LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The NJM2880 is a low dropout voltage regulator. Advanced Bipolar technology achieves low noise, high ripple rejection and low quiescent current.

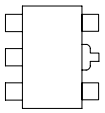
■ PACKAGE OUTLINE

NJM2880U

■ FEATURES

- ●High Ripple Rejection 70dB typ. (f=1kHz)
- ●Output Noise Voltage Vno=30uVrms (Cp=0.01uF)
- ●Output capacitor with 1.0uF ceramic capacitor
- ●Output Current Io(max.)=300mA
- ●High Precision Output Vo±1.0%
- ●Low Dropout Voltage 0.10V typ. (Io=100mA)
- ●ON/OFF Control (Active High)
- ●Internal Short Circuit Current Limit
- ●Internal Thermal Overload Protection
- ●Bipolar Technology
- ●Package Outline SOT-89(5pin)

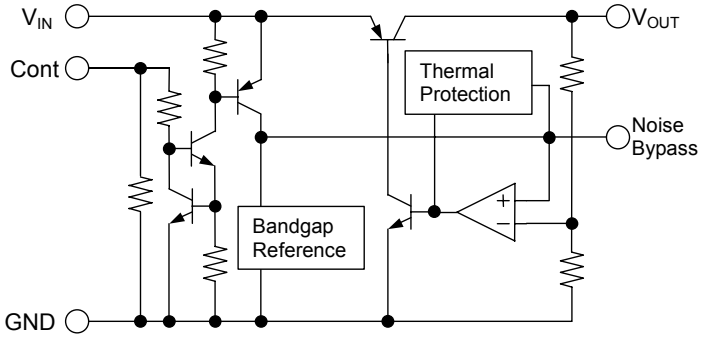
■ PIN CONFIGURATION



NJM2880U

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

■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE RANK LIST

Device Name	Vout	Device Name	Vout
NJM2880U21	2.1V	NJM2880U33	3.3V
NJM2880U25	2.5V	NJM2880U38	3.8V
NJM2880U26	2.6V	NJM2880U05	5.0V
NJM2880U27	2.7V		
NJM2880U28	2.8V		
NJM2880U285	2.85V		
NJM2880U03	3.0V		

■ 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	350	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.

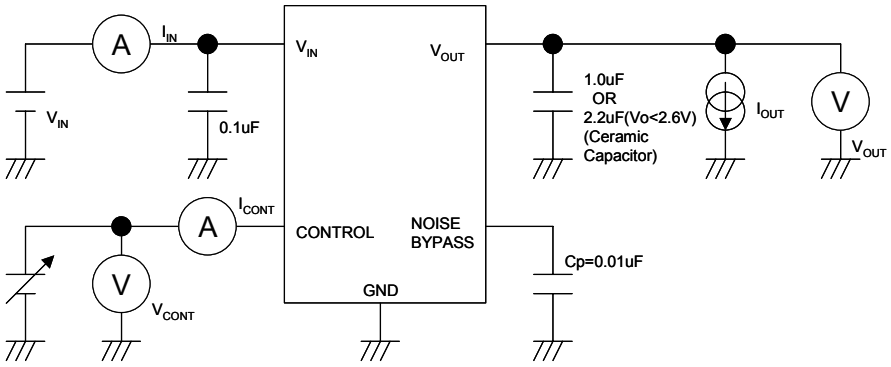
■ ELECTRICAL CHARACTERISTICS

(V_{IN}=Vo+1V, Co=1.0uF: Vo≥2.7V (Co=2.2uF: Vo≤2.6V), Cp=0.01uF, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	Vo	Io=30mA	-1.0%	-	+1.0%	V
Quiescent Current	I_Q	Io=0mA, expect Icont	-	120	180	uA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	V_{CONT}=0V	-	-	100	nA
Output Current	Io	Vo-0.3V	300	400	-	mA
Line Regulation	$\Delta Vo/\Delta V_{IN}$	V_{IN}=Vo+1V ~ Vo+6V, Io=30mA	-	-	0.10	%/V
Load Regulation	$\Delta Vo/\Delta Io$	Io=0 ~ 300mA	-	-	0.03	%/mA
Dropout Voltage	ΔV_{I-O}	Io=100mA	-	0.10	0.18	V
Ripple Rejection	RR	ein=200mVrms,f=1kHz, Io=10mA Vo=3V Version	-	70	-	dB
Average Temperature Coefficient of Output Voltage	$\Delta Vo/\Delta Ta$	Ta=0~85°C, Io=10mA	-	±50	-	ppm/°C
Output Noise Voltage	V_{NO}	f=10Hz~80kHz, Io=10mA, Vo=3V Version	-	30	-	uVrms
Control Voltage for ON-state	$V_{CONT(ON)}$		1.6	-	-	V
Control Voltage for OFF-state	$V_{CONT(OFF)}$		-	-	0.6	V

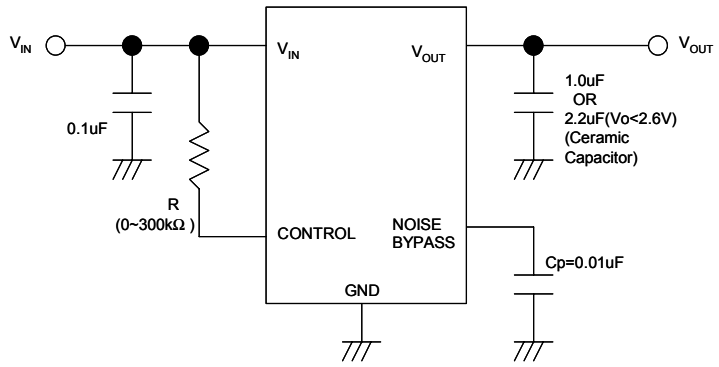
(note 2) The above specification is a common specification for all output voltages.
Therefore, it may be different from the individual specification for a specific output voltage.

■ TEST CIRCUIT



■ TYPICAL APPLICATION

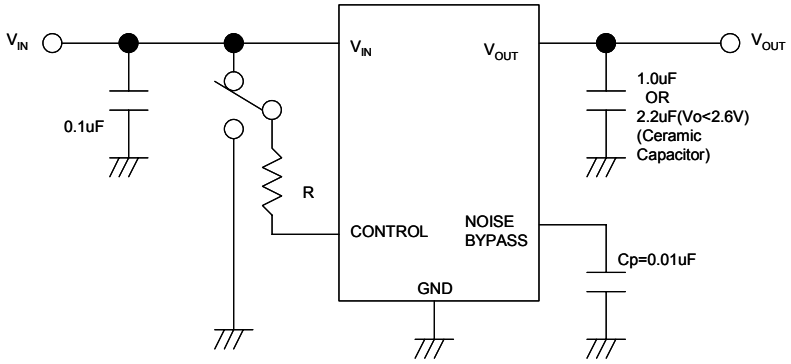
① In the case where ON/OFF Control is not required:



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 Cp

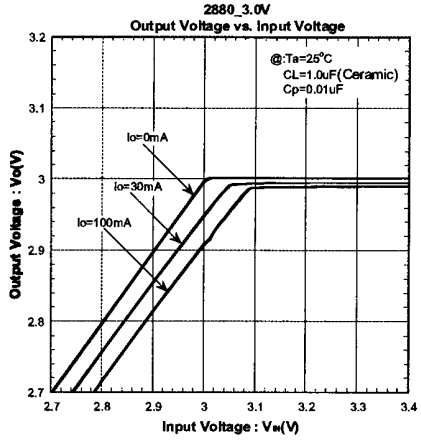
Noise bypass capacitance Cp reduces noise generated by band-gap reference circuit.

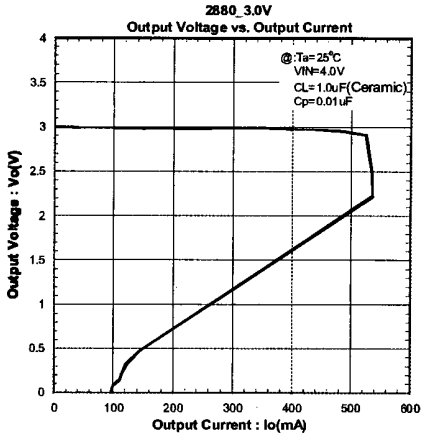
Noise level and ripple rejection will be improved when larger Cp is used.

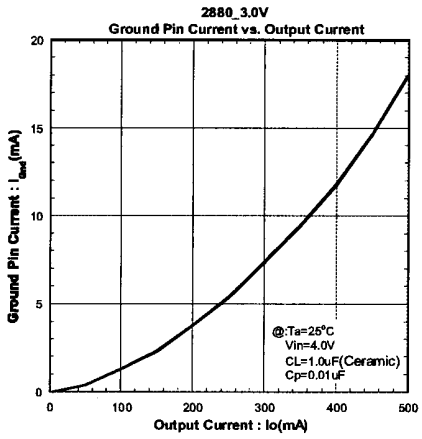
Use of smaller Cp value may cause oscillation.

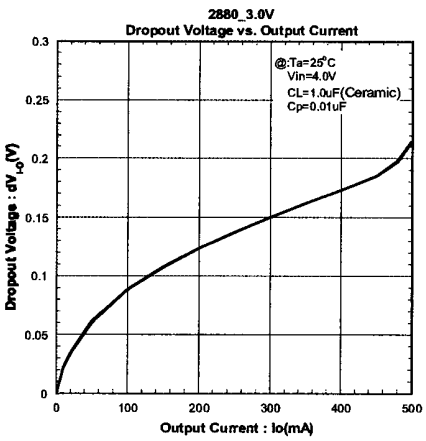
Use the Cp value of 0.01uF greater to avoid the problem.

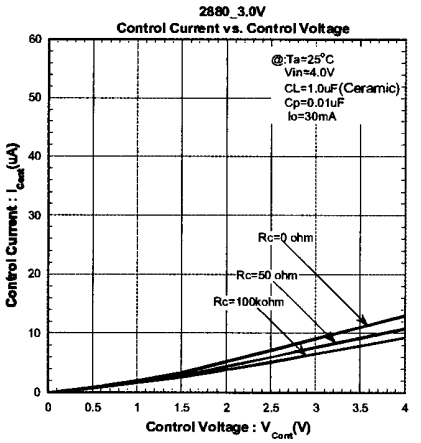
■ TYPICAL CHARACTERISTICS

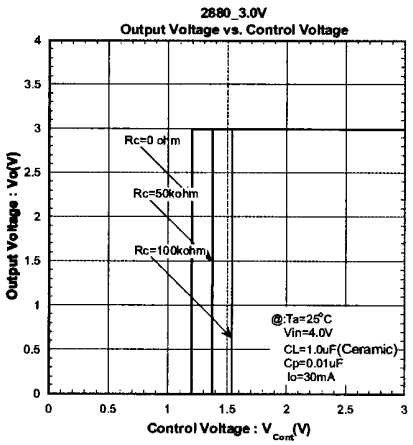






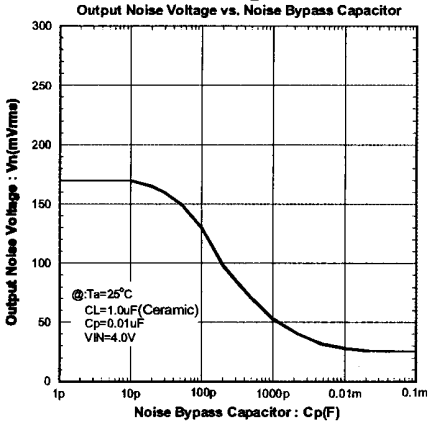




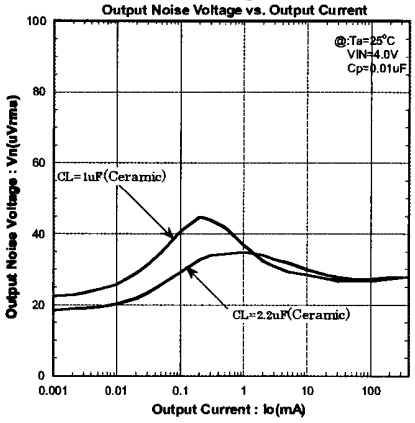


■ TYPICAL CHARACTERISTICS

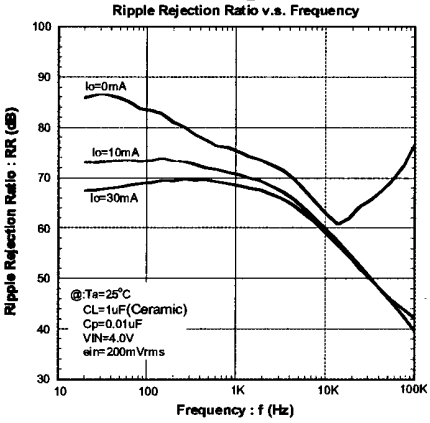
NJM2880_3.0V
Output Noise Voltage vs. Noise Bypass Capacitor



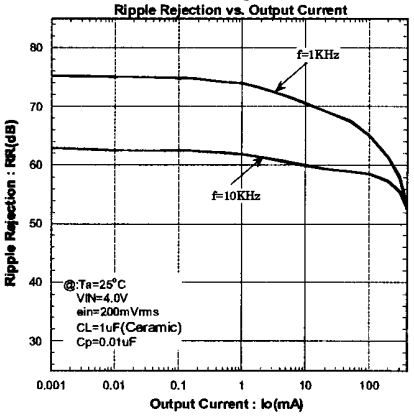
NJM2880_3.0V
Output Noise Voltage vs. Output Current



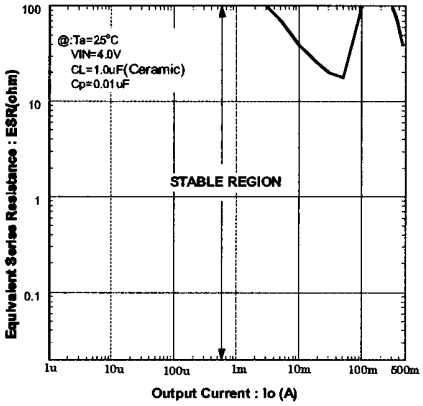
NJM2880_3.0V
Ripple Rejection Ratio v.s. Frequency



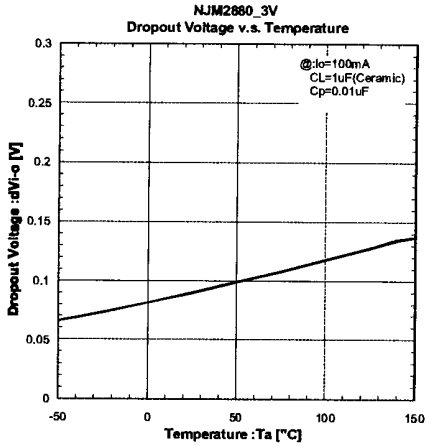
NJM2880_3.0V
Ripple Rejection vs. Output Current

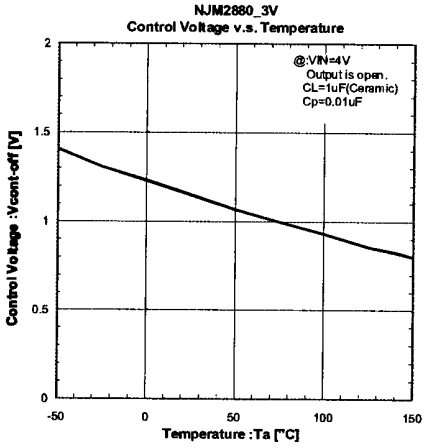


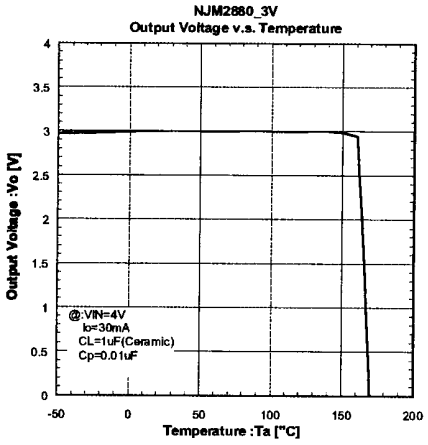
NJM2880_3.0V
Equivalent Serise Resistance vs. Output Current

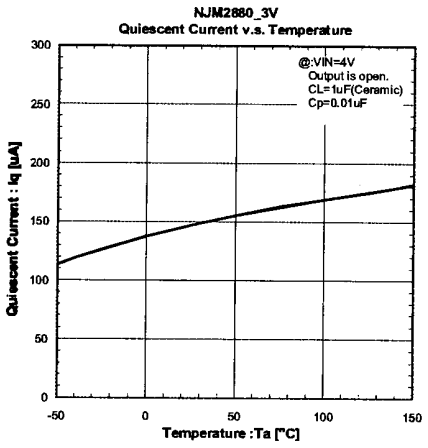


■ TYPICAL CHARACTERISTICS









[CAUTION]
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