

2ch LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The NJM2890 is a 2-channel low dropout voltage regulator featuring a low noise, high precision of $\pm 1.0\%$, high ripple rejection ratio of 70dB, and 150mA output current (all both outputs). It also offers useful functions of an ON/OFF control, thermal overload protection and short circuit current limit, and it can use ceramic capacitor of $1\mu\text{F}$ as an output capacitor. The NJM2890 is available in a small and thin surface mount 10-lead MSOP (VSP) package. It is suitable for various portable devices.

■ PACKAGE OUTLINE

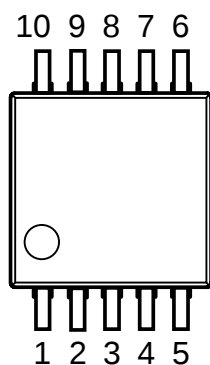


NJM2890R
(MSOP10 (VSP10))

■ FEATURES

- High Ripple Rejection 70dB typ. ($f=1\text{kHz}$, $V_o=3\text{V}$ Version)
- Output Noise Voltage $V_{no}=30\mu\text{V}_{rms}$ typ. ($C_p=0.01\mu\text{F}$)
- Output capacitor with $1.0\mu\text{F}$ ceramic capacitor ($V_o \geq 2.7\text{V}$)
- Output Current $I_o(\text{max.})=150\text{mA} \times 2\text{ch}$
- High Precision Output $V_o \pm 1.0\%$
- Low Dropout Voltage 0.10V typ. ($I_o=60\text{mA}$)
- Operating Voltage Range $+2.5\text{V}$ to $+14\text{V}$ ($V_o \leq 2.0\text{V}$ version)
- ON/OFF Control (Active High)
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline MSOP10 (VSP10)* *MEET JEDEC MO-187-DA

■ PIN CONFIGURATION

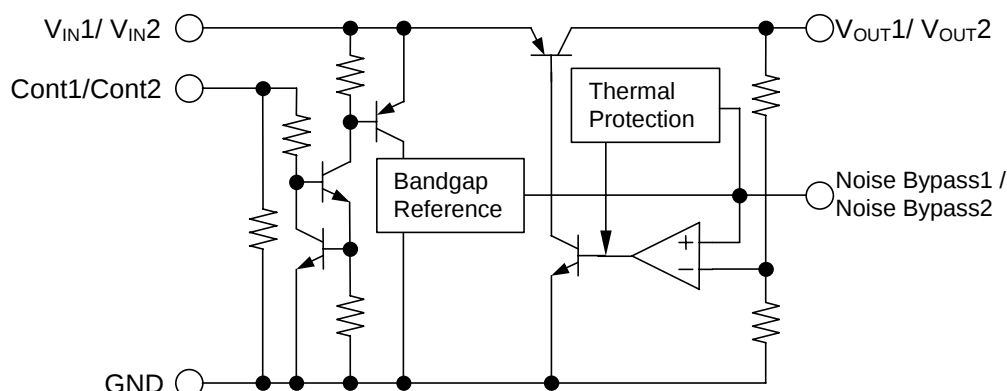


NJM2890R

PIN FUNCTION

- | | |
|--------------|-------------------|
| 1. CONTROL1 | 6. NOISE BYPASS2 |
| 2. V_{IN1} | 7. V_{OUT2} |
| 3. GND | 8. GND |
| 4. V_{IN2} | 9. V_{OUT1} |
| 5. CONTROL2 | 10. NOISE BYPASS1 |

■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE RANK LIST

Device Name	Vout	
	CH1	CH2
NJM2890R2121	2.1V	2.1V
NJM2890R2727	2.7V	2.7V
NJM2890R2818	2.8V	1.8V
NJM2890R2828	2.8V	2.8V
NJM2890R0318	3.0V	1.8V
NJM2890R0303	3.0V	3.0V
NJM2890R3325	3.3V	2.5V
NJM2890R3326	3.3V	2.6V
NJM2890R3333	3.3V	3.3V
NJM2890R0403	4.0V	3.0V
NJM2890R0521	5.0V	2.1V

■ 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	320	mW
Operating Temperature	Topr	−40 to +85	°C
Storage Temperature	Tstg	−40 to +125	°C

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

■ OPERATING RANGE

V_{IN} =+2.5V to +14.0V (In case of V_O <2.1V version)

■ ELECTRICAL CHARACTERISTICS

(Vo>2.0V version :

1CH/2CH : $V_{IN}=V_o+1V$, $C_{IN}=0.1\mu F$, $C_o=1.0\mu F$: $V_o\geq 2.7V$ ($C_o=2.2\mu F$: $V_o\leq 2.6V$), $C_p=0.01\mu F$, $T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_o	$I_o=30mA$	-1.0%	—	+1.0%	V
Quiescent Current	I_Q	$I_o=0mA$, 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	$\Delta V_o/\Delta V_{IN}$	$V_{IN}=V_o+1V$ to V_o+6V , $I_o=30mA$	—	—	0.10	%/V
Load Regulation	$\Delta V_o/\Delta I_o$	$I_o=0$ to $100mA$	—	—	0.03	%/mA
Dropout Voltage	ΔV_{L-O}	$I_o=60mA$	—	0.10	0.18	V
Ripple Rejection	RR	$e_{in}=200mV_{rms}$, $f=1kHz$, $I_o=10mA$, $V_o=3V$ Version	—	70	—	dB
Average Temperature Coefficient of Output Voltage	$\Delta V_o/\Delta T_a$	$T_a=0$ to $85^\circ C$, $I_o=10mA$	—	± 50	—	ppm/ $^\circ C$
Output Noise Voltage	V_{NO}	$f=10Hz$ to $80kHz$, $I_o=10mA$, $V_o=3V$ Version	—	30	—	μV_{rms}
Control Voltage for ON-state	$V_{CONT(ON)}$		1.6	—	—	V
Control Voltage for OFF-state	$V_{CONT(OFF)}$		—	—	0.6	V

(Vo≤2.0V version :

1CH/2CH : $V_{IN}=V_o+1V$, $C_{IN}=0.1\mu F$, $C_o=2.2\mu F$, $C_p=0.01\mu F$, $T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_o	$I_o=30mA$	-1.0%	—	+1.0%	V
Quiescent Current	I_Q	$I_o=0mA$, 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	$\Delta V_o/\Delta V_{IN}$	$V_{IN}=V_o+1V$ to V_o+6V , $I_o=30mA$	—	—	0.10	%/V
Load Regulation	$\Delta V_o/\Delta I_o$	$I_o=0$ to $100mA$	—	—	0.03	%/mA
Ripple Rejection	RR	$e_{in}=200mV_{rms}$, $f=1kHz$, $I_o=10mA$, $V_o=1.8V$ Version	—	75	—	dB
Average Temperature Coefficient of Output Voltage	$\Delta V_o/\Delta T_a$	$T_a=0$ to $85^\circ C$, $I_o=10mA$	—	± 50	—	ppm/ $^\circ C$
Output Noise Voltage	V_{NO}	$f=10Hz$ to $80kHz$, $I_o=10mA$, $V_o=1.8V$ Version	—	22	—	μV_{rms}
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.