

NJM5532

The NJM5532 is a high performance dual low noise operational amplifier. Compared to the standard dual operational amplifiers, such as the NJM1458, it shows better noise performance, improved output drive capability, and considerably higher small-signal and power bandwidths.

This makes the device especially suitable for application in high quality and professional audio equipment, instrumentation, control circuits, and telephone channel amplifiers. The op amp is internally compensated for gains equal to one. If very low noise is of prime importance, version be used which has guaranteed NJM5532DD it is recommended that the noise specifications.

■ Features

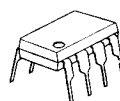
- Small signal bandwidth — 10MHz
- Output drive capability — 600Ω, 10Vrms
- Input noise voltage — 5nV/√Hz
- DC voltage gain — 100dB
- AC voltage gain — 67dB at 10kHz
- Power bandwidth — 140kHz
- Slew rate — 8V/μS
- Large supply voltage range — ±3 to ±20V

■ Absolute Maximum Ratings

Supply Voltage	V^+/V^-	±22V
Input Voltage	V_i	V^+/V^- (V)
Differential Input Voltage	V_{ID}	±0.5V
Power Dissipation	P_D (D,S-Type) (M-Type)	500mW 600mW (note)
Operating Temperature Range	T_{opr}	-20~+75°C
Storage Temperature Range	T_{stg}	-40~+125°C

(note) At on a ceramic PCB (10×20×0.635 mm)

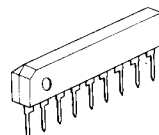
■ Package Outline



NJM5532D



NJM5532M



NJM5532S

■ Electrical Characteristics ($V^+/V^- = \pm 15V$, $T_a = 25^\circ C$)

DC Electrical Characteristics

Parameter	Symbol	Test Condition	5532			Unit
			Min.	Typ.	Max.	
Input Offset Voltage	V_{IO}		—	0.5	4	mV
Input Offset Current	I_{IO}		—	10	150	nA
Input Bias Current	I_B		—	200	800	nA
Supply Current	I_{CC}		—	9	16	mA
Input Common Mode Voltage Range	V_{ICM}		±12	±13	—	V
Common Mode Rejection Ratio	CMR		70	100	—	dB
Supply Voltage Rejection Ratio	SVR		80	100	—	dB
Large Signal Voltage Gain 1	A_{V1}	$R_L \geq 2k\Omega$, $V_O = \pm 10V$	88	100	—	dB
Large Signal Voltage Gain 2	A_{V2}	$R_L \geq 600\Omega$, $V_O = \pm 10V$	83.5	94	—	dB
Maximum Output Voltage Swing 1	V_{OM1}	$R_L \geq 600\Omega$	±12	±13	—	V
Maximum Output Voltage Swing 2	V_{OM2}	$R_L \geq 600\Omega$, $V^+/V^- = \pm 18V$	±15	±16	—	V
Input Resistance	R_{IN}		30	300	—	kΩ
Short Circuit Current	I_{OS}		—	38	—	mA

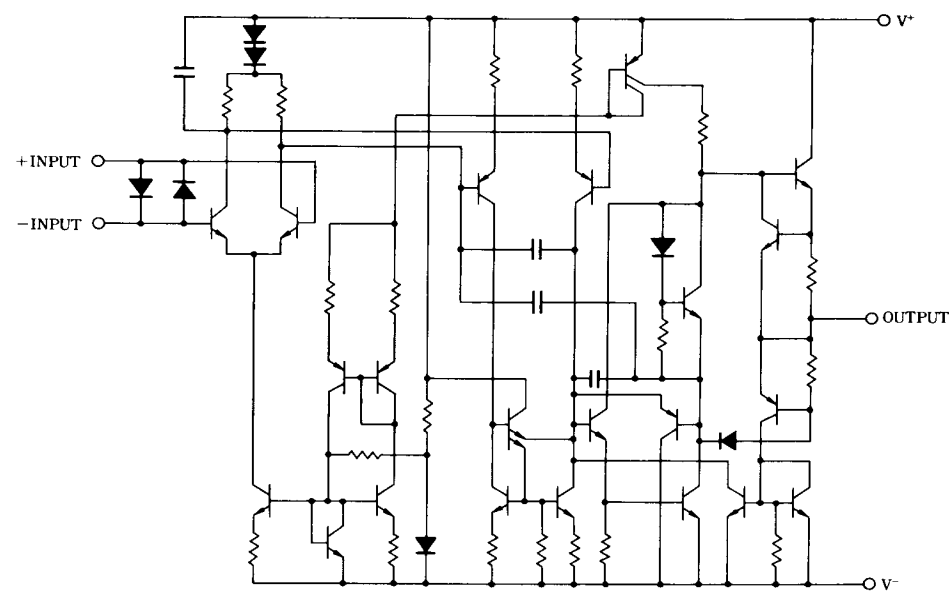
■ Electrical Characteristics (V⁺/V⁻ = ±15V, Ta=25°C)

AC Electrical Characteristics

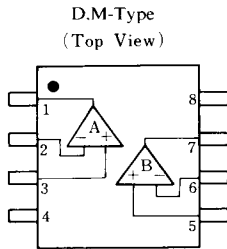
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Resistance	R _O	A _V =30dB, f=10kHz, R _L =600Ω	—	0.3	—	Ω
Overshoot		A _V =1, V _{IN} =100mV _{P-P} , C _L =100pF, R _L =600Ω	—	10	—	%
Gain	A _V	f=10kHz	—	67	—	dB
Slew Rate	SR		—	8	—	V/μS
Gain Bandwidth Product	GB	C _L =100pF, R _L =600Ω	—	10	—	MHz
Power Bandwidth	W _{PG}	V _O =±10V	—	140	—	kHz
Power Bandwidth	W _{PG}	V _O =±14V, R _L =600Ω, V ⁺ /V ⁻ =±18V	—	100	—	kHz
Equivalent Input Noise Voltage	V _{NI}	f _O =30Hz	—	8	—	nV/√Hz
Equivalent Input Noise Voltage	V _{NI}	f _O =1kHz	—	5	—	nV/√Hz
Equivalent Input Noise Current	i _{NI}	f _O =30Hz	—	2.7	—	pA/√Hz
Equivalent Input Noise Current	i _{NI}	f _O =1kHz	—	0.7	—	pA/√Hz
Channel Separation	CS	f=1kHz, R _S =5kΩ	—	110	—	dB

JRC's general selected products D rank are also prepared for the noise standard (R_S=2.2kΩ, RIAA, V_N=1.4μV Max.)

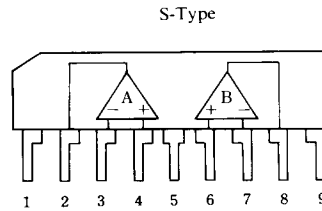
■ Equivalent Circuit (1/2 Shown)



■ Connection Diagram

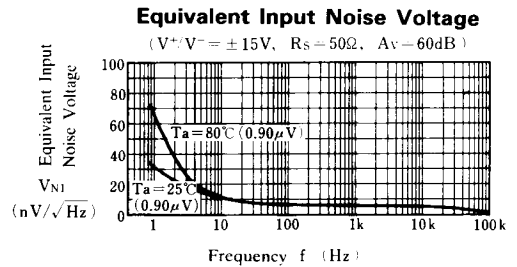
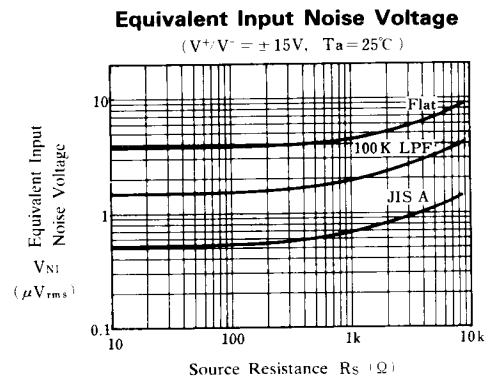
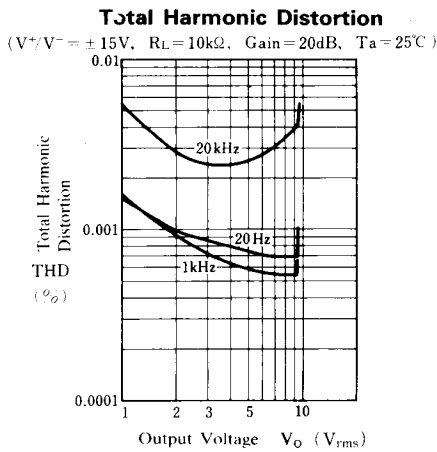


PIN FUNCTION
1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V-
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8. V+



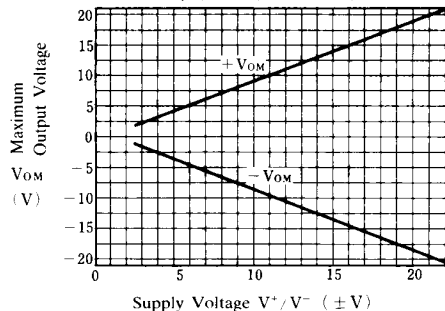
PIN FUNCTION
1. V-
2. A OUTPUT
3. A-INPUT
4. A+INPUT
5. V-
6. B+INPUT
7. B-INPUT
8. B OUTPUT
9. V+

■ Typical Characteristics



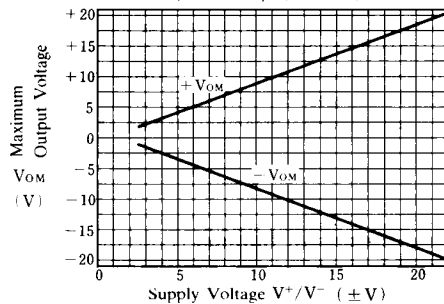
Maximum Output Voltage

($R_L = 2k\Omega$, $T_a = 25^\circ\text{C}$)



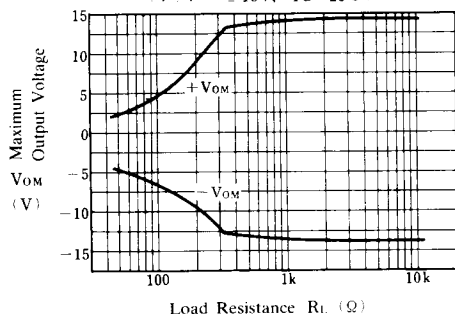
Maximum Output Voltage

($R_L = 600\Omega$, $T_a = 25^\circ\text{C}$)



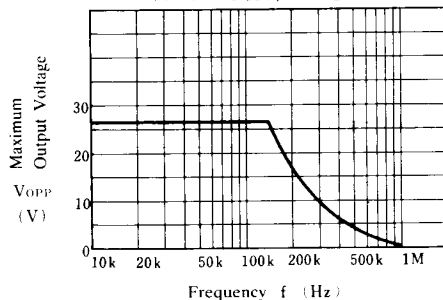
Maximum Output Voltage

($V^+/V^- = \pm 15\text{V}$, $T_a = 25^\circ\text{C}$)



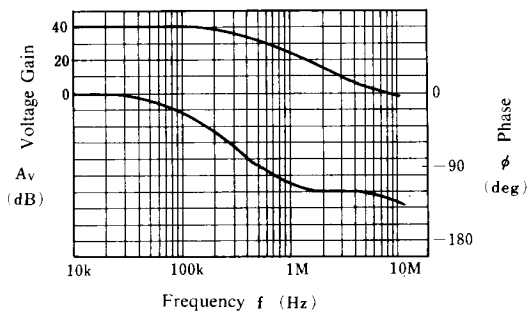
Maximum Output Voltage

($V^+/V^- = \pm 15\text{V}$, $T_a = 25^\circ\text{C}$)



Voltage Gain, Phase vs. Frequency

($T_a = 25^\circ\text{C}$)



Notice

When used in voltage follower circuit, put a current limit resistor in to non-inverting input terminal to avoid inside input diode destruction when the power supply is turned on.

