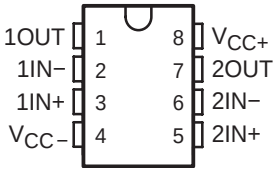
DUAL AUDIO OPERATIONAL AMPLIFIER

- **Operating Voltage . . . ±2 V to ±18 V**
- **Low Noise Voltage . . . 1.2 μVrms (Typ)**
- **Wide GBW . . . 15 MHz (Typ)**
- **Low THD . . . 0.05% (Typ)**
- **Slew Rate . . . 5.5V/μsec (Typ)**
- **Suitable for Applications Such as Audio Preamplifier, Active Filter, Headphone Amplifier, Industrial Measurement Equipment**

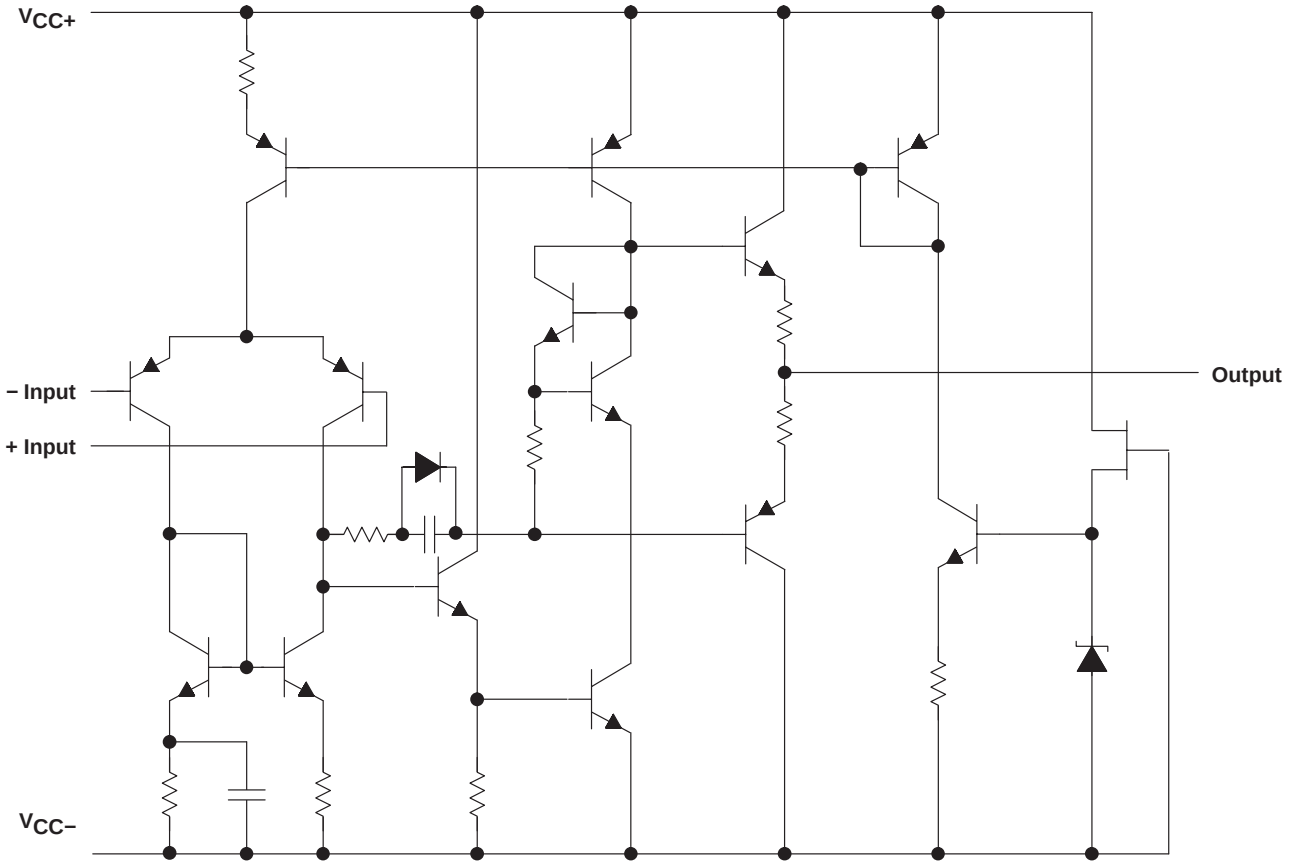
D (SOIC), DGK (VSSOP/MSOP), P (PDIP), OR PW (TSSOP) PACKAGE (TOP VIEW)



description/ordering information

The HG4560 is a high-gain, wide-bandwidth, dual operational amplifier capable of driving 20 V peak-to-peak into 400-Ω loads. The HG4560 combines many of the features of the HG4558, but with wider bandwidth and higher slew rate, making this device ideal for active filters, data and telecommunications, and many instrumentation applications.

equivalent circuit



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Supply voltage, $V_{CC\pm}$	±18 V
Input voltage (any input)	±15 V
Output current	±50 mA
Package thermal impedance, θ_{JA} (see Notes 1 and 2): D package	97°C/W
DGK package	172°C/W
P package	85°C/W
PW package	149°C/W
Operating virtual junction temperature, T_J	150°C
Storage temperature range, T_{stg}	−60°C to 125°C

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES: 1. Maximum power dissipation is a function of $T_J(max)$, θ_{JA}, and T_A. The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_J(max) - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can affect reliability.

2. The package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions

		MIN	MAX	UNIT
V_{CC+}	Supply voltage	2	16	V
V_{CC-}		−2	−16	
V_{ID}	Differential input voltage		±30	V
V_{ICR}	Input common mode range	−14	14	V
T_A	Operating free-air temperature range	−40	85	°C

electrical characteristics, $V_{CC\pm}$ = ±15 V, T_A = 25°C (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_{IO}	Input offset voltage	$R_S \le 10$ kΩ		0.5	6	mV
I_{IO}	Input offset current			5	200	nA
I_{IB}	Input bias current			40	500	nA
A_{VD}	Large-signal differential voltage amplification	$R_L \ge 2$ kΩ, V_O = ±10 V	86	100		dB
r_i	Input resistance		0.3	5		MΩ
V_O	Output voltage swing	$R_L \ge 2$ kΩ	±12	±14		V
		I_O = 25 mA	±10	±12.5		
V_{ICR}	Common-mode input voltage range		±12	±14		V
CMRR	Common-mode rejection ratio	$R_S \le 10$ kΩ	70	90		dB
k_{SVR}†	Supply-voltage rejection ratio	$R_S \le 10$ kΩ	76.5	90		dB
I_{CC}	Supply current (all amplifiers)			4.3	5.7	mA

† Measured with $V_{CC\pm}$ differentially varied simultaneously from ±4 V to ±15 V

operating characteristics, $V_{CC\pm}$ = ±15 V, T_A = 25°C (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
SR	Slew rate at unity gain			5.5		V/μs
GBW	Gain bandwidth product			15		MHz
THD	Total harmonic distortion	V_O = 5 V, R_L = 2 kΩ, f = 1 kHz, A_{VD} = 20 dB		0.05		%
V_n	Equivalent input noise voltage	RIAA, $R_S \le 2$ kΩ, 30 kHz LPF		1.2		μVrms

Important statement:

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