

## LOW DROPOUT VOLTAGE REGULATOR

### ■ GENERAL DESCRIPTION

The NJM2863/64 is a low dropout voltage regulator designed for VCO application.

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

### ■ PACKAGE OUTLINE



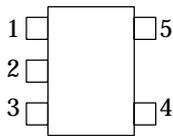
NJM2863F

NJM2864F

### ■ FEATURES

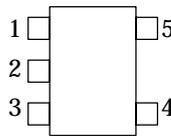
- High Ripple Rejection            75dB typ. (f=1kHz)
- Output Noise Voltage             $V_{no}=19\mu V_{rms}$  typ. ( $C_p=0.01\mu F$ ,  $C_o=1.0\mu F$ (Ceramic))  
 $V_{no}=12\mu V_{rms}$  typ. ( $C_p=0.1\mu F$ ,  $C_o=10\mu F$ (Tantalum))
- Output capacitor with 1.0uF ceramic capacitor
- Output Current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



NJM2863F

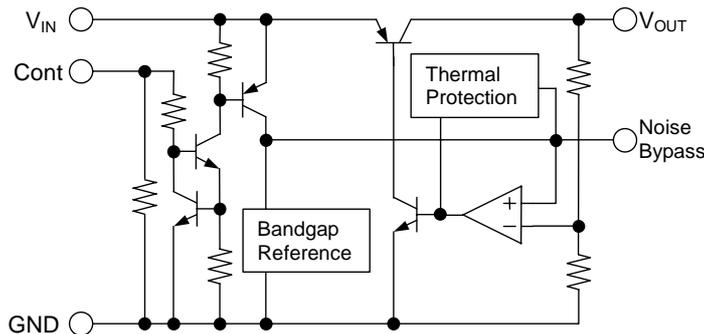
- PIN FUNCTION**  
 1. CONTROL (Active High)  
 2. GND  
 3. NOISE BYPASS  
 4.  $V_{OUT}$   
 5.  $V_{IN}$



NJM2864F

- 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	$V_{OUT}$
NJM286xF27	2.7V
NJM286xF28	2.8V
NJM286xF29	2.9V
NJM286xF03	3.0V

# NJM2863/64

## ■ 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

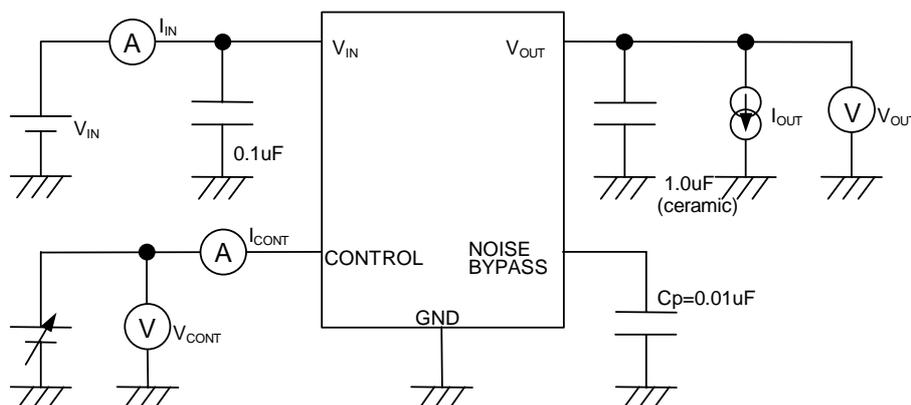
(V<sub>IN</sub>=V<sub>O</sub>+1V, C<sub>IN</sub>=0.1μF, C<sub>O</sub>=1.0uF, C<sub>p</sub>=0.01μF, Ta=25°C)

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>O</sub> =3V Version	-	75	-	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 1	V <sub>NO1</sub>	f=10Hz~80kHz, I <sub>O</sub> =10mA, C <sub>p</sub> =0.01μF, C <sub>O</sub> =1.0uF(Ceramic) V <sub>O</sub> =3V Version	-	19	-	μVrms
Output Noise Voltage 2	V <sub>NO2</sub>	f=10Hz~80kHz, I <sub>O</sub> =10mA, C <sub>p</sub> =0.1μF, C <sub>O</sub> =10uF(Tantalum) V <sub>O</sub> =3V Version	-	12	-	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.

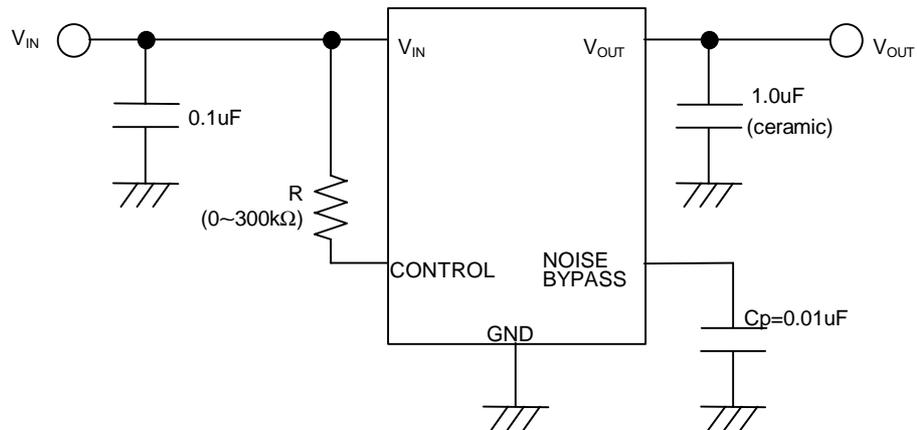
Therefore, it may be different from the individual specification for a specific output voltage.

## ■ TEST CIRCUIT



## ■ TYPICAL APPLICATION

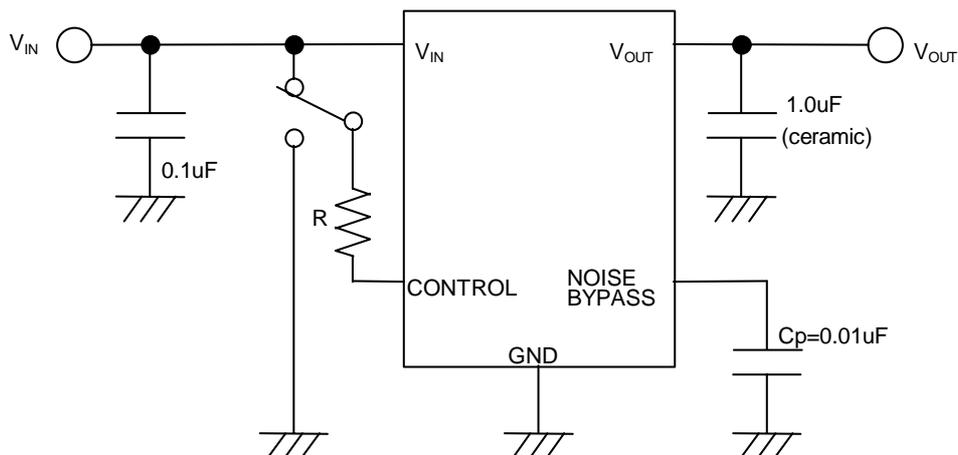
① In case that ON/OFF Control is not required:



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.

[CAUTION]

The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.