

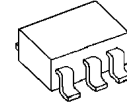
Low Dropout Voltage Regulator

■ 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

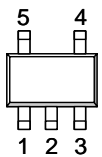


NJM2871BF/72BF

■ FEATURES

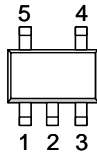
- High Ripple Rejection 75dB typ. (f=1kHz Vo=3V version)
- Output Noise Voltage Vno=30μVrms typ. (Cp=0.01μF)
- Output capacitor with 1.0uF ceramic capacitor (Vo≥2.7V: Version)
- Output Current Io(max.)=150mA
- High Precision Output Vo ±1.0%
- Low Dropout Voltage 0.10V typ. (Io=60mA)
- Input Voltage Range +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



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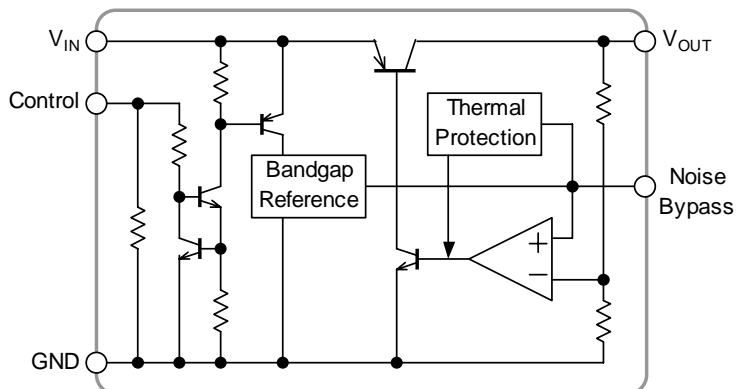
1. CONTROL (Active High)
2. GND
3. NOISE BYPASS
4. V_{OUT}
5. V_{IN}



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)	mW
			200(*3)	
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)

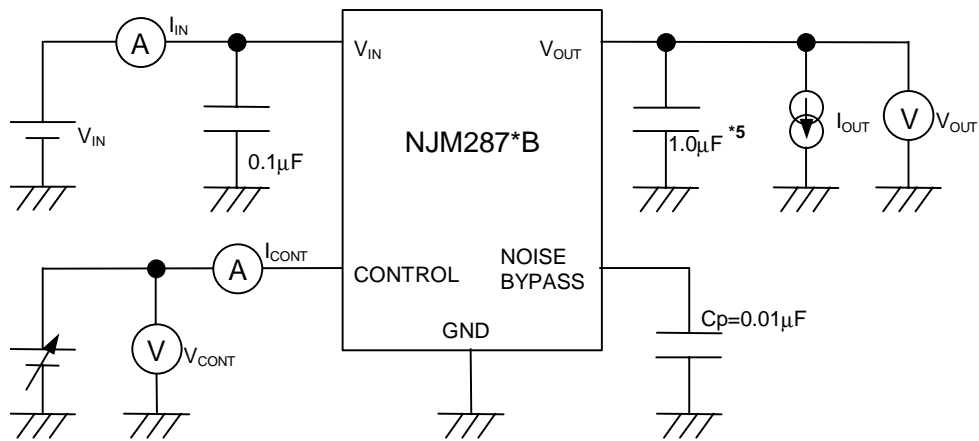
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	Vo	I _o =30mA	-1.0%	-	+1.0%	V
Quiescent Current	I _Q	I _o =0mA, except I _{cont}	-	120	180	μA
Quiescent Current at Control OFF	I _{Q(OFF)}	V _{CONT} =0V	-	-	100	nA
Output Current	I _o	Vo-0.3V	150	200	-	mA
Line Regulation	ΔVo/ΔV _{IN}	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.

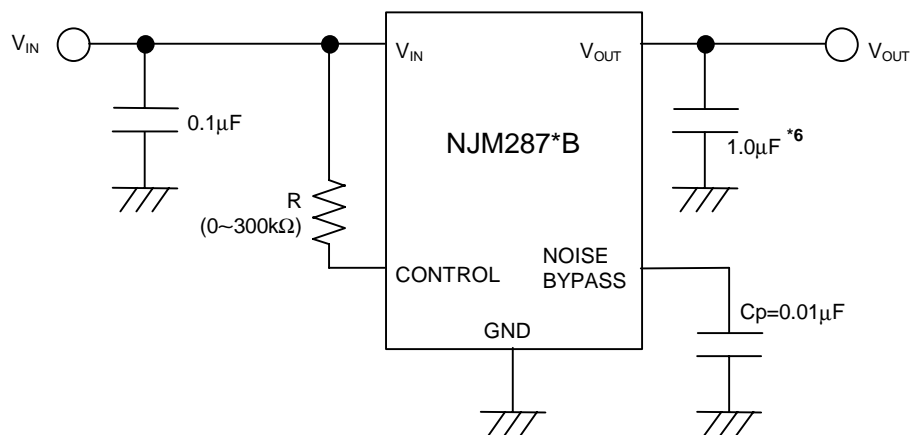
■ TEST CIRCUIT



*5 1.8V < V_o ≤ 2.6V version : $C_o=2.2\mu\text{F}$
 $V_o \leq 1.8\text{V}$ version : $C_o=4.7\mu\text{F}$

■ TYPICAL APPLICATION

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



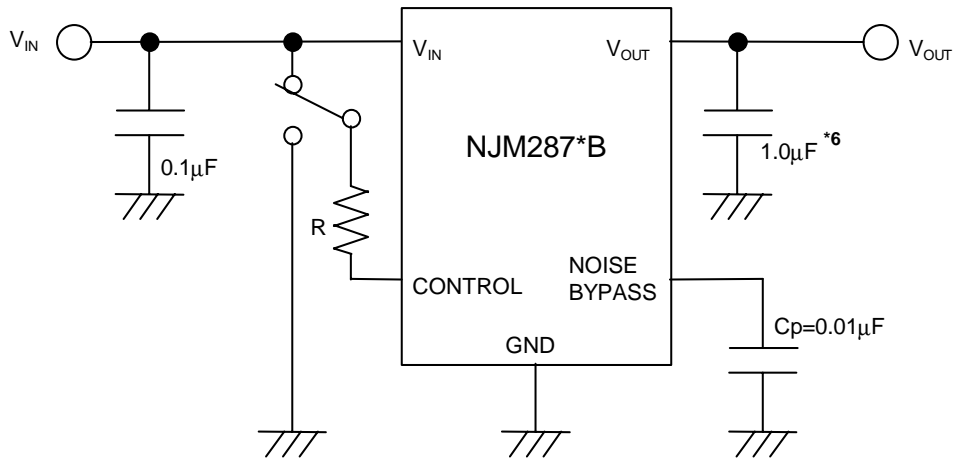
*6 1.8V < V_o ≤ 2.6V version : $C_o=2.2\mu\text{F}$
 $V_o \leq 1.8\text{V}$ version : $C_o=4.7\mu\text{F}$

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 $V_o \le 2.6V$ version : $C_o=2.2\mu F</math>(ceramic)
 $V_o \le 1.8V</math> version : $C_o=4.7\mu F</math>(ceramic)$$$

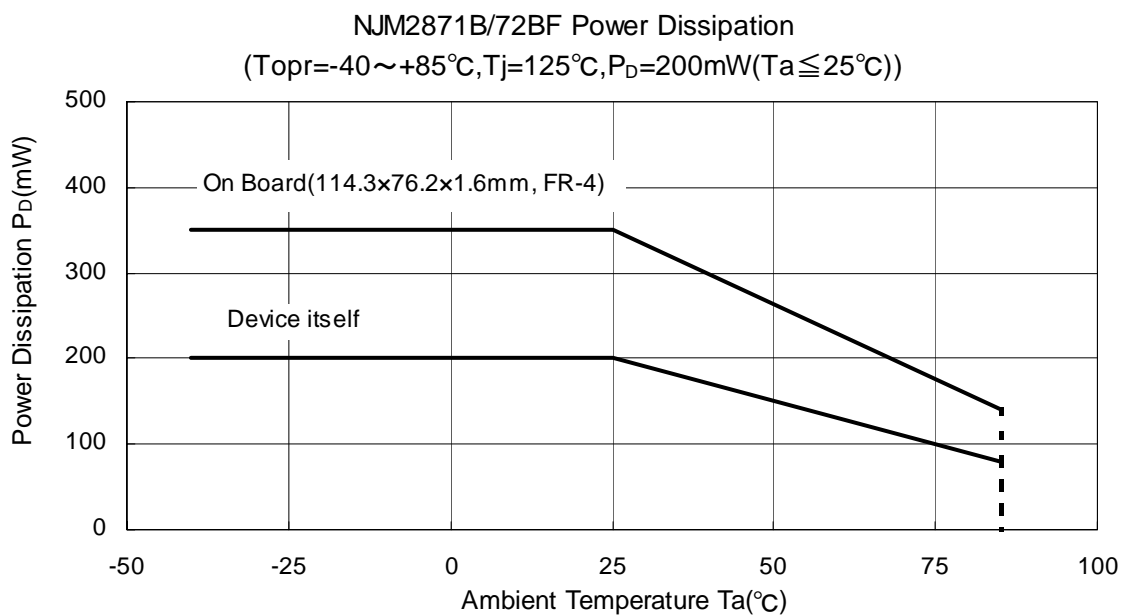
State of control terminal:

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

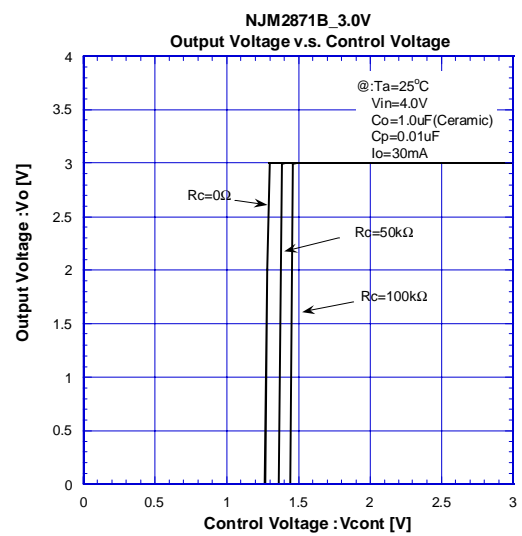
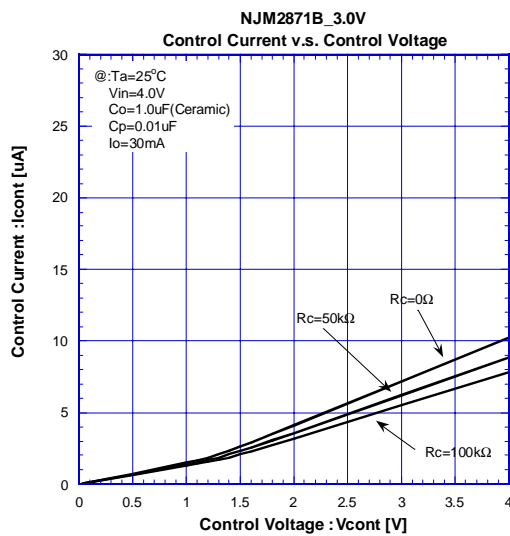
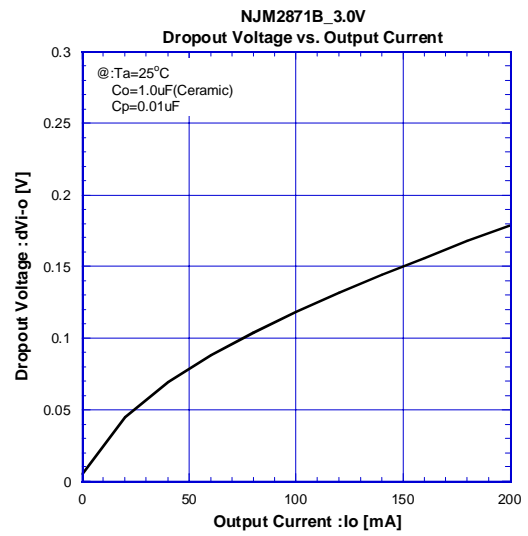
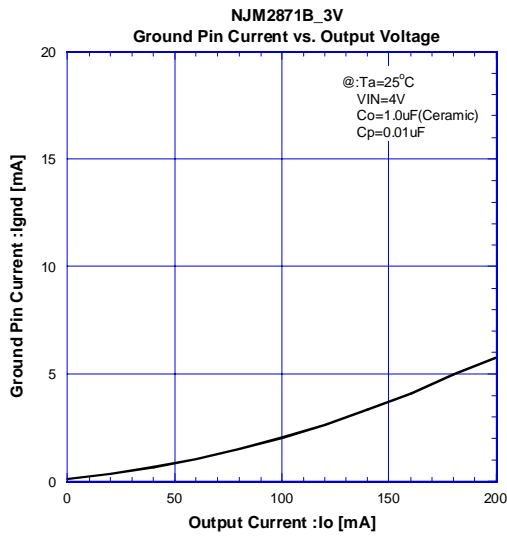
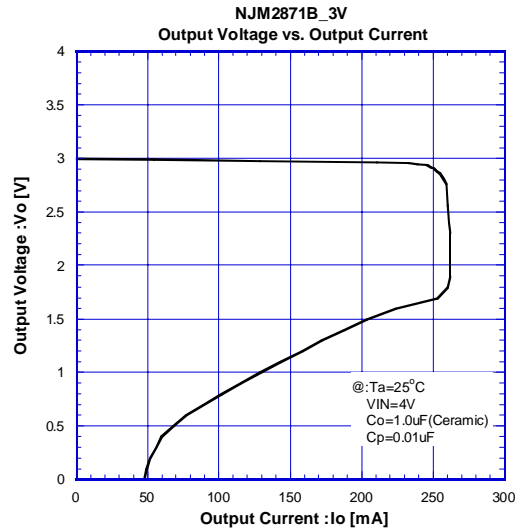
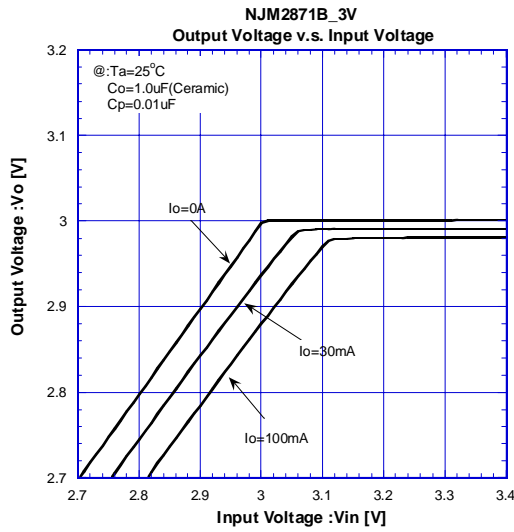
*Noise bypass Capacitance C_p

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 μF greater to avoid the problem.

■ POWER DISSIPATION vs. AMBIENT TEMPERATURE

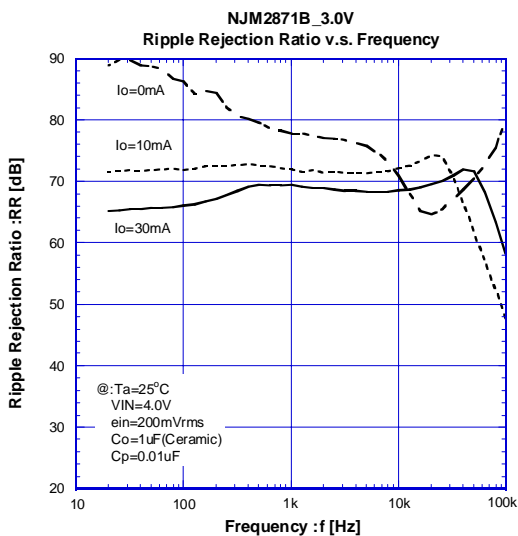
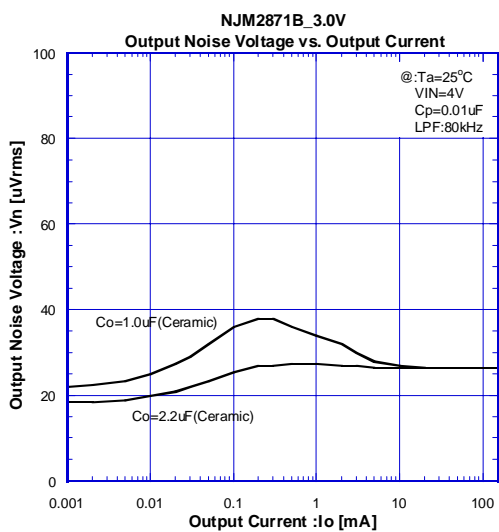
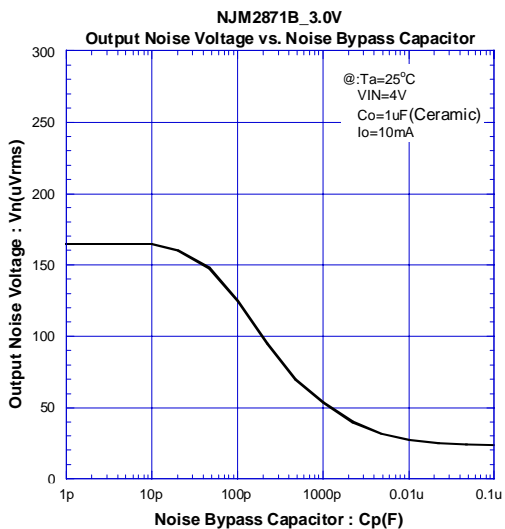
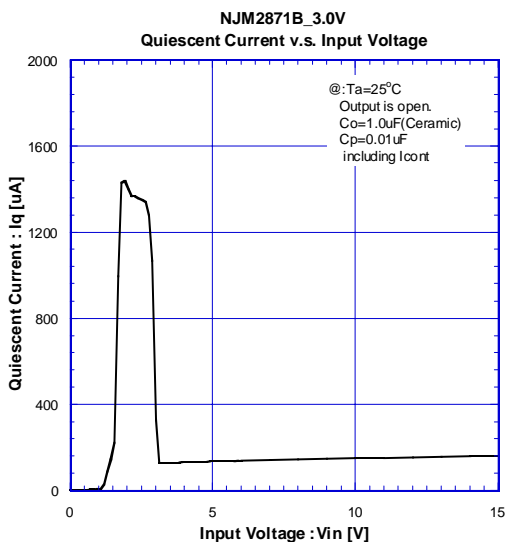
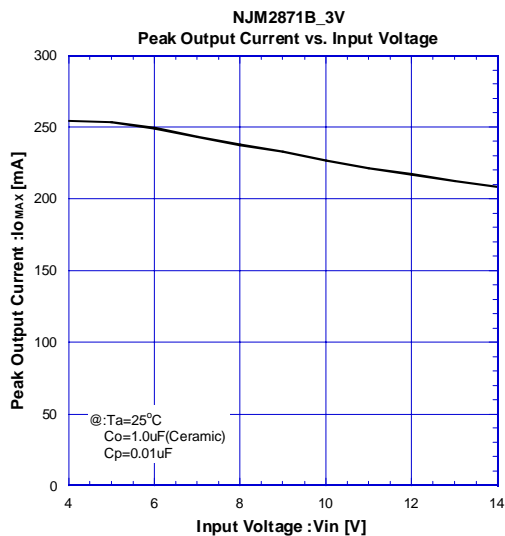
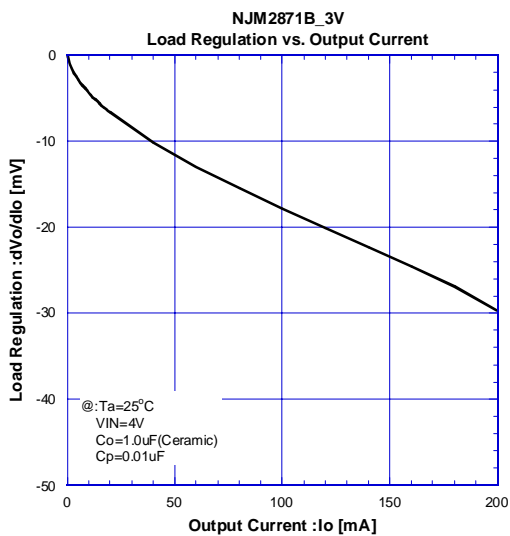


ELECTRICAL CHARACTERISTICS

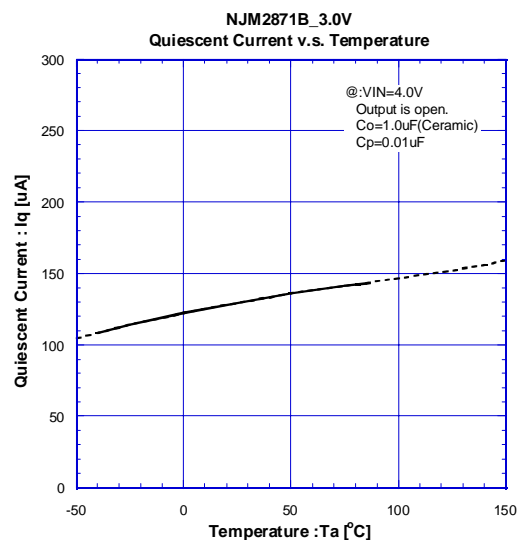
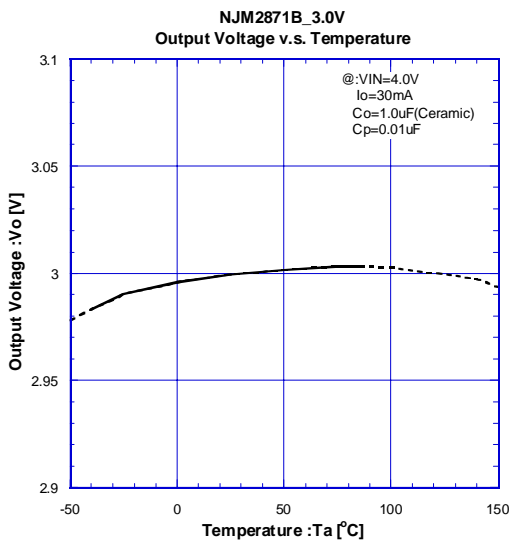
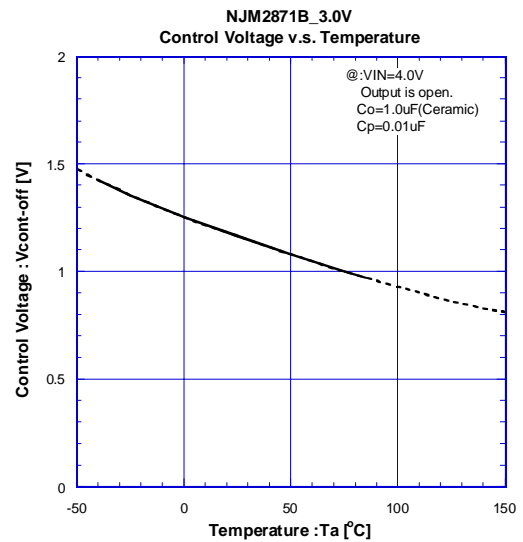
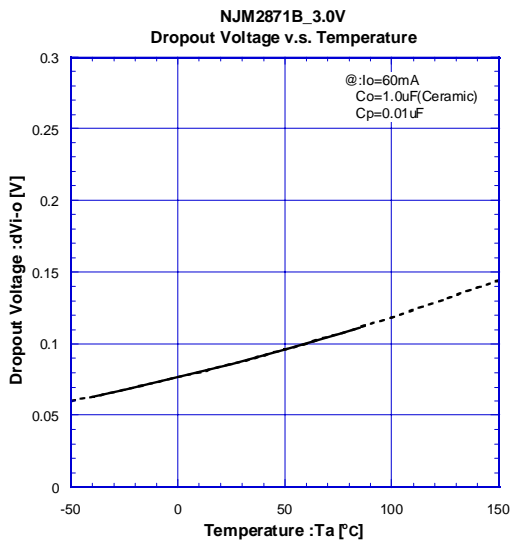
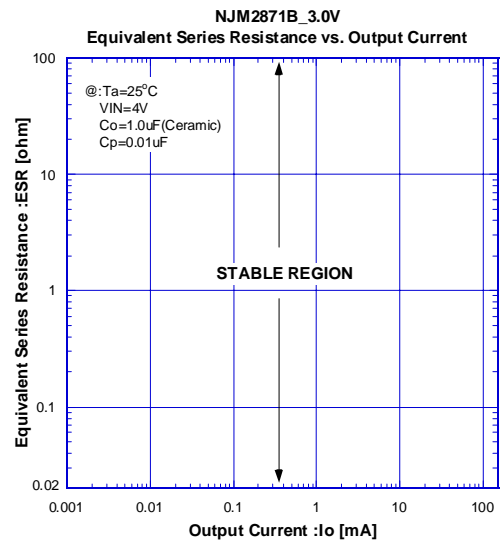
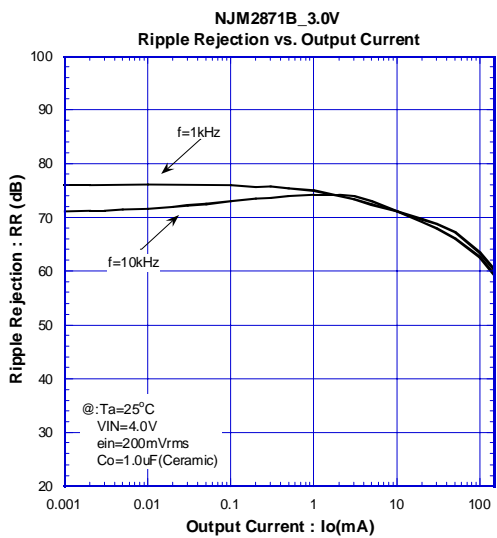


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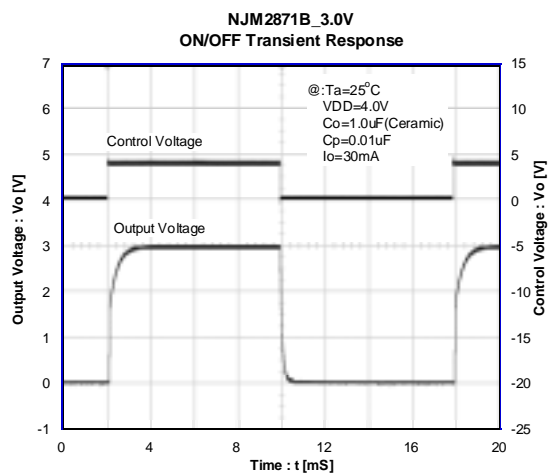
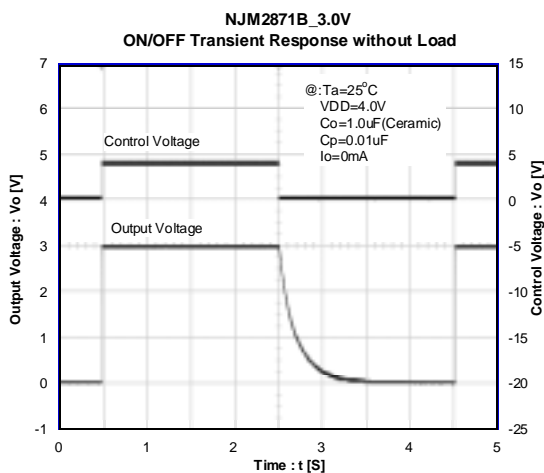
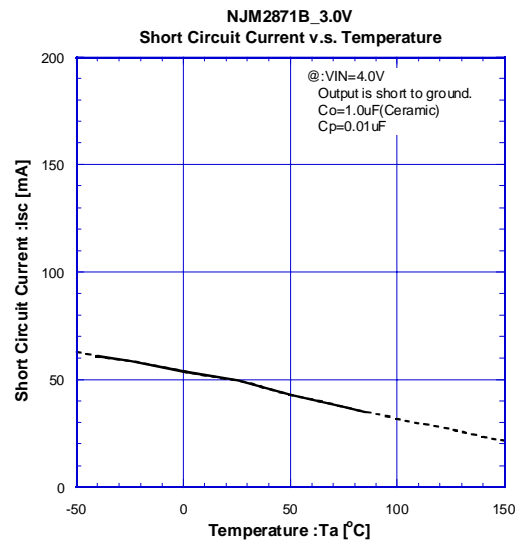
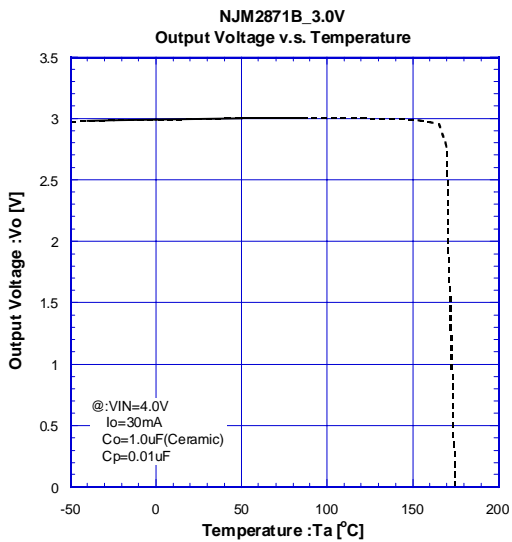
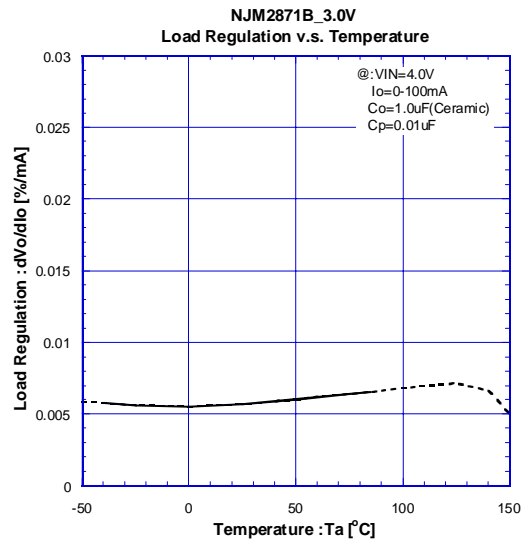
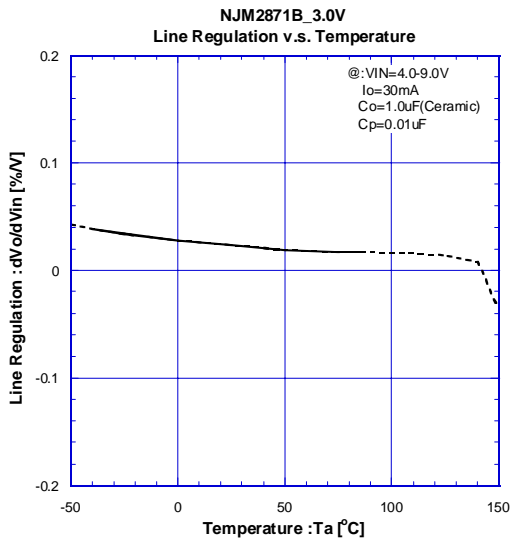


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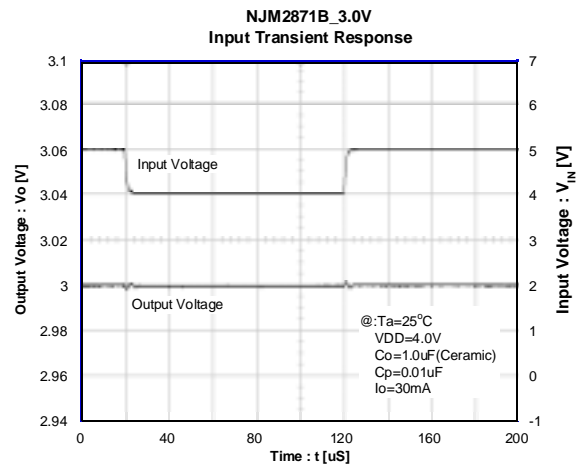
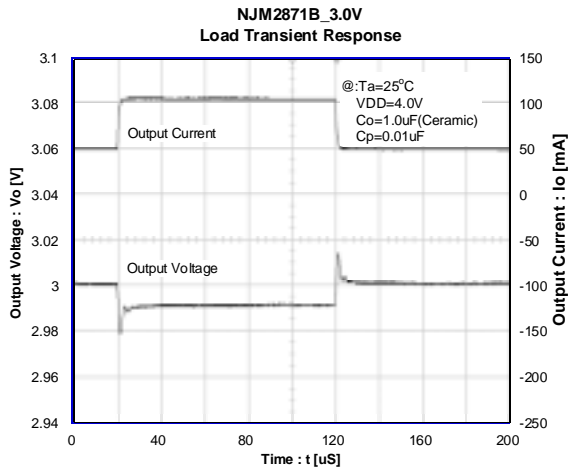


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ELECTRICAL CHARACTERISTICS



■ ELECTRICAL CHARACTERISTICS



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