

SINGLE-SUPPLY LOW POWER DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

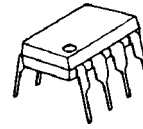
The NJM2132 is a general purpose single supply low power dual operational amplifier.

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

■ FEATURES

- Operating Voltage (+2.7V~+32V)
- Low Operating Current (180 μ A typ. @ V^+ =5V, each amplifier)
- Slew Rate (2.1V/ μ s typ.)
- Gain Bandwidth Product (1.8MHz typ.)
- Bipolar Technology
- Package Outline DIP8, DMP8, SSOP8

■ PACKAGE OUTLINE



NJM2132D

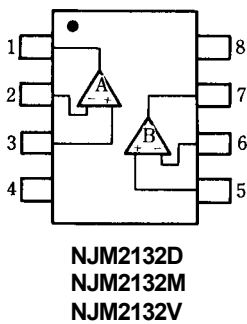


NJM2132M



NJM2132V

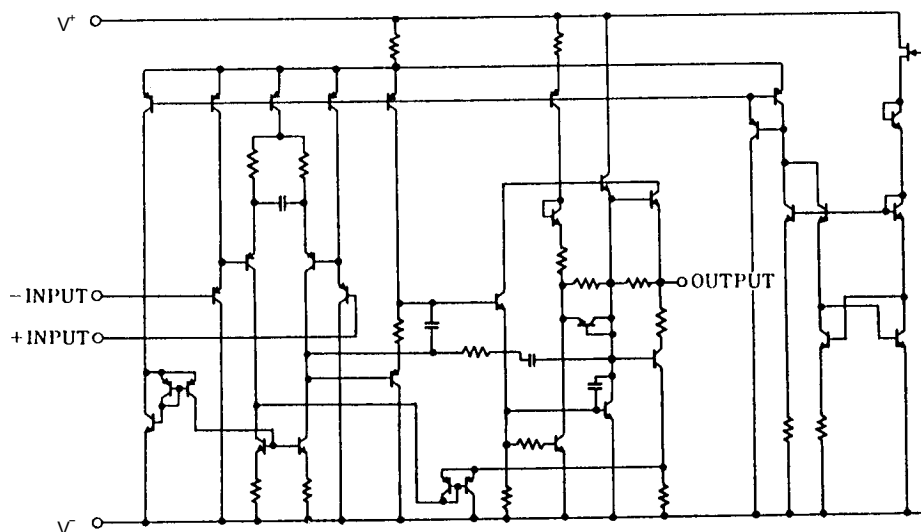
■ PIN CONFIGURATION



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)



NJM2132

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

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	(DIP8) 500 (DMP8) 300 (SSOP8) 250	mW
Operating Temperature Range	T_{opr}	-40~+85	°C
Storage Temperature Range	T_{stg}	-50~+125	°C

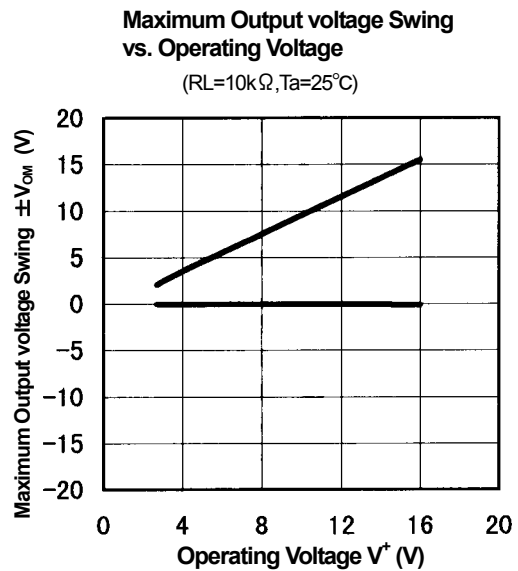
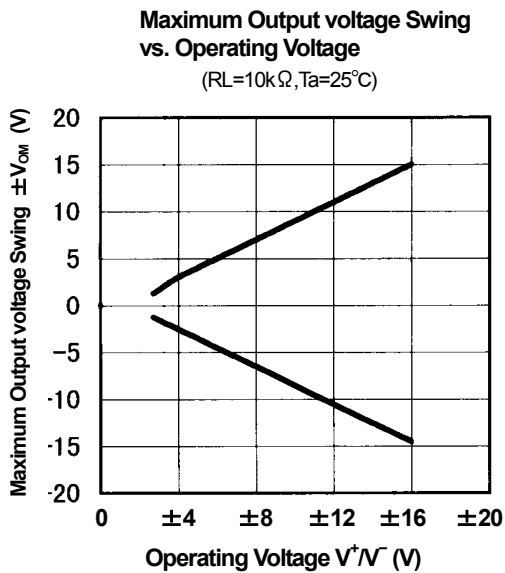
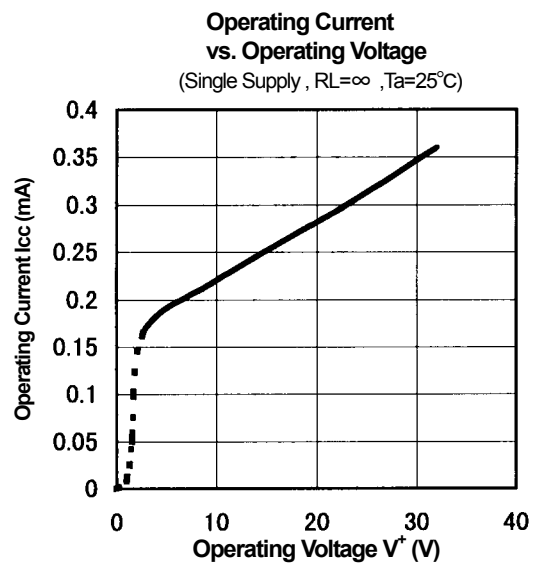
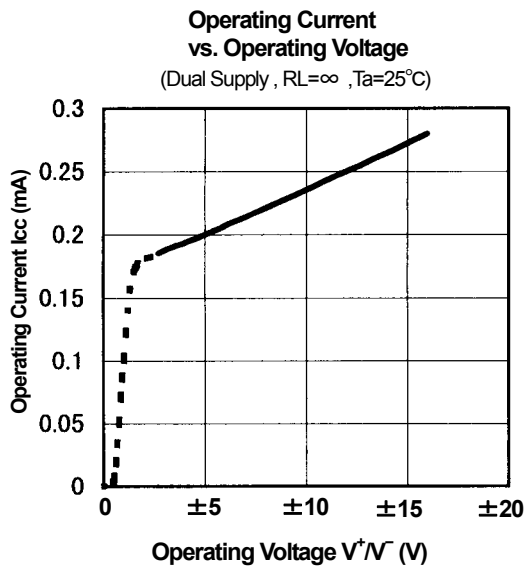
(note) When the supply voltage is less than +36V, the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS

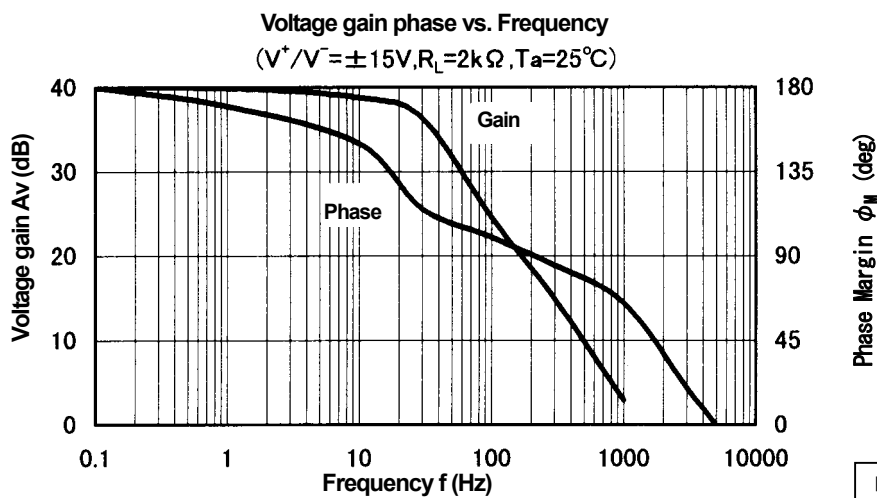
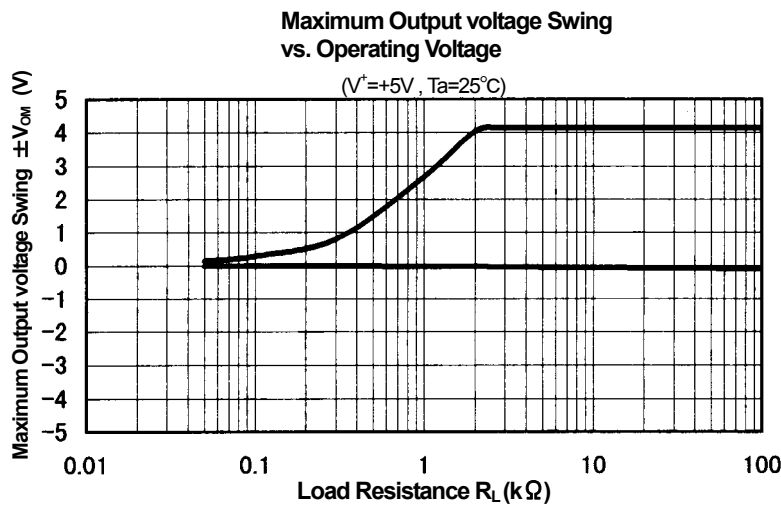
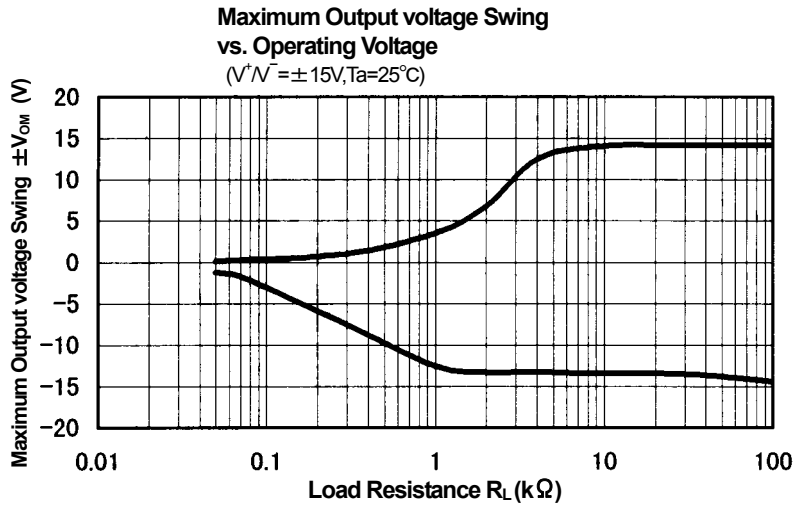
($V^+V^- = \pm 15V, Ta=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	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	-	$\mu V/^\circ C$
Input Offset Current	I_{IO}		-	5	20	nA
Input Bias Current	I_B		-	20	100	nA
Large Signal Voltage Gain	A_V	$R_L \geq 10k\Omega, V_O = \pm 10V$	90	100	-	dB
Input Common Mode Voltage Range	V_{ICM}		-15~-+13.5	-	-	V
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega$	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_{OM}	$V^+=+5V, V^-=0V$	3.5	4.3	-	V
	- 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}	$V_{IN}^+ = 1V, V_{IN}^- = 0V$	2.2	3.6	-	mA
Output Sink Current	I_{SINK}	$V_{IN}^+ = 0V, V_{IN}^- = 1V$	15	27	-	mA
Input Resistance	R_{IN}		-	300	-	M Ω
Input Capacitance	C_i		-	0.8	-	pF
Close Loop Output Impedance	Z_O	$f=1.0MHz$	-	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/ μs
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	θ_M	$R_L = 10k\Omega$	-	60	-	deg.
		$R_L = 10k\Omega, C_L = 100pF$	-	45	-	
Amplitude Margin	A_m	$R_L = 10k\Omega$	-	15	-	dB
		$R_L = 10k\Omega, C_L = 100pF$	-	5.0	-	
Total Harmonic Distortion	THD	$A_V = +10, R_L = 10k\Omega$ $f=10kHz, 2 \leq V_O \leq 20V_{P-P}$	-	0.03	-	%
Channel Separation	CS	$f=10kHz, Input Referred$	-	120	-	dB

■ TYPICAL CHARACTERISTICS





■ TYPICAL CHARACTERISTICS



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