

Ultra Low Noise Low Dropout Voltage Regulator

■ GENERAL DESCRIPTION

The NJM2863/64 is a 2ch low dropout voltage regulator designed for VCO Applications.

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

■ PACKAGE OUTLINE

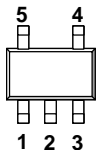


NJM2863F/64F

■ FEATURES

- High Ripple Rejection 75dB typ. (f=1kHz)
- Output capacitor with 1.0 μ F ceramic capacitor
- Output Noise Voltage $V_{no}=19\mu V_{rms}$ typ. ($C_p=0.01\mu F$, $C_o=1.0\mu F$ (Ceramic))
 $V_{no}=12\mu V_{rms}$ typ. ($C_p=0.1\mu F$, $C_o=10\mu F$ (Tantalum))
- Output Current $I_o(max.)=100mA$
- High Precision Output $V_o\pm 1.0\%$
- 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 MTP5

■ PIN CONFIGURATION



PIN FUNCTION

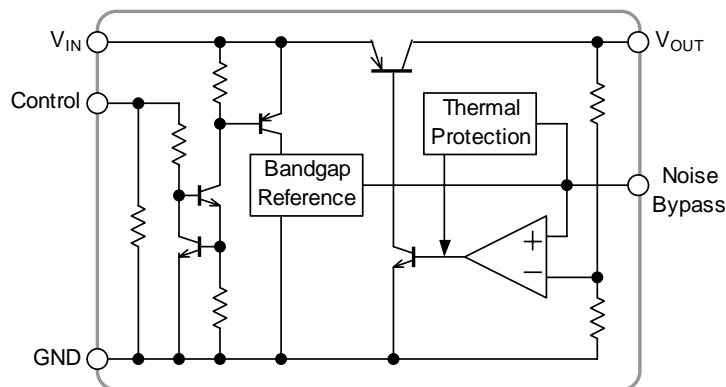
- 1.CONTROL
- 2.GND
- 3.NOISE BYPASS
- 4.V_{OUT}
- 5.V_{IN}

NJM2863F

- 1.V_{IN}
- 2.GND
- 3.CONTROL
- 4.NOISE BYPASS
- 5.V_{OUT}

NJM2864F

■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE RANK LIST

Device Name	V _{OUT}	Device Name	V _{OUT}
NJM286×F21	2.1V	NJM286×F29	2.9V
NJM286×F25	2.5V	NJM286×F03	3.0V
NJM286×F27	2.7V	NJM286×F33	3.3V
NJM286×F28	2.8V	NJM286×F05	5.0V
NJM286×F285	2.85V		

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■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V _{IN}	+14	V
Control Voltage	V _{CONT}	+14(*note 1)	V
Power Dissipation	P _D	200	mW
Operating Temperature	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +125	°C

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

■ ELECTRICAL CHARACTERISTICS

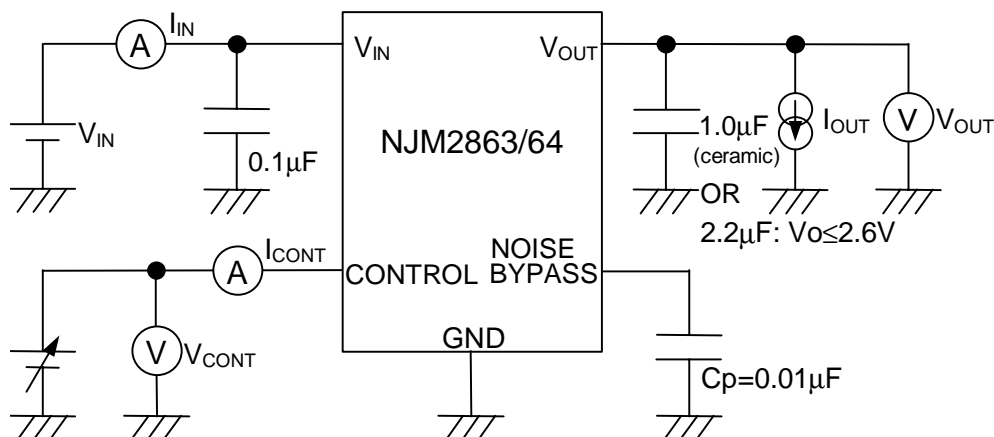
(V_{IN}=V_o+1V, C_{IN}=0.1μF, C_o=1.0μF: V_o≥2.7V (C_o=2.2μF: V_o≤2.6V), C_p=0.01μF, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V _o	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	V _o =0.3V	100	130	—	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 _{L-O}	I _o =60mA	—	0.10	0.18	V
Ripple Rejection	RR	e _{in} =200mVrms, f=1kHz, I _o =10mA, V _o =3V Version	—	75	—	dB
Average Temperature Coefficient of Output Voltage	ΔV _o /ΔTa	Ta=0-85°C, I _o =10mA	—	± 50	—	ppm/°C
Output Noise Voltage1	V _{NO1}	f=10Hz-80kHz, I _o =10mA, C _p =0.01μF, C _o =1.0μF (Ceramic), V _o =3V Version	—	19	—	μVrms
Output Noise Voltage2	V _{NO2}	f=10Hz-80kHz, I _o =10mA, C _p =0.1μF, C _o =10μF (Tantalum), V _o =3V Version	—	12	—	μVrms
Control Voltage for ON-state	V _{CONT(ON)}		1.6	—	—	V
Control Voltage for OFF-state	V _{CONT(OFF)}		—	—	0.6	V

(*note 2): The above specification is a common specification for all output voltages.

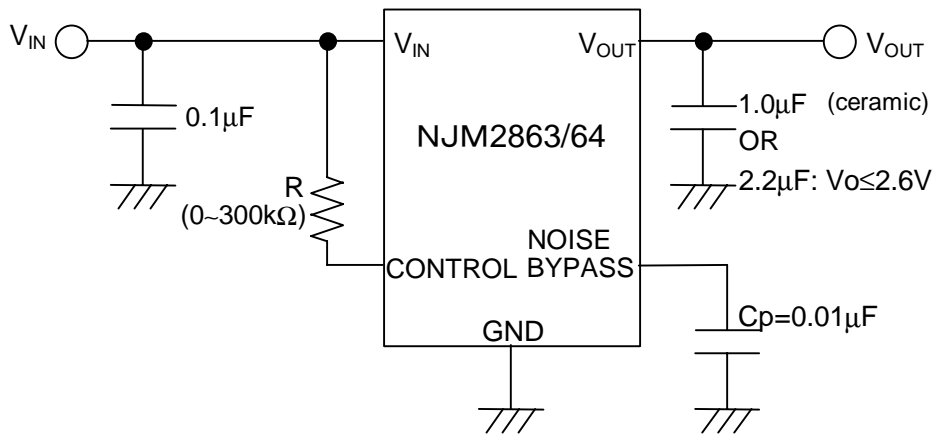
Therefore, it may be different from the individual specification for a specific output voltage.

■ TEST CIRCUIT



■ TYPICAL APPLICATION

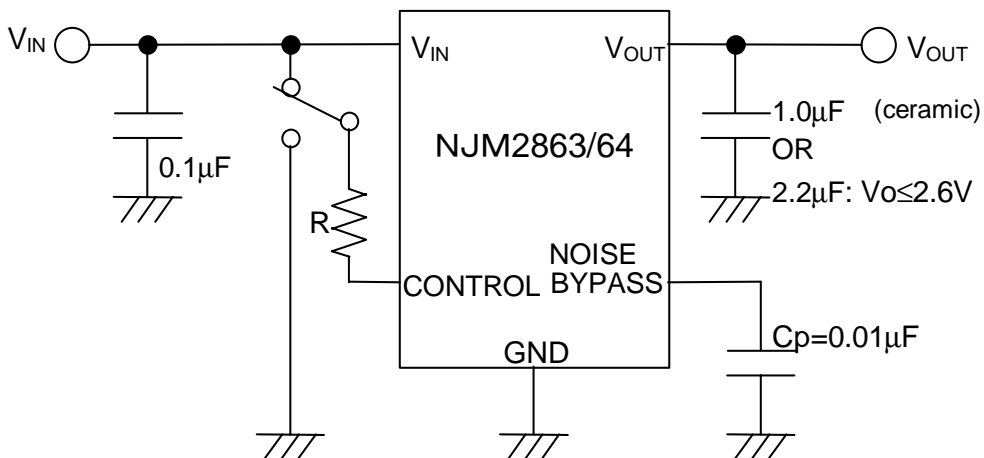
① In the case where ON/OFF Control is not required:



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".

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.

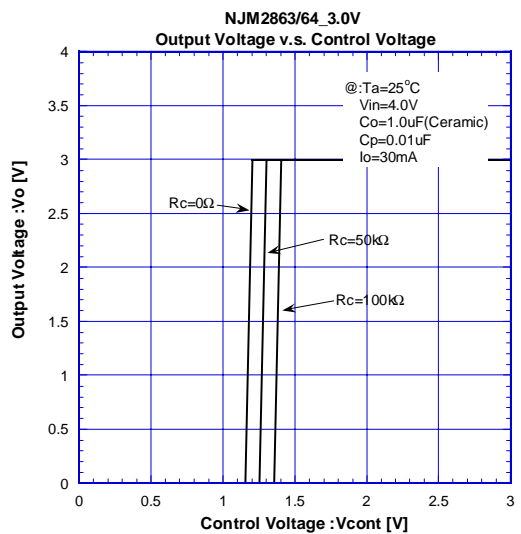
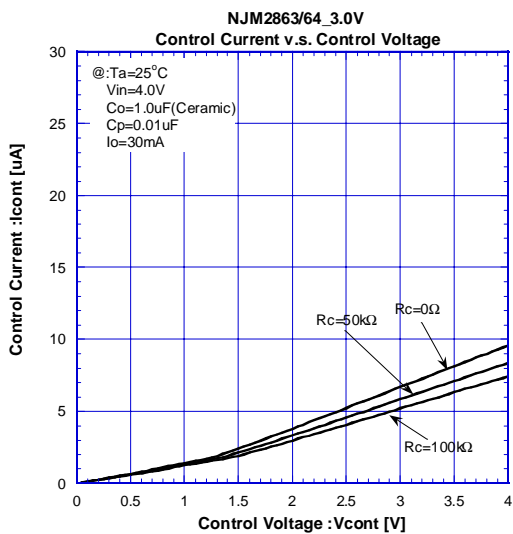
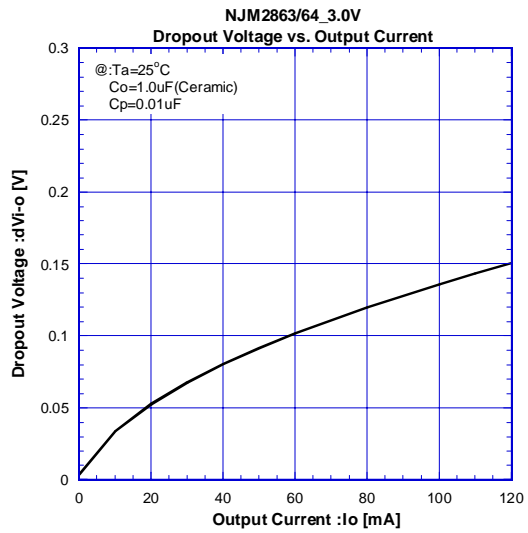
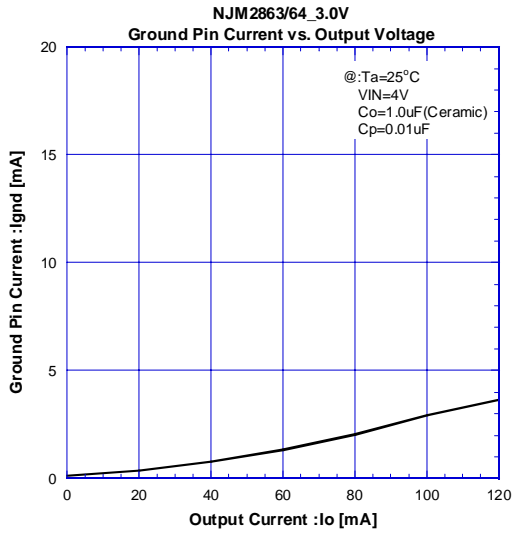
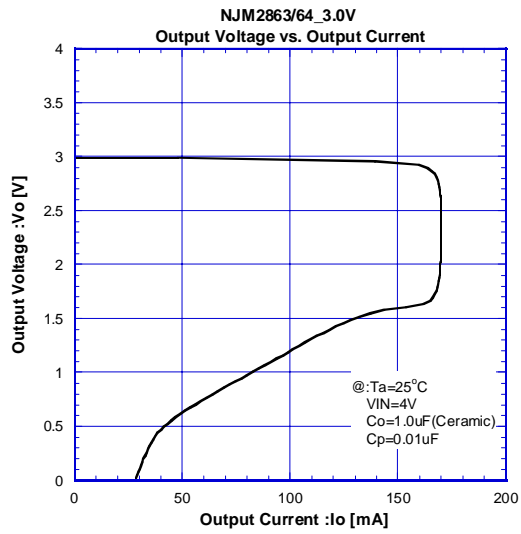
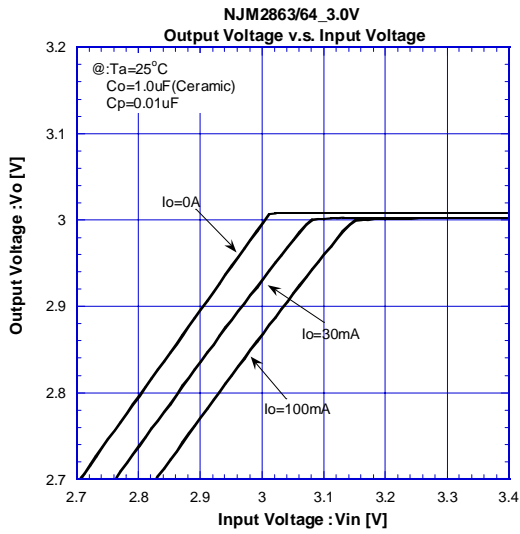
Noise level and ripple rejection will be improved when larger C_p is used.

Use of smaller C_p value may cause oscillation.

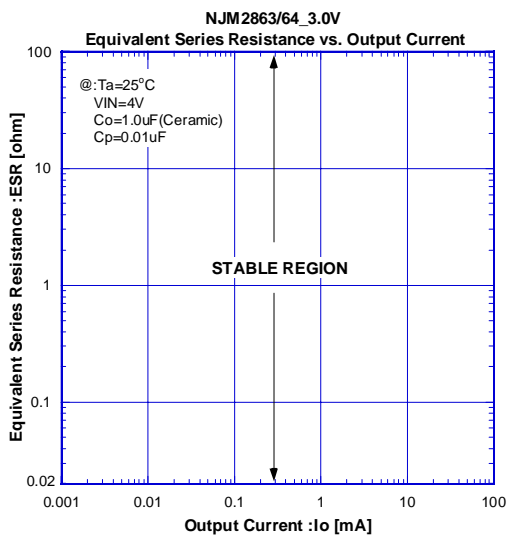
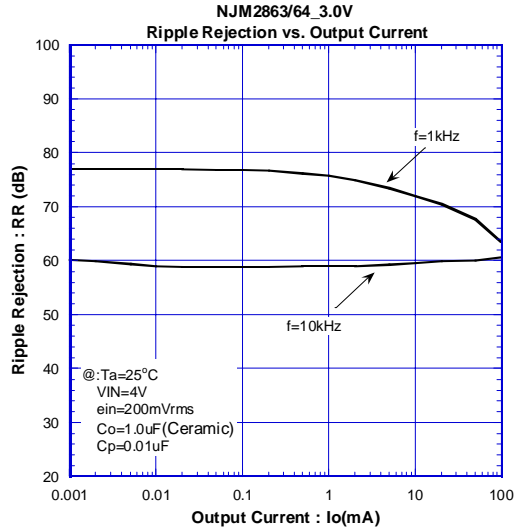
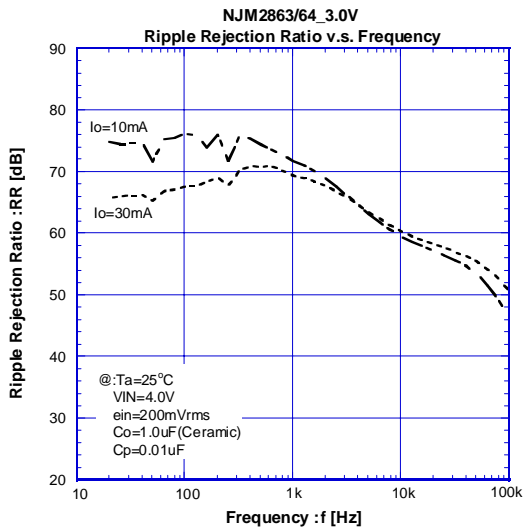
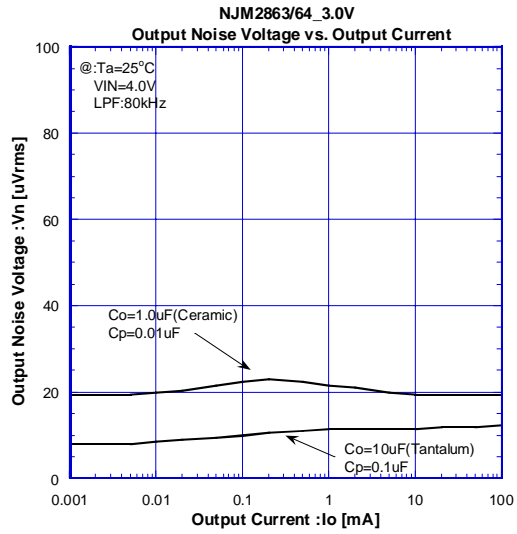
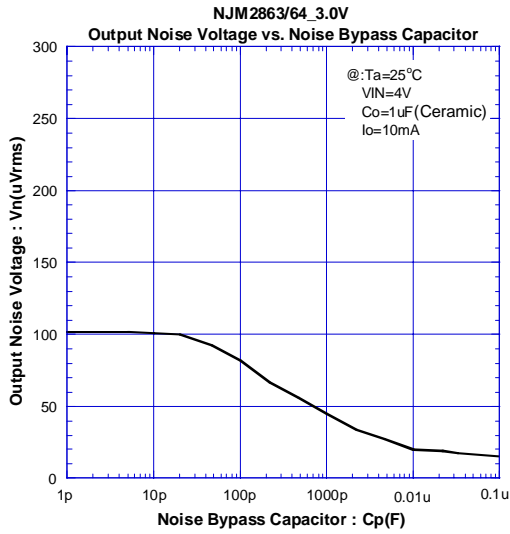
Use the C_p value of $0.01\mu\text{F}$ greater to avoid the problem.

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ELECTRICAL CHARACTERISTICS

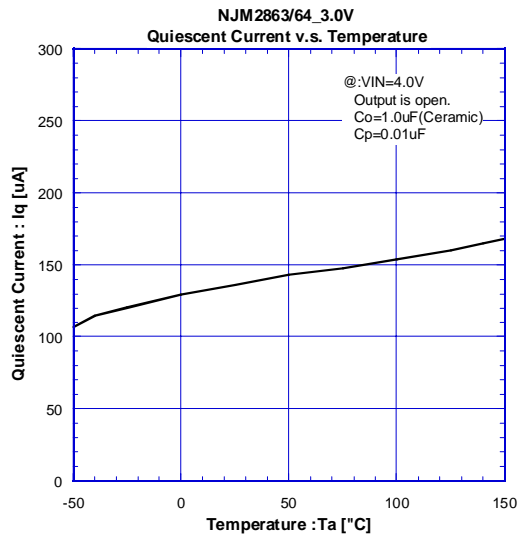
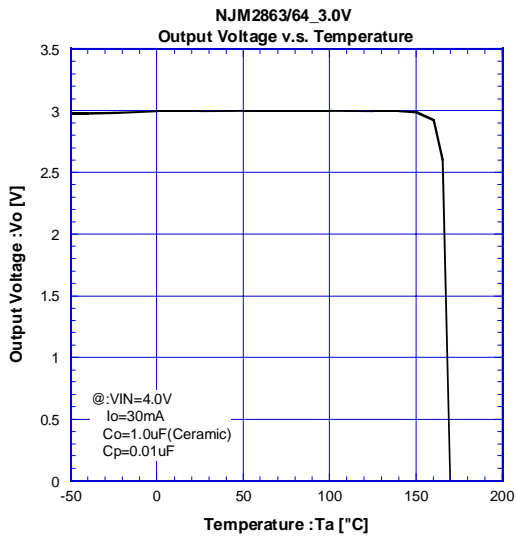
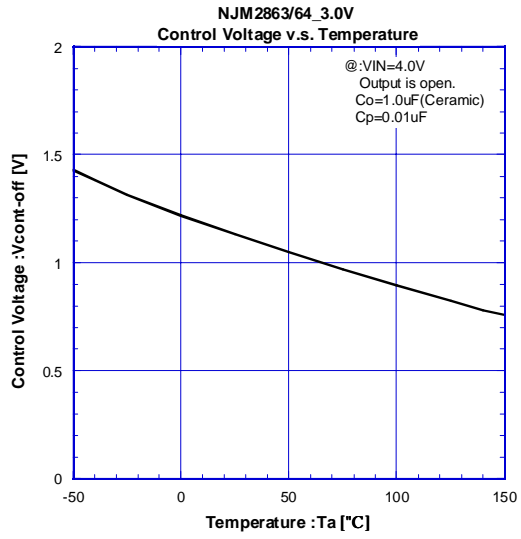
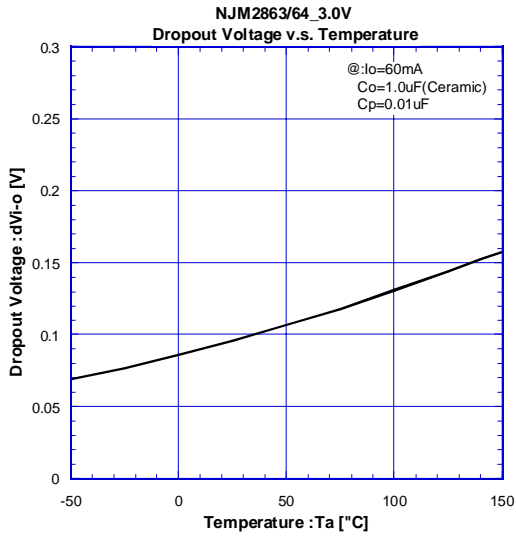


■ ELECTRICAL CHARACTERISTICS



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■ ELECTRICAL CHARACTERISTICS



[CAUTION]

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