μF)
- Output capacitor with 1.0μF ceramic capacitor (Vo≥2.7V: Version)
- Output Current Io(max.)=150mA
- High Precision Output Vo ±1.0%
- Low Dropout Voltage 0.10V typ. (Io=60mA)
- Input Voltage Range +2.3 ~ +14V (Vo≤2.0V version)
- ON/OFF Control (Active High)
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline SOT-23-5 (MTP5)

■ PIN CONFIGURATION



NJM2871BF

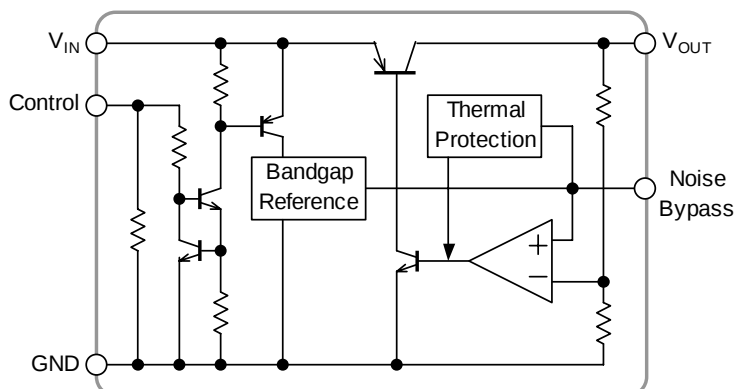
1. CONTROL (Active High)
2. GND
3. NOISE BYPASS
4. V_{OUT}
5. V_{IN}



NJM2872BF

1. V_{IN}
2. GND
3. CONTROL (Active High)
4. NOISE BYPASS
5. V_{OUT}

■ EQUIVALENT CIRCUIT



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■ OUTPUT VOLTAGE RANK LIST

Device Name	V _{OUT}	Device Name	V _{OUT}	Device Name	V _{OUT}
NJM287*BF15	1.5V	NJM287*BF26	2.6V	NJM287*BF33	3.3V
NJM287*BF18	1.8V	NJM287*BF27	2.7V	NJM287*BF34	3.4V
NJM287*BF19	1.9V	NJM287*BF28	2.8V	NJM287*BF35	3.5V
NJM287*BF02	2.0V	NJM287*BF29	2.9V	NJM287*BF38	3.8V
NJM287*BF21	2.1V	NJM287*BF03	3.0V	NJM287*BF04	4.0V
NJM287*BF23	2.3V	NJM287*BF31	3.1V	NJM287*BF48	4.8V
NJM287*BF25	2.5V	NJM287*BF32	3.2V	NJM287*BF05	5.0V

■ 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	SOT-23-5 350(*2) 200(*3)	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) : Mounted on glass epoxy board based on EIA/JEDEC. (114.3x76.2x1.6mm: 2Layers)

(*3) : Device itself

■ Operating voltage

V_{IN}=+2.3 ~ +14V (In case of Vo<2.1V version)

■ ELECTRICAL CHARACTERISTICS

(V_{IN}=Vo+1V, C_{IN}=0.1μF, Co=1.0μF: Vo≥2.7V (Co=2.2μF : 1.8V<Vo≤2.6V, Co=4.7μF : Vo≤1.8V), Cp=0.01μF, Ta=25°C)

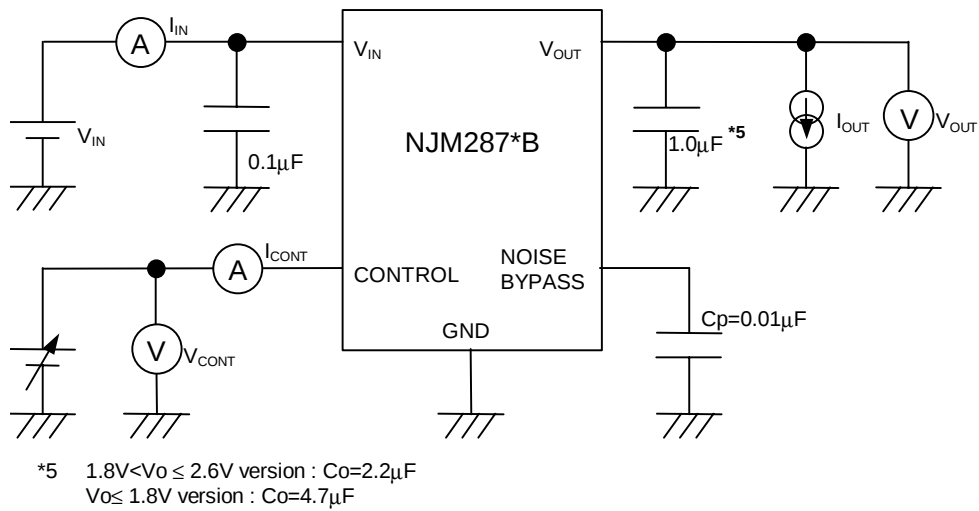
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	Vo	I _o =30mA	-1.0%	—	+1.0%	V
Quiescent Current	I _Q	I _o =0mA, except I _{cont}	—	120	180	μA
Quiescent Current at Control OFF	I _{Q(OFF)}	V _{CONT} =0V	—	—	100	nA
Output Current	I _o	Vo-0.3V	150	200	—	mA
Line Regulation	ΔVo/ΔV _{IN}	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 (*4)	ΔV _{L-O}	I _o =60mA	—	0.10	0.18	V
Ripple Rejection	RR	e _{in} =200mVrms, f=1kHz, I _o =10mA, Vo=3V version	—	75	—	dB
Average Temperature Coefficient of Output Voltage	ΔVo/ΔTa	Ta=0 ~ +85°C, I _o =10mA	—	± 50	—	ppm/°C
Output Noise Voltage	V _{NO1}	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

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

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

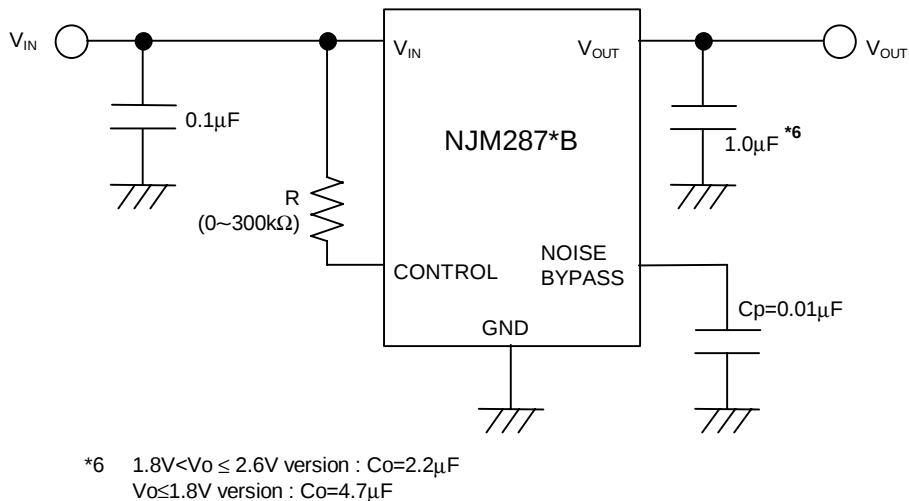
Therefore, it may be different from the individual specification for a specific output voltage.

■ TEST CIRCUIT



■ TYPICAL APPLICATION

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

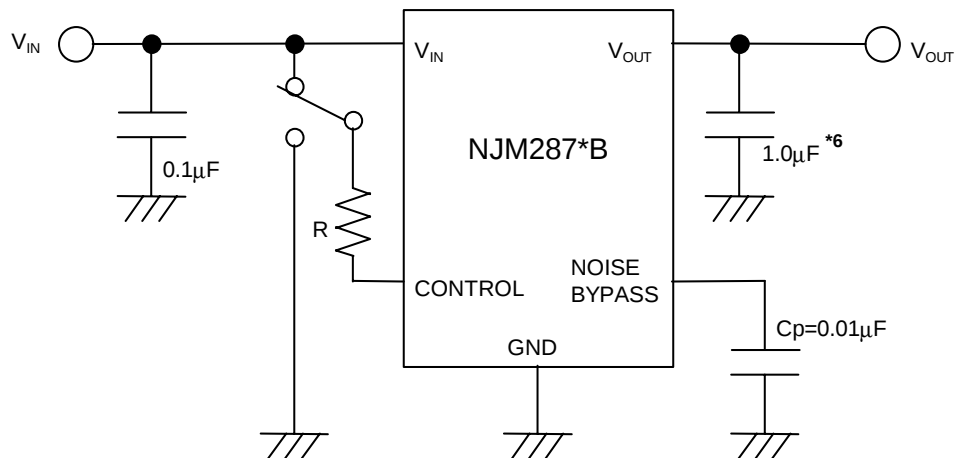


Connect control terminal to V_{IN} terminal

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".

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② In use of ON/OFF CONTROL:



*6 1.8V<Vo ≤ 2.6V version : Co=2.2μF(ceramic)
Vo≤1.8V version : Co=4.7μF(ceramic)

State of control terminal:

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

*Noise bypass Capacitance Cp

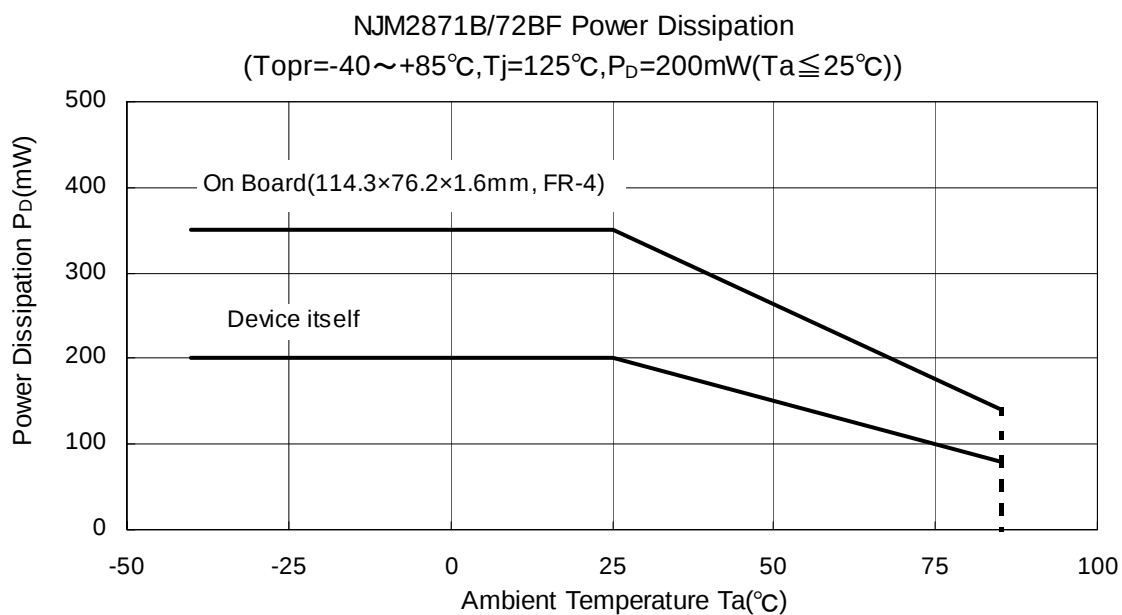
Noise bypass capacitance Cp reduces noise generated by band-gap reference circuit.

Noise level and ripple rejection will be improved when larger Cp is used.

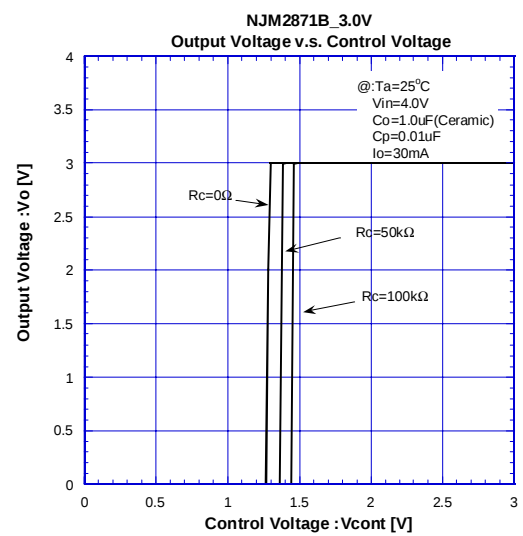
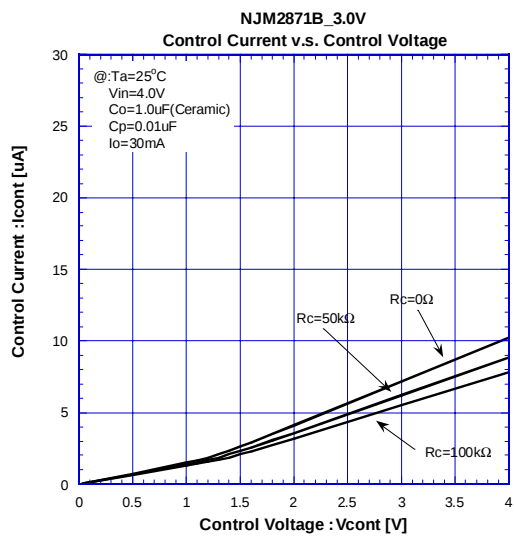
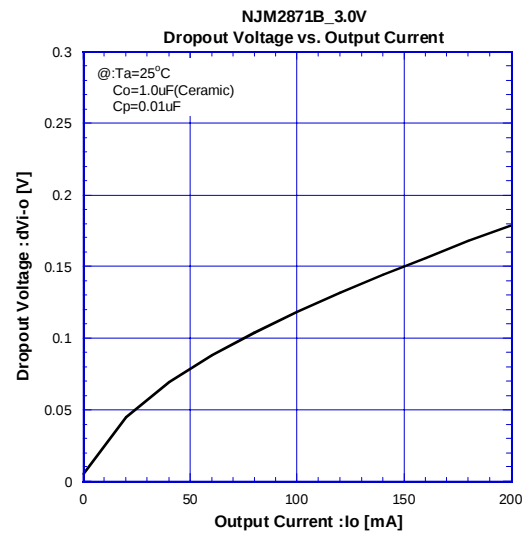
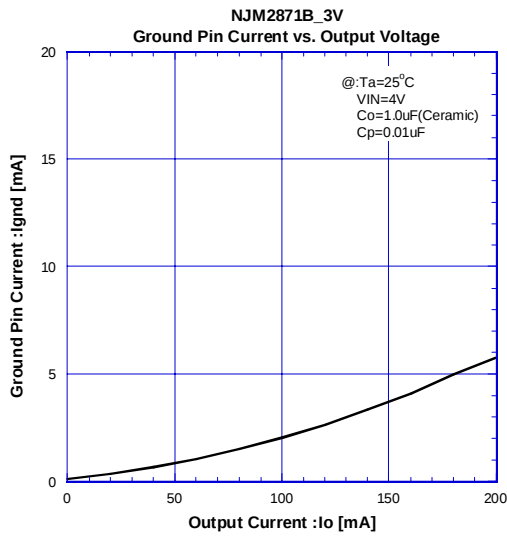
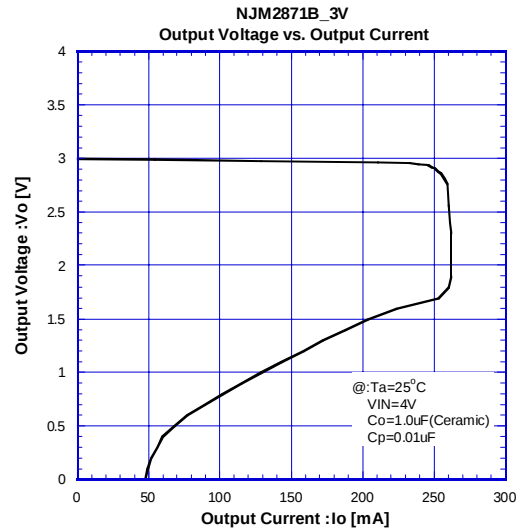
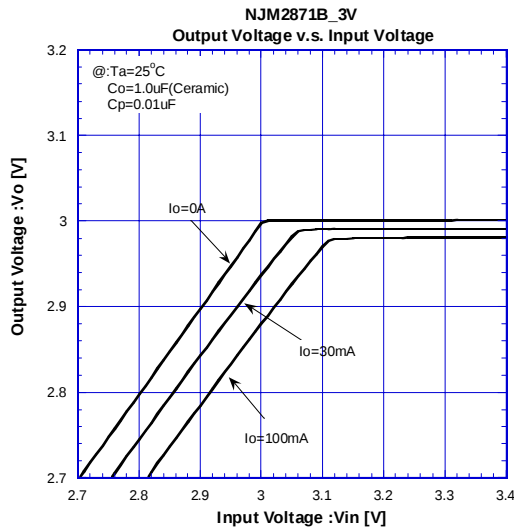
Use of smaller Cp value may cause oscillation.

Use the Cp value of 0.01uF greater to avoid the problem.

■ POWER DISSIPATION vs. AMBIENT TEMPERATURE

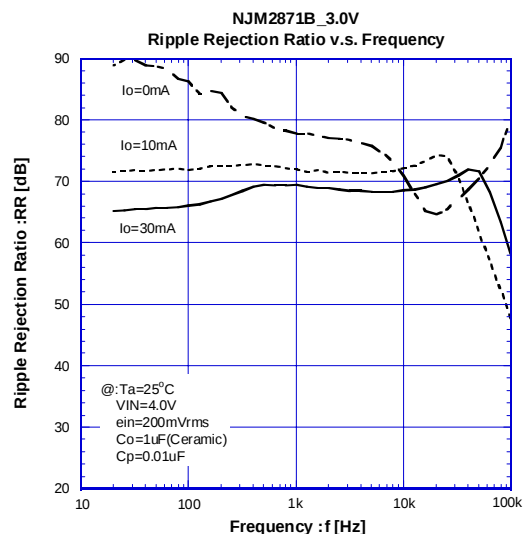
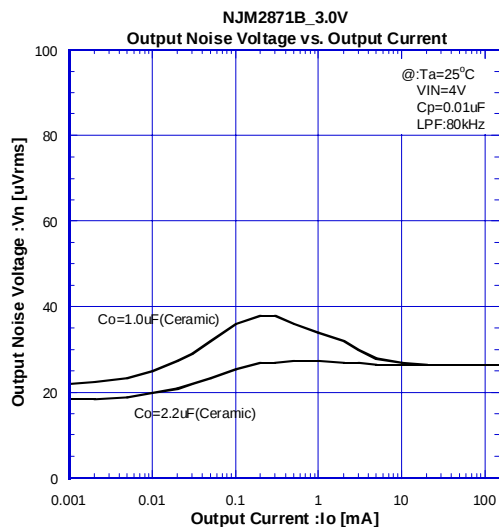
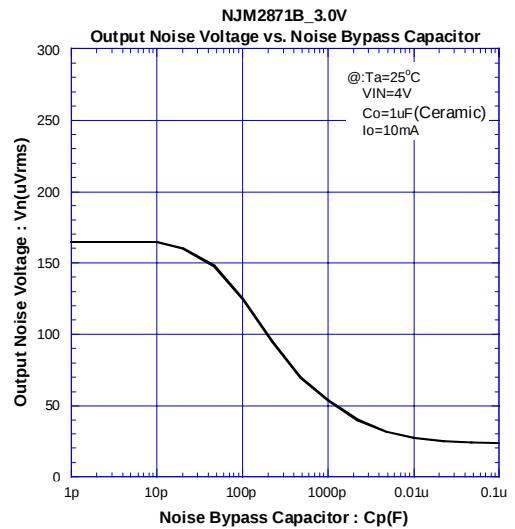
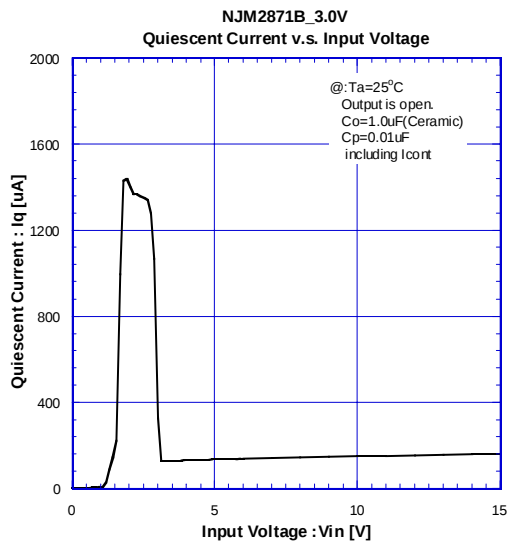
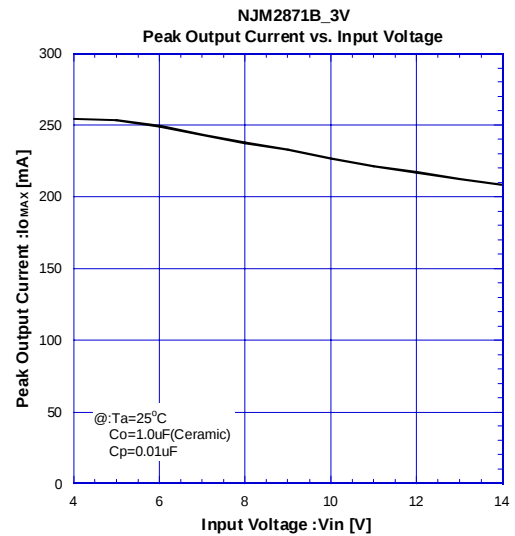
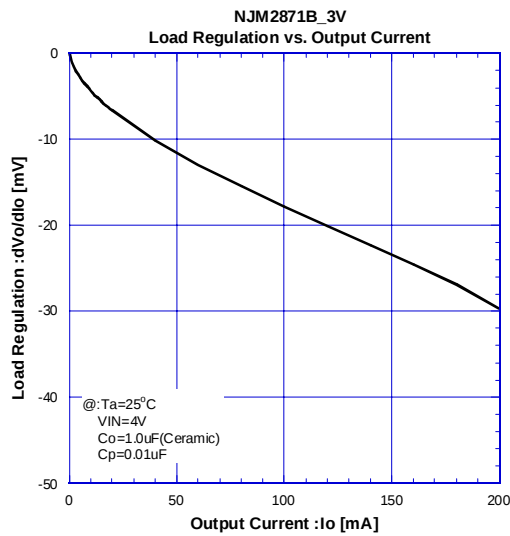


ELECTRICAL CHARACTERISTICS

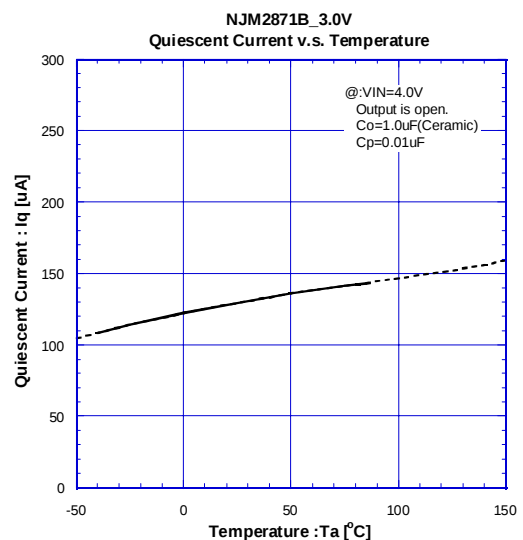
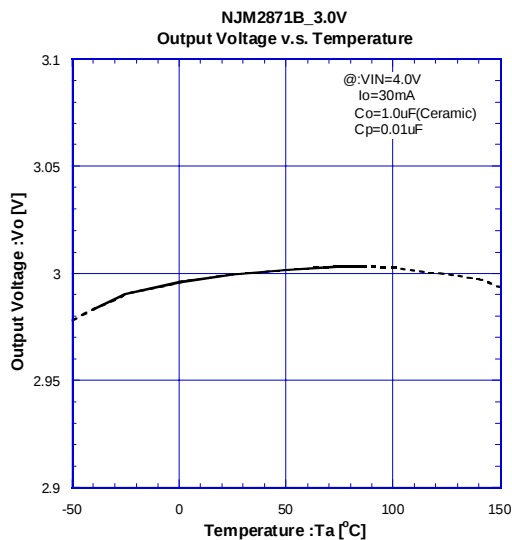
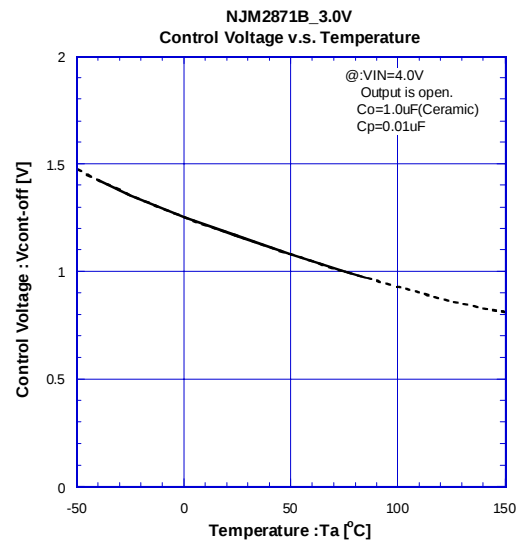
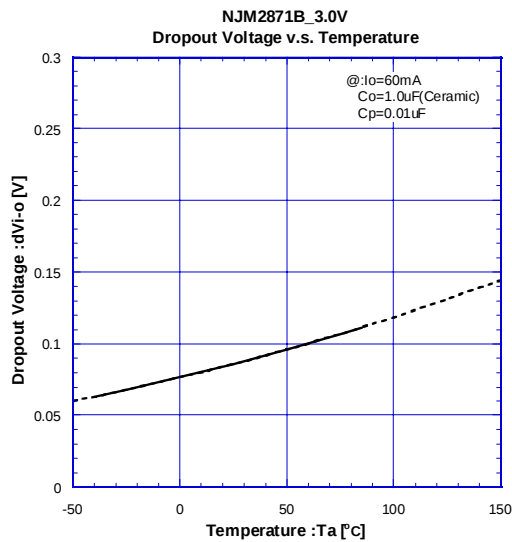
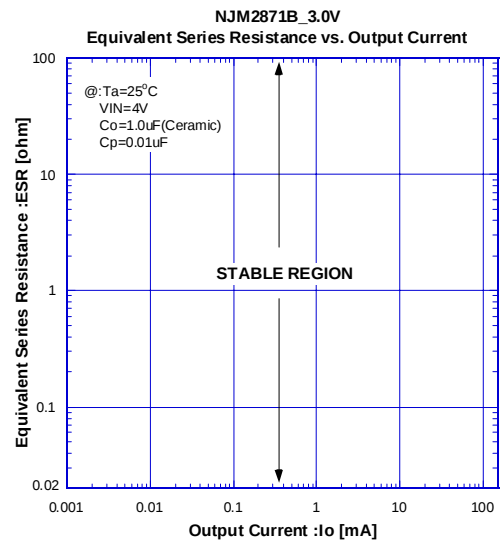
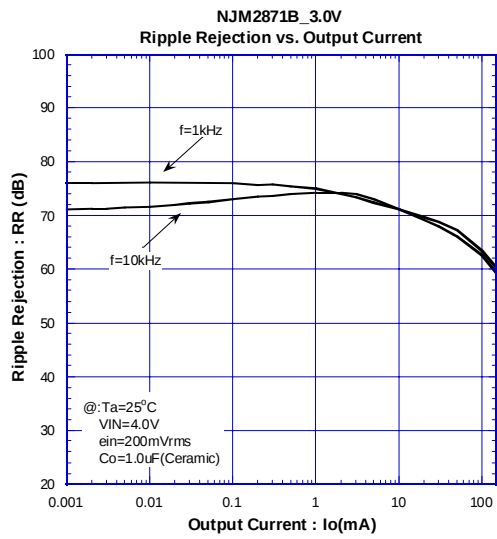


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ELECTRICAL CHARACTERISTICS

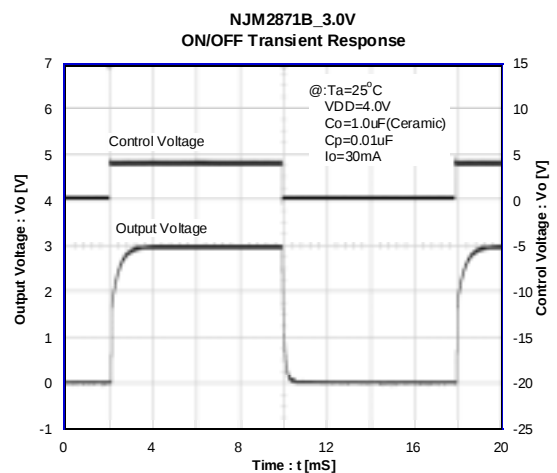
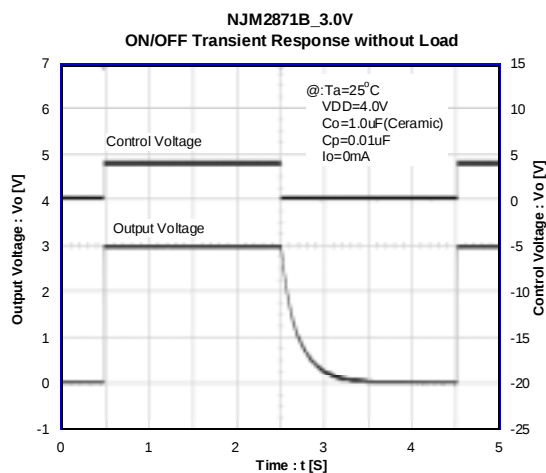
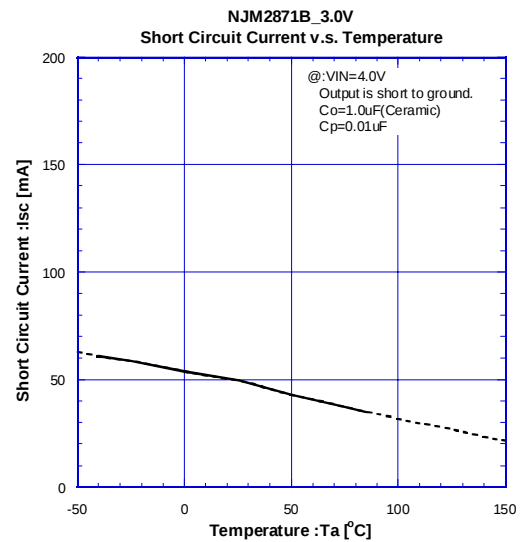
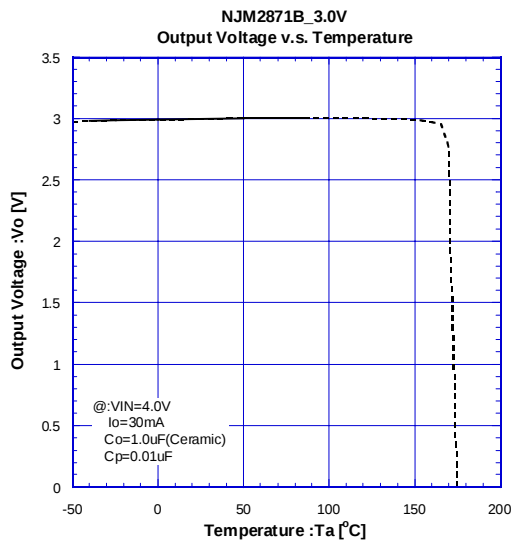
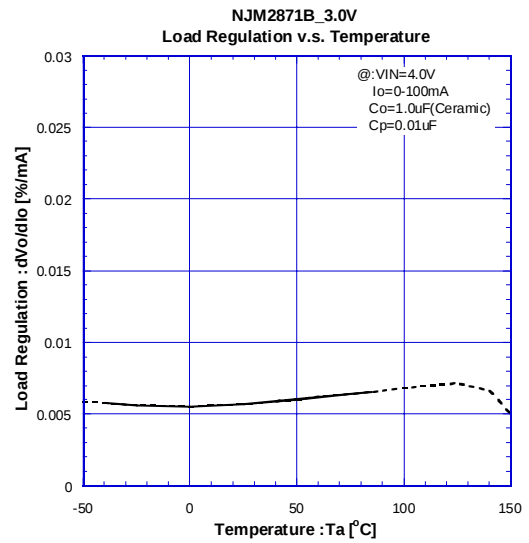
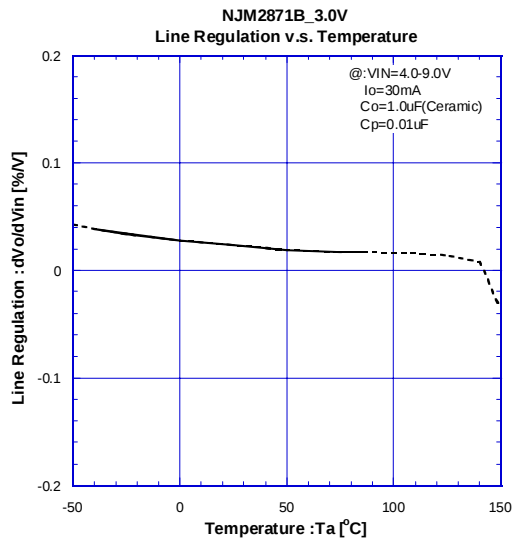


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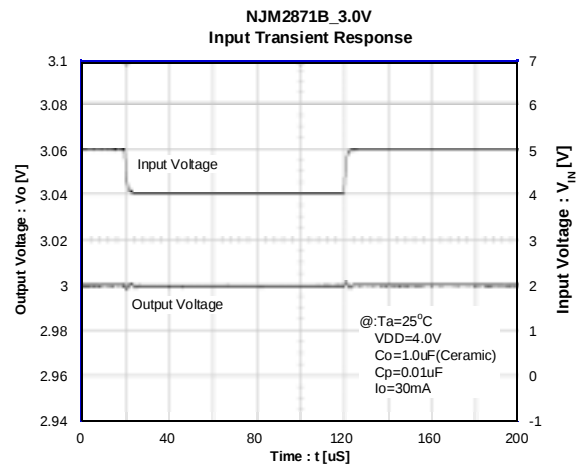
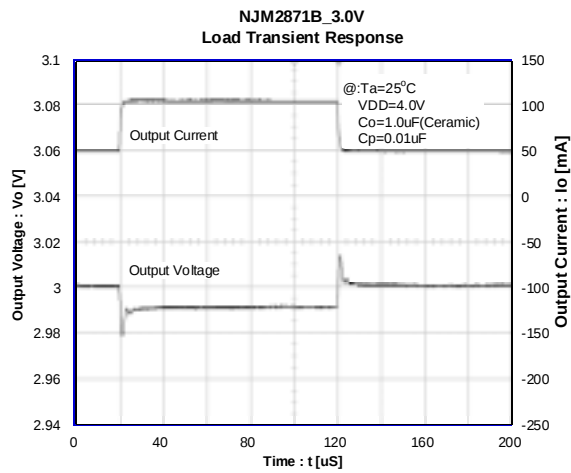


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ELECTRICAL CHARACTERISTICS



■ ELECTRICAL CHARACTERISTICS



[CAUTION]

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