

## LOW DROPOUT VOLTAGE REGULATOR

### ■ GENERAL DESCRIPTION

The NJM2861/62 is a low dropout voltage regulator. Advanced Bipolar technology achieves low noise, high ripple rejection and low quiescent current.

### ■ PACKAGE OUTLINE

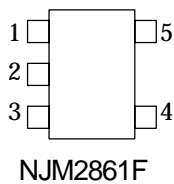


NJM2861F  
NJM2862F

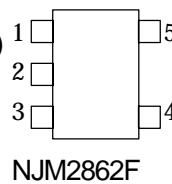
### ■ FEATURES

- 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 $\mu F$  ceramic capacitor ( $V_o \geq 2.7V$ )
- Output Current               $I_o(max.)=100mA$
- 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              MTP5 (MTP5:2.8x2.9x1.1mm)

### ■ PIN CONFIGURATION

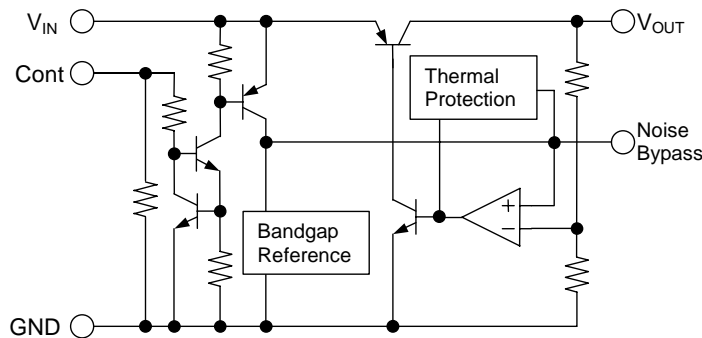


**PIN FUNCTION**  
 1. CONTROL (Active High)  
 2. GND  
 3. NOISE BYPASS  
 4.  $V_{OUT}$   
 5.  $V_{IN}$



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

### ■ EQUIVALENT CIRCUIT



### ■ OUTPUT VOLTAGE RANK LIST

Device Name	$V_{OUT}$	Device Name	$V_{OUT}$
NJM286xF21	2.1V	NJM286xF33	3.3V
NJM286xF25	2.5V	NJM286xF38	3.8V
NJM286xF26	2.6V	NJM286xF05	5.0V
NJM286xF27	2.7V		
NJM286xF28	2.8V		
NJM286xF285	2.85V		
NJM286xF03	3.0V		

# NJM2861/62

## ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V <sub>IN</sub>	+14	V
Control Voltage	V <sub>CONT</sub>	+14(note 1)	V
Power Dissipation	P <sub>D</sub>	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

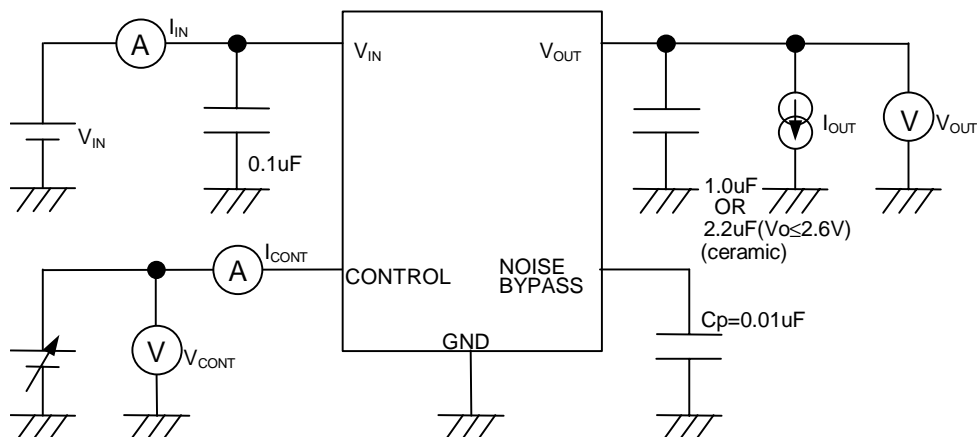
(V<sub>IN</sub>=V<sub>O</sub>+1V, C<sub>IN</sub>=0.1μF, C<sub>O</sub>=1.0μF: V<sub>O</sub>≥2.7V (C<sub>O</sub>=2.2μF: V<sub>O</sub>≤2.6V), C<sub>p</sub>=0.01μF, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V <sub>O</sub>	I <sub>O</sub> =30mA	-1%	—	+1%	V
Quiescent Current	I <sub>Q</sub>	I <sub>O</sub> =0mA, expect I <sub>cont</sub>	—	120	180	μA
Quiescent Current at Control OFF	I <sub>Q(OFF)</sub>	V <sub>CONT</sub> =0V	—	—	100	nA
Output Current	I <sub>O</sub>	V <sub>O</sub> -0.3V	100	130	-	mA
Line Regulation	ΔV <sub>O</sub> /ΔV <sub>IN</sub>	V <sub>IN</sub> =V <sub>O</sub> +1V ~ V <sub>O</sub> +6V, I <sub>O</sub> =30mA	—	—	0.10	%/V
Load Regulation	ΔV <sub>O</sub> /ΔI <sub>O</sub>	I <sub>O</sub> =0 ~ 60mA	—	—	0.03	%/mA
Dropout Voltage	ΔV <sub>I-O</sub>	I <sub>O</sub> =60mA	—	0.10	0.18	V
Ripple Rejection	RR	e <sub>in</sub> =200mVrms, f=1kHz, I <sub>O</sub> =10mA V <sub>IN</sub> =V <sub>O</sub> +1V, V <sub>O</sub> =3V Version	—	70	—	dB
Average Temperature Coefficient of Output Voltage	ΔV <sub>O</sub> /ΔTa	Ta=0-85°C, I <sub>O</sub> =10mA	—	±50	—	ppm/°C
Output Noise Voltage	V <sub>NO</sub>	f=10Hz-80kHz, I <sub>O</sub> =10mA, V <sub>O</sub> =3V Version	—	30	—	μVrms
Control Voltage for ON-state	V <sub>CONT(ON)</sub>		1.6	—	—	V
Control Voltage for OFF-state	V <sub>CONT(OFF)</sub>		—	—	0.6	V

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

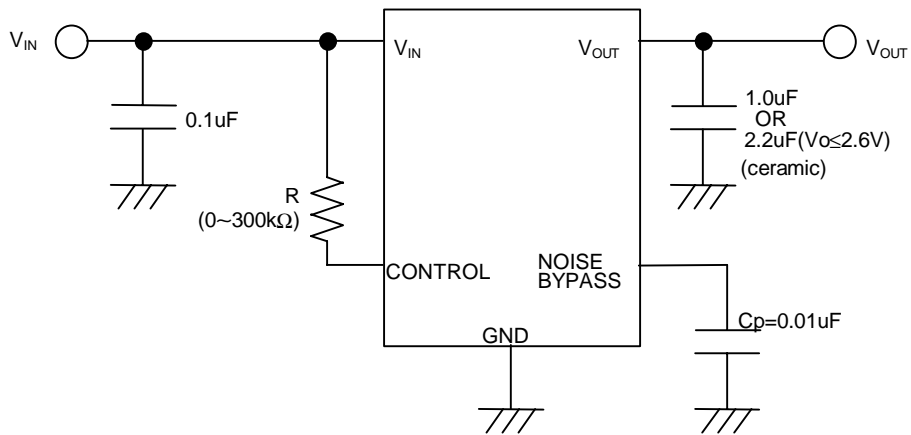
Therefore, it may be different from the individual specification for a specific output voltage.

## ■ TEST CIRCUIT



## ■ TYPICAL APPLICATION

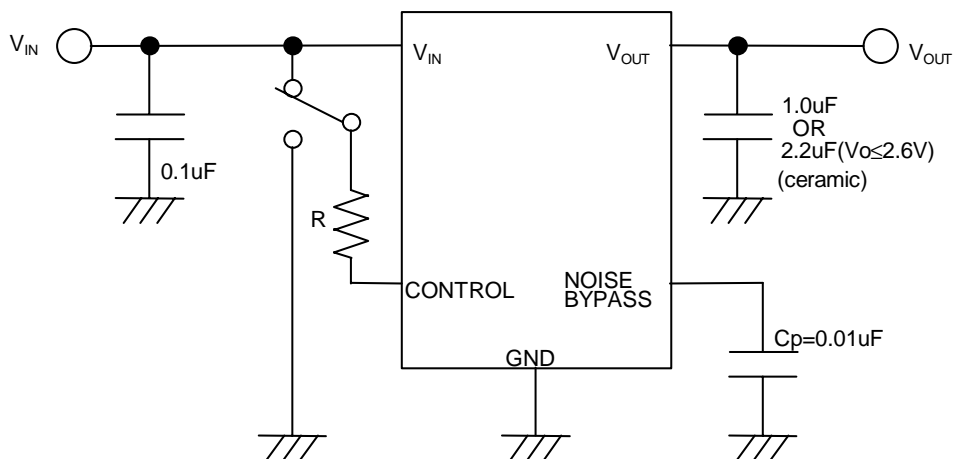
① In case that ON/OFF Control is not required:



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.

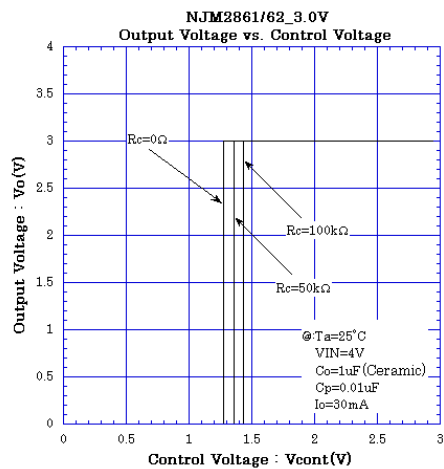
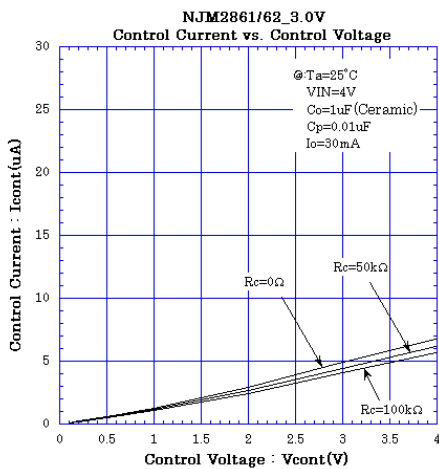
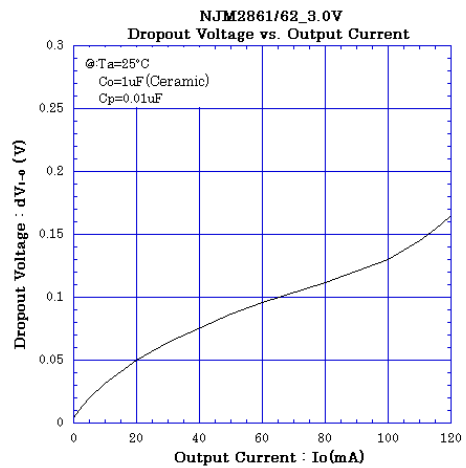
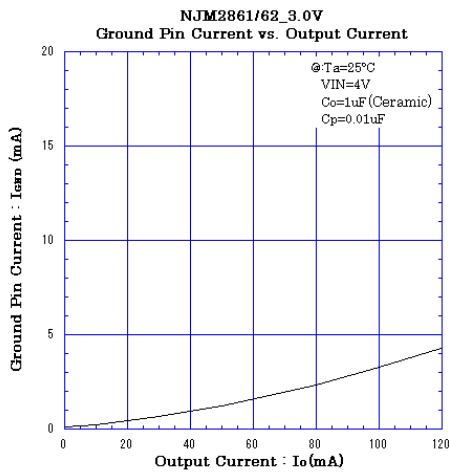
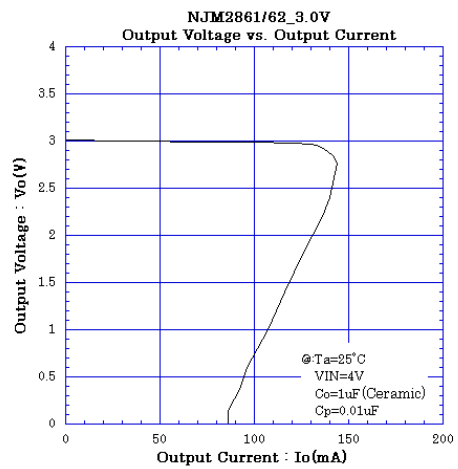
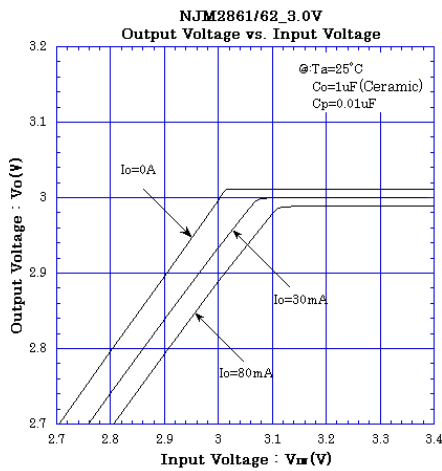
Noise level and ripple rejection will be improved when larger  $C_p$  is used.

Use of smaller  $C_p$  value may cause oscillation.

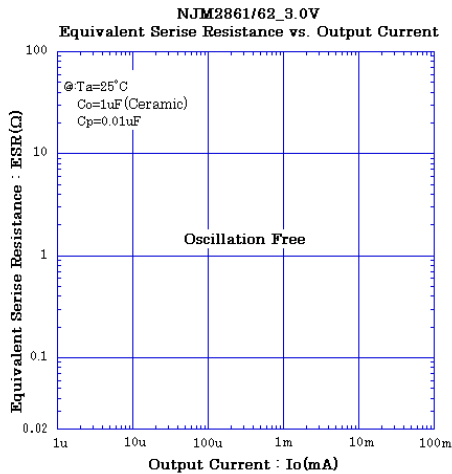
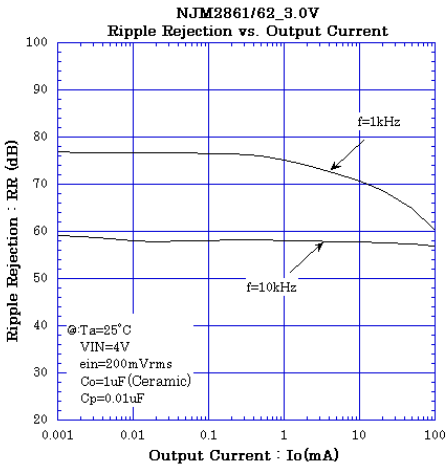
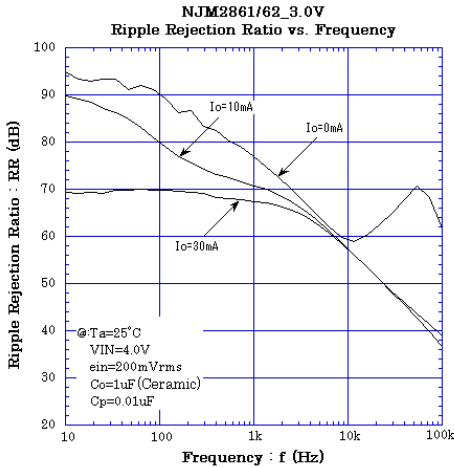
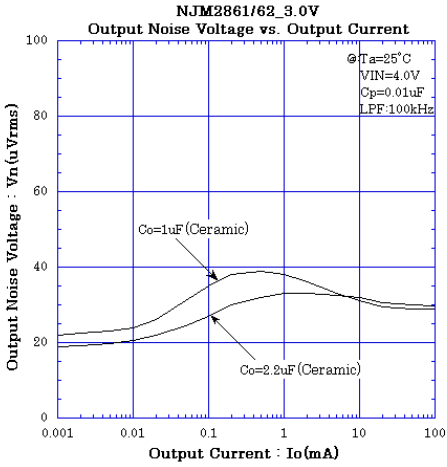
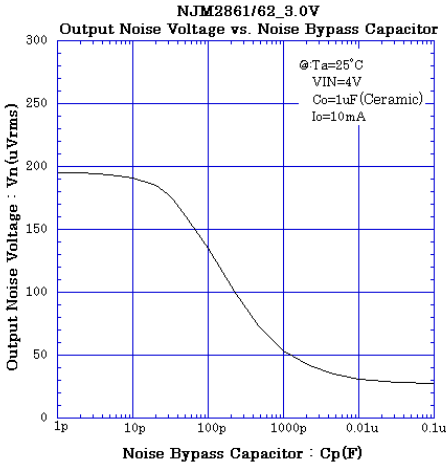
Use the  $C_p$  value of 0.01uF greater to avoid the problem.

# NJM2861/62

## ■ ELECTRICAL CHARACTERISTICS

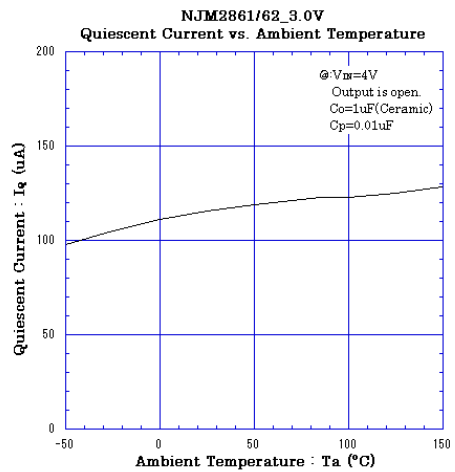
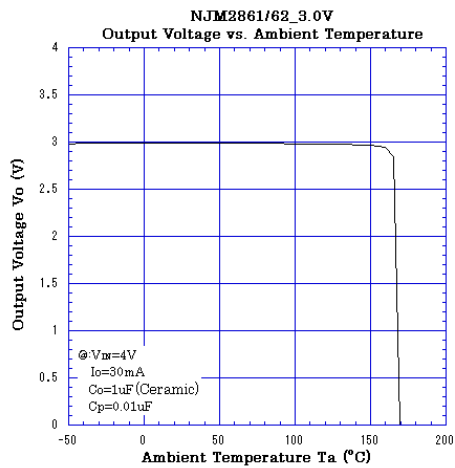
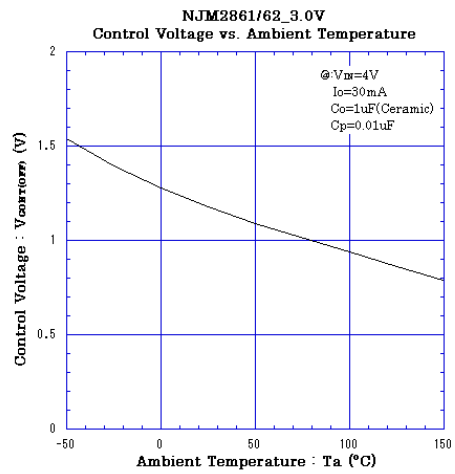
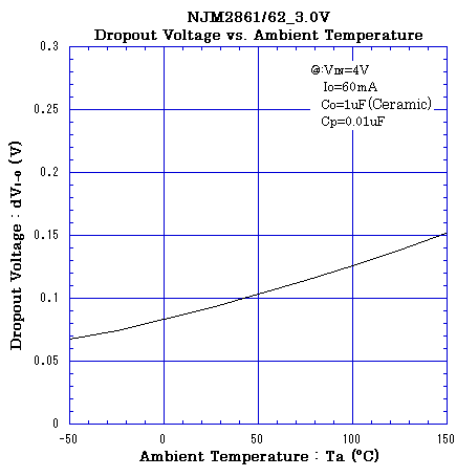


■ ELECTRICAL CHARACTERISTICS



# NJM2861/62

## ■ ELECTRICAL CHARACTERISTICS



**[CAUTION]**

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