

LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The NJM2873 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

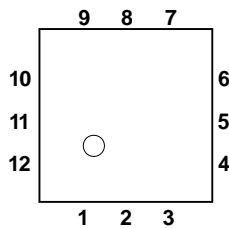


NJM2873PB1

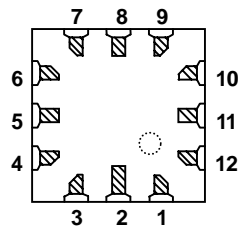
■ FEATURES

- High Ripple Rejection 70dB typ. (f=1kHz)
- Output Noise Voltage $V_{no}=30\mu V_{rms}$ ($C_p=0.01\mu F$)
- Output capacitor with 1.0 μF ceramic capacitor ($V_o\geq 2.7V$)
- Output Current $I_o(max.)=150mA$
- High Precision Output $V_o\pm 1\%$
- Low Dropout Voltage 0.10V typ. ($I_o=60mA$)
- 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



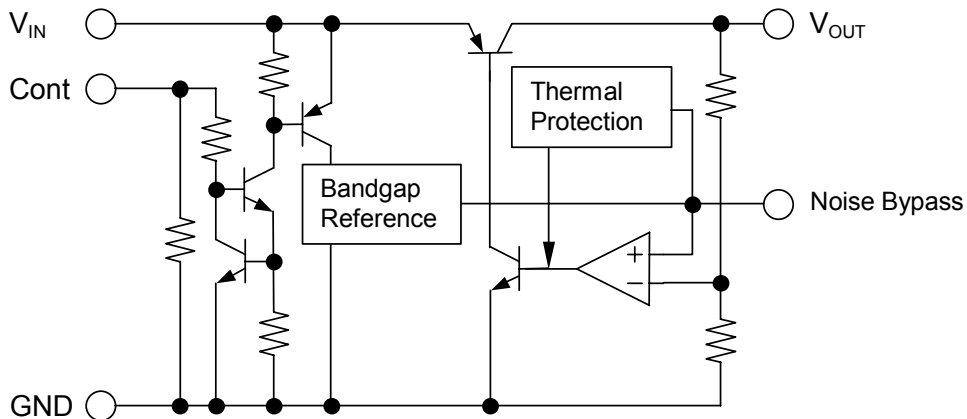
BOTTOM

PIN FUNCTION

- | | |
|-------------|-----------------|
| 1. V_{IN} | 7. GND |
| 2. V_{IN} | 8. NOISE BYPASS |
| 3. V_{IN} | 9. NC |
| 4. CONTROL | 10. V_{OUT} |
| 5. GND | 11. V_{OUT} |
| 6. GND | 12. V_{OUT} |

NJM2873PB1

■ EQUIVALENT CIRCUIT



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■ OUTPUT VOLTAGE RANK LIST

Device Name	V _{OUT}
NJM2873PB1-21	2.1V
NJM2873PB1-25	2.5V
NJM2873PB1-26	2.6V
NJM2873PB1-27	2.7V
NJM2873PB1-28	2.8V
NJM2873PB1-285	2.85V
NJM2873PB1-03	3.0V
NJM2873PB1-33	3.3V
NJM2873PB1-38	3.8V
NJM2873PB1-05	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	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

■ ELECTRICAL CHARACTERISTICS

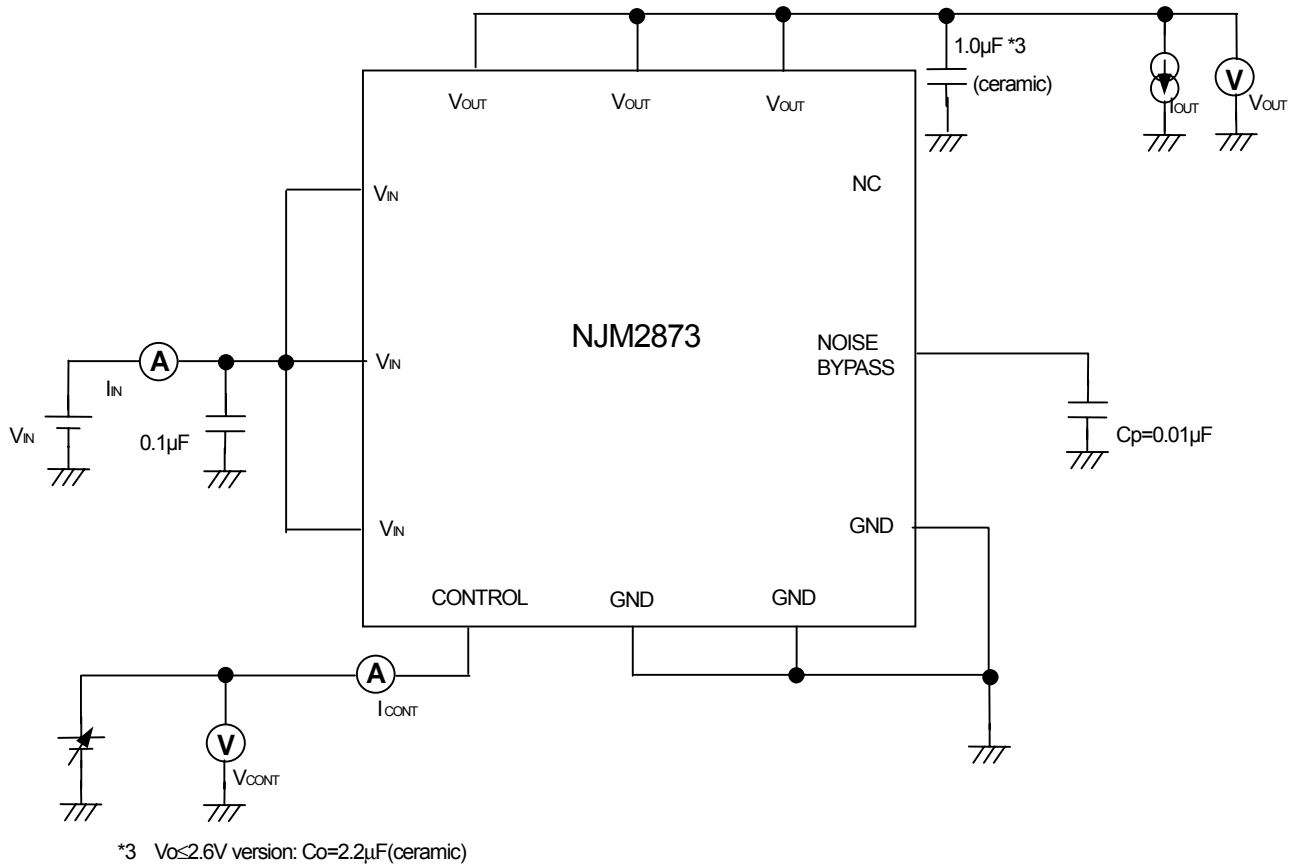
(V_{IN}=V_o+1V, C_{IN}=0.1uF, C_o=1.0uF: V_o≥2.7V (C_o=2.2uF: V_o≤2.6V), C_p=0.01uF, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V _o	I _o =30mA	-1%	-	+1%	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	V _o - 0.3V	150	200	-	mA
Line Regulation	ΔV _o /ΔV _{IN}	V _{IN} =V _o +1V ~ V _o +6V, I _o =30mA	-	-	0.10	%/V
Load Regulation	ΔV _o /ΔI _o	I _o =0 ~ 100mA	-	-	0.03	%/mA
Dropout Voltage	ΔV _{I-O}	I _o =60mA	-	0.10	0.18	V
Ripple Rejection	RR	e _{in} =200mVrms, f=1kHz, I _o =10mA V _o =3V Version	-	70	-	dB
Average Temperature Coefficient of Output Voltage	ΔV _o /ΔTa	Ta=0~85°C, I _o =10mA	-	±50	-	ppm/°C
Output Noise Voltage	V _{NO}	f=10Hz~80kHz, I _o =10mA, V _o =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

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.

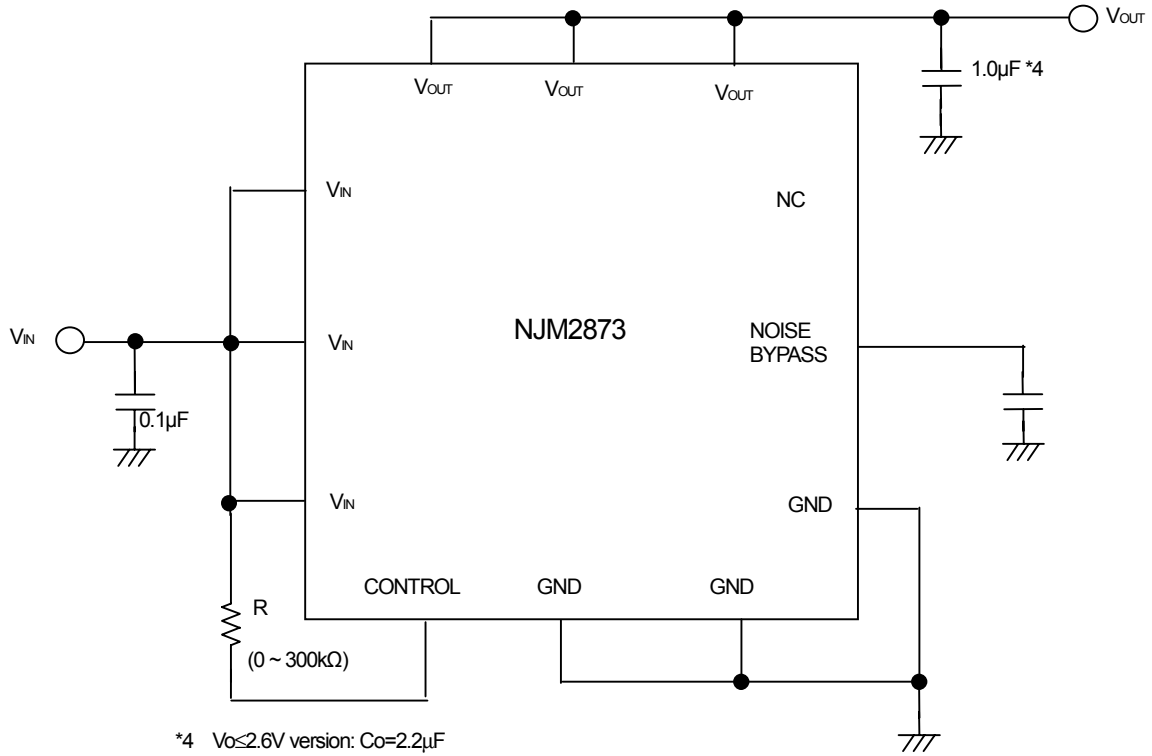
■ TEST CIRCUIT



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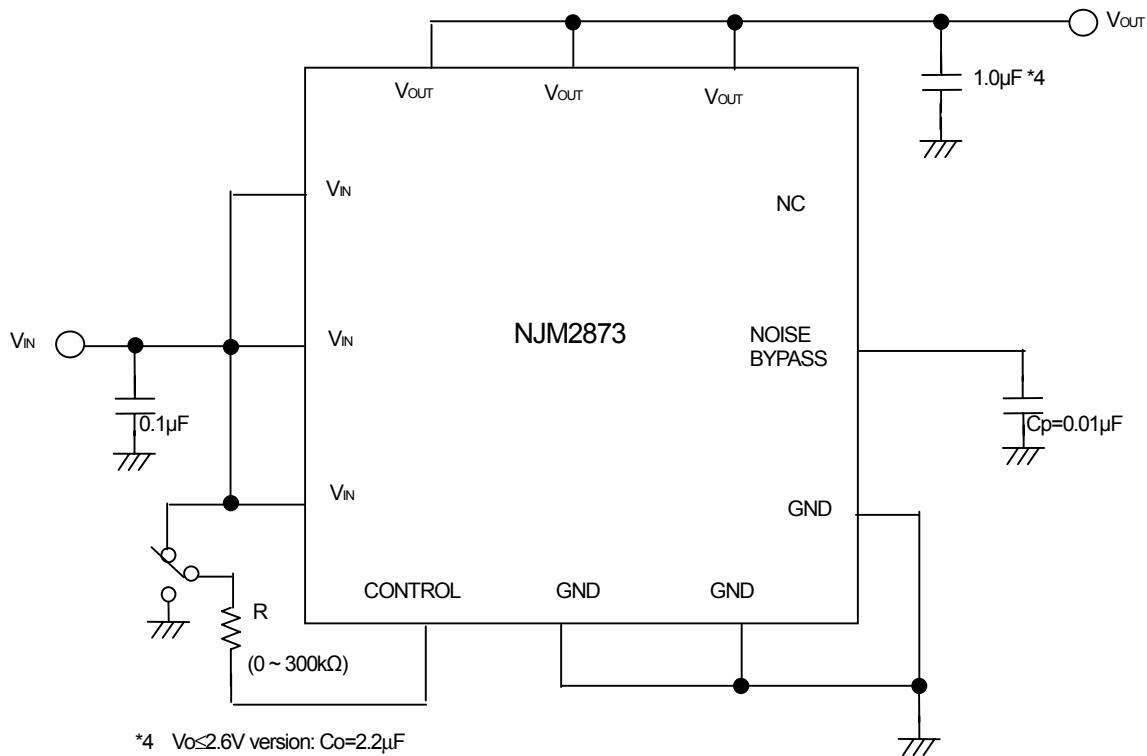
■ TYPICAL APPLICATION

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



Connect control terminal to V_{IN} terminal

② In use of ON/OFF CONTROL:



State of control terminal:

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

*Noise bypass Capacitance C_p

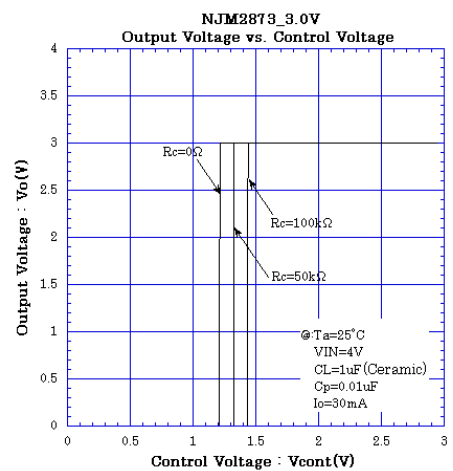
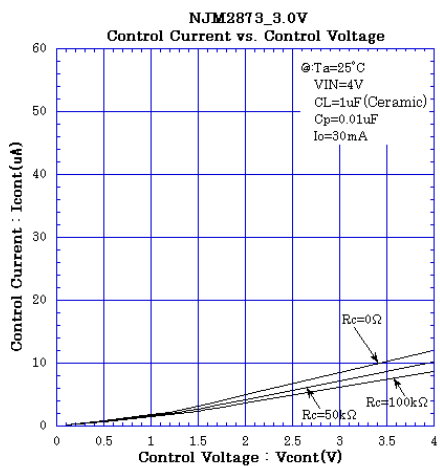
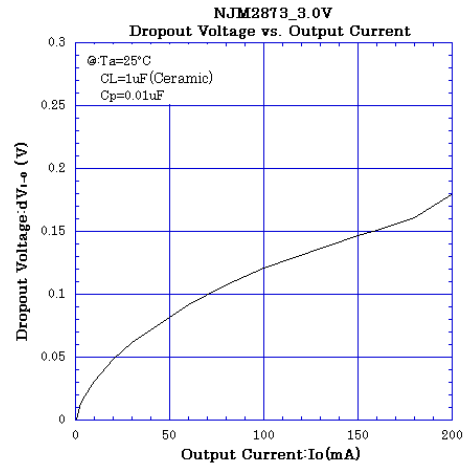
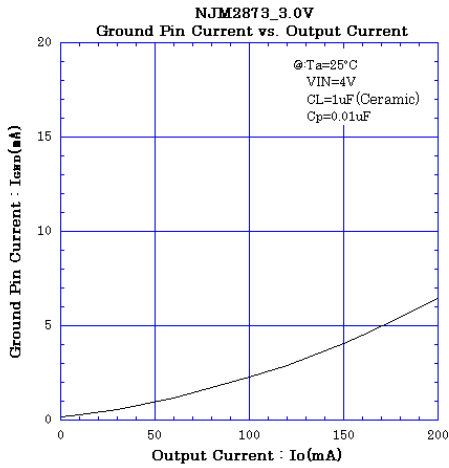
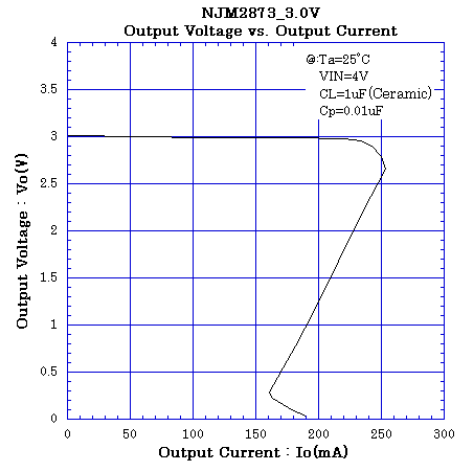
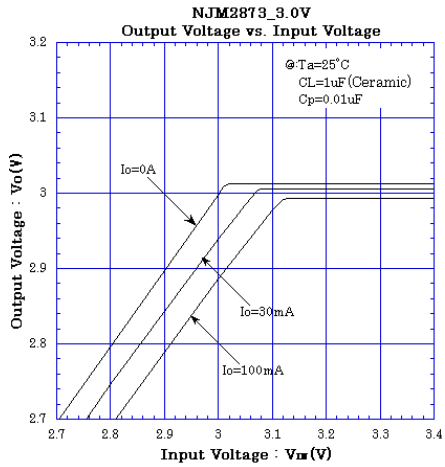
Noise bypass capacitance C_p reduces noise generated by band-gap reference circuit. Noise level and ripple rejection will be improved when larger C_p is used. Use of smaller C_p value may cause oscillation. Use the C_p value of $0.01\mu F$ greater to avoid the problem.

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

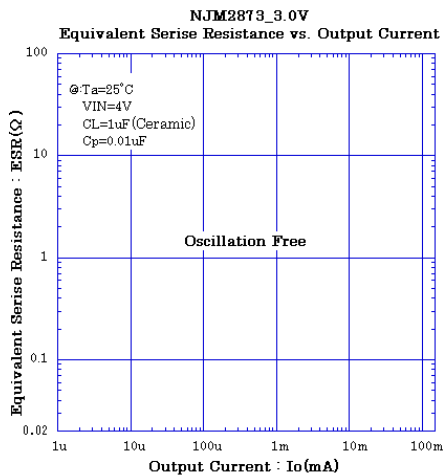
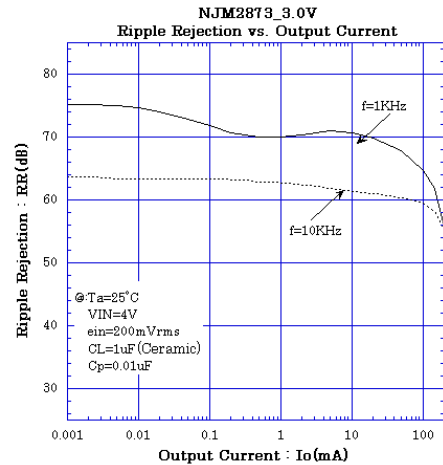
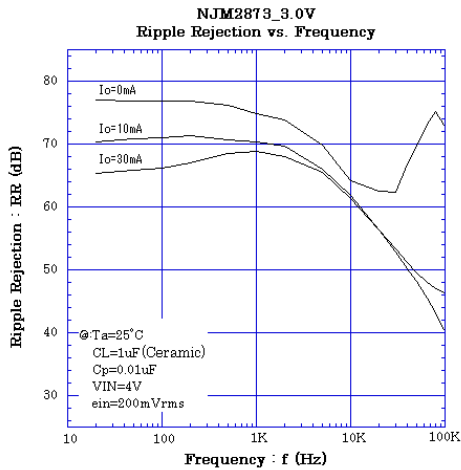
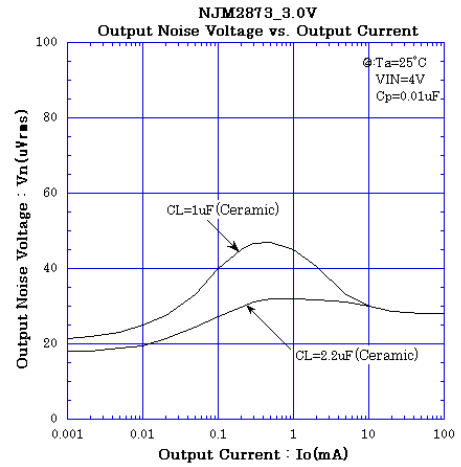
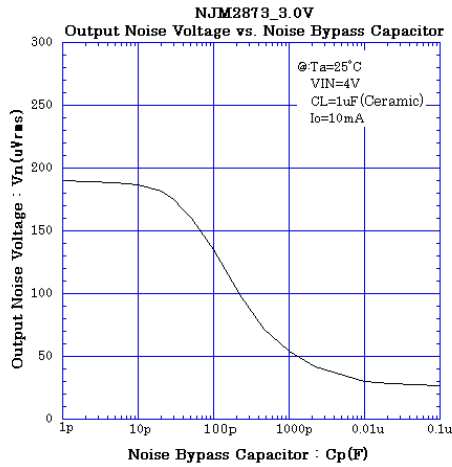
The current flow into the control terminal while the IC is ON state (I_{CONT}) can be reduced when a pull up resistance "R" is inserted between V_{IN} and the control terminal. The minimum control voltage for ON state ($V_{CONT(ON)}$) is increased due to the voltage drop caused by I_{CONT} and the resistance "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.

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■ ELECTRICAL CHARACTERISTICS

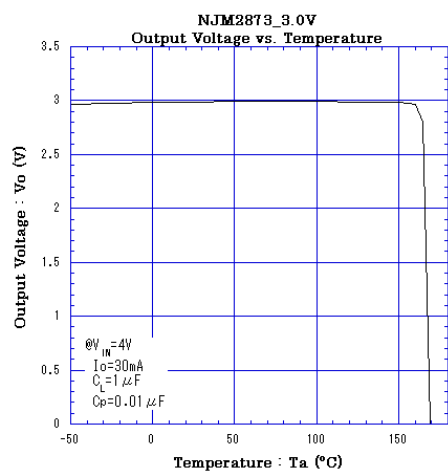
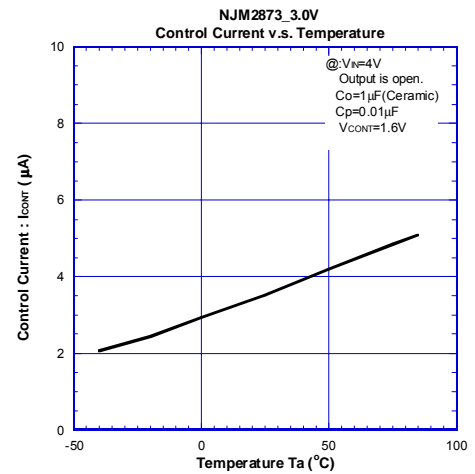
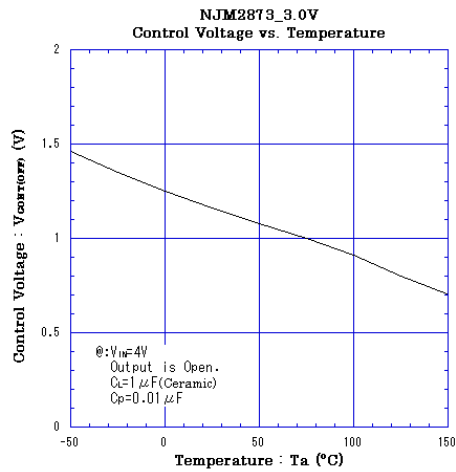
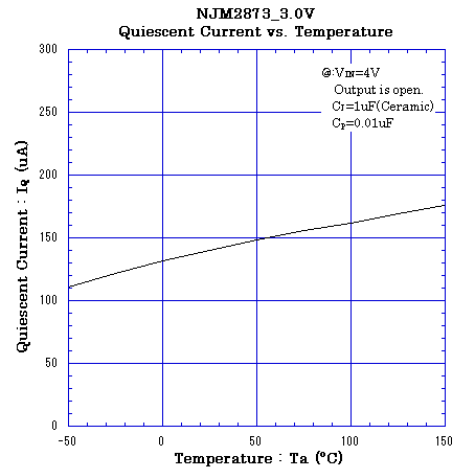
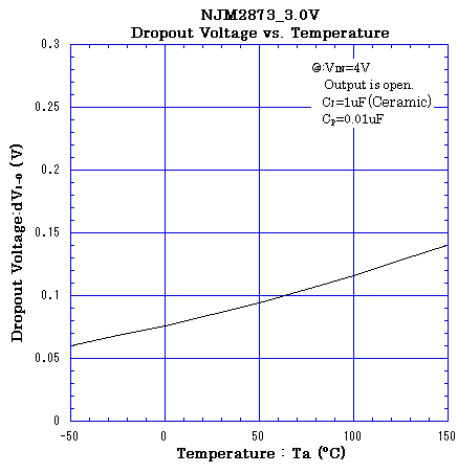


ELECTRICAL CHARACTERISTICS



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■ ELECTRICAL CHARACTERISTICS



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