SINGLE-SUPPLY LOW POWER DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM2132 is a general purpose single supply low power dual operational amplifier.

The features of low operating current, wide and low operating voltage, high input inpedance, and single supply operation are suitable for battery operated items.
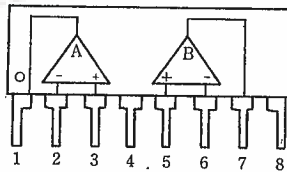
■ FEATURES

- Operating Voltage $(+2.7V \sim +32V)$
- Low Operating Current $(180 \, \mu A$ typ. @V$^+$=5V, each amplifier)
- Slew Rate $(2.1V/\mu s$ typ.)
- Gain Bandwidth Product $(1.8MHz$ typ.)
- Bipolar Technology
- Package Outline   DIP8, DMP8, SSOP8, SIP8
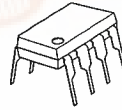
■ PACKAGE OUTLINE

NJM2132D   NJM2132M

NJM2132V   NJM2132L

■ PIN CONFIGURATION
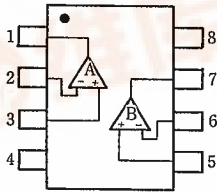
NJM2132D
NJM2132M
NJM2132V

NJM2132L

PIN FUNCTION
1. A OUTPUT
2. A −INPUT
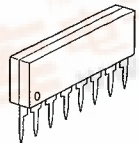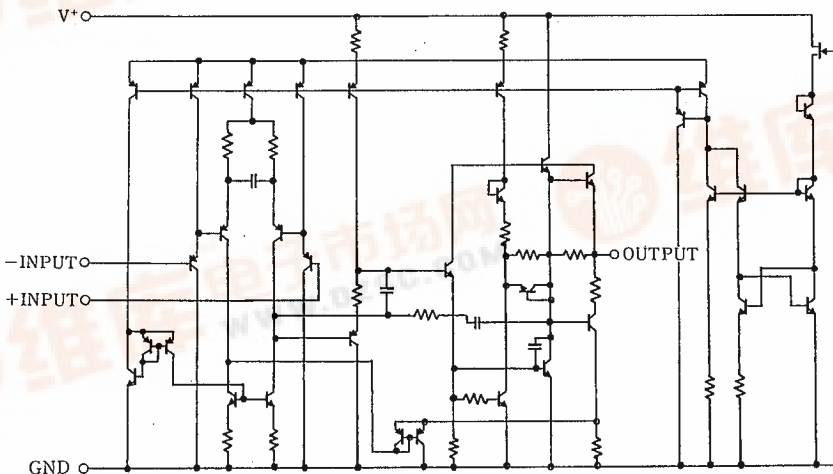3. A +INPUT
4. V$^-$
5. B +INPUT
6. B −INPUT
7. B OUTPUT
8. V$^+$

■ EQUIVALENT CIRCUIT (1/2 Shown)

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	36	V
Differential Input Voltage	V_{ID}	±36	V
Input Voltage	V_{IC}	−0.3～+36(note)	V
Power Dissipation	P_D	(DIP-8) 500 (DMP-8) 300 (SSOP-8) 250 (SIP-8) 800	mW
Operating Temperature Range	T_{opr}	−40～+85	℃
Storage Temperature Range	T_{stg}	−50～+125	℃

(note) When the supply voltage is less than +36V, the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS

$(V^+/V^-=\pm 15V, Ta=25℃)$

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V^+	Single Supply	+2.7	—	+32	V
Input Offset Voltage	V_{IO}	$R_S=0\,\Omega$	—	2.0	4.5	mV
		$V^+=+5V, V^-=0V, R_S=0\,\Omega$	—	2.5	5.0	
V_{IO} Drift	$\Delta V_{IO}/T$	$R_S=0\,\Omega$	—	10	—	$\mu V/℃$
Input Offset Current	I_{IO}		—	5	20	nA
Input Bias Current	I_B		—	20	100	nA
Large Signal Voltage Gain	A_V	$R_L \geqq 10k\,\Omega, V_O=\pm 10V$	94	114	—	dB
Input Common Mode Voltage Range	V_{ICM}			−15～+13.5(MIN)		V
Common mode Rejection Ratio	CMR	$R_S \leqq 10k\,\Omega$	80	90	—	dB
Supply Voltage Rejection Ratio	SVR	$R_S=100\,\Omega$	80	100	—	dB
Maximum Output Voltage Swing	V_{OM}	$R_L=10k\,\Omega$	±13.6	±14.2	—	V
	$+V_{OM}$	$V^+=+5V, V^-=0V$	3.5	4.3	—	
	$-V_{OM}$	$R_L=10k\,\Omega$	—	0.05	0.15	
Operating Current	I_{CC}	$R_L=\infty$(all Amp.)	—	440	500	μA
		$V^+=+5V, V^-=0V$	—	360	500	
Output Source Current	I_{SOURCE}	$V_{IN}^+=1V, V_{IN}^-=0V$	3.0	5.0	—	mA
Output Sink Current	I_{SINK}	$V_{IN}^+=0V, V_{IN}^-=1V$	15	27	—	mA
Input Resistance	R_{IN}		—	300	—	$M\Omega$
Input Capacitance	Ci		—	0.8	—	pF
Close Loop Output Impedance	Zo	f=1.0MHz	—	100	—	Ω
Equivalent Input Noise Voltage	e_n	$R_S=100\,\Omega$, f=1kHz	—	32	—	$nV/\sqrt{Hz}$
Slew Rate	SR	$R_L=10k\,\Omega$	—	2.1	—	$V/\mu s$
Gain Bandwidth Product	GB	f=100kHz	—	1.8	—	MHz
Power Bandwidth	BW_p	$A_V=+1.0, R_L=10k\,\Omega$ $V_O=20V_{p-p}$, THD=5%	—	35	—	kHz
Phase Margin	ϕ_M	$R_L=10k\,\Omega$	—	60	—	deg.
		$R_L=10k\,\Omega, C_L=100_pF$	—	45	—	
Amplitude Margin	A_m	$R_L=10k\,\Omega$	—	15	—	dB
		$R_L=10k\,\Omega, C_L=100_pF$	—	5.0	—	
Total Harmonic Distortion	THD	$A_V=+10, R_L=10k\,\Omega$ f=10kHz, $2\leqq V_O\leqq 20V_{p-p}$	—	0.03	—	%
Channel Separation	CS	f=10kHz, Input Referrd	—	120	—	dB

NJM2132

MEMO