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NTE727
Integrated Circuit
Four Independent AC Amplifiers

Description:

The NTE727 is a silicon monolithic integrated circuit in a 16–Lead DIP type package consisting of four independent identical AC amplifiers which can operate from a single–ended power supply.

The amplifiers include internal DC bias and feedback to provide temperature–stabilized operation. They may be used in a wide variety of AC applications in which operational amplifiers have previously been used.

Each high gain amplifier has a high impedance non–inverting input, and a lower impedance inverting input for the application of feedback. Two power–supply terminals and two ground terminals are provided to reduce internal and external coupling between amplifiers.

Features:

- Four AC Amplifiers on a Common Substrate
- Independently Accessible Inputs and Outputs
- Operates from a Single–Ended Supply
- Noise Figure (Each Amp): 2dB Typ @ 1kHz
- High Voltage Gain (Each Amp): 53dB Min
- High Input Resistance (Each Amp): 90kΩ Typ
- Undistorted Output Voltage (Each Amp): $2V_{rms}$ Min
- Output Impedance (Each Amp): 1kΩ Typ
- Open–Loop Bandwidth (Each Amp): 300kHz Typ

Applications:

- Multi–Channel or Cascade Operation
- Low–Level Preamplifiers
- Equalizers
- Linear Signal Mixers
- Tone Generators
- Multivibrators
- AC Intergrators

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Power Supply Voltage . . . . . +16V

AC Input Voltage . . . . . $0.5V_{rms}$

Power Dissipation (T_A = +55°C), P_D 750mW

Derate Above 55°C . . . . . 7.7mW/°C

Operating Temperature Range, T_{opr} . . . . . –40° to +85°C

Storage Temperature Range, T_{stg} . . . . . –65° to +150°C

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Static (V_{CC} = 12V)							
Current Drain Per Amplifier Pair	I_{12} or I_{15}			9.5	13.5	17.5	mA
DC Voltage at Output Terminals	V_1, V_6, V_{11}, V_{16}			6.1	6.9	8.1	V
DC Voltage at Feedback Terminals	V_3, V_7, V_{10}, V_{14}			1.7	2.0	2.3	V
DC Voltage at Input Terminals	V_4, V_8, V_9, V_{13}			2.2	2.5	2.8	V
Dynamic (Characteristics given are for each amplifier with no AC feedback)							
Open–Loop Gain	A_{OL}	V_{CC} = 12V, E_{IN} = 2mV, f = 10kHz		53	58	–	dB
Output Voltage Swing	V_O(rms)	V_{CC} = 12V, f = 1kHz, THD = 5%		2.0	2.4	–	V
Open–Loop –3dB Bandwidth	BW	V_{CC} = 12V, E_{IN} = 2mV		250	300	0	kHz
Total Harmonic Distortion	THD	V_{CC} = 12V, f = 1kHz, E_{OUT} = $2V_{rms}$		–	0.65	–	%
Input Resistance	R_{IN}	Open Loop, f = 1kHz, Note 1		–	90	–	kΩ
Input Capacitance	C_{IN}	f = 1MHz		–	9	–	pF
Output Resistance	R_{OUT}	Note 1		–	1	–	kΩ
Output Capacitance	C_{OUT}	f = 1MHz		–	18	–	pF
Feedback Capacitance (Output to Non–Inverting Input	C_{FB}	V_{CC} = 12V, f = 1MHz		–	<0.1	–	pF
Broad–Band Output Noise Voltage	E_N	V_{CC} = 12V, R_S = 10kΩ, A = 40dB, Equivalent Noise BW = 50kHz		–	0.3	1.0	mV
Output Noise Voltage “Weighted”	$E_{N(WT)}$			–	0.5	2.2	mV
Noise Figure	NF	R_S = 5kΩ	f = 10Hz	–	10.0	–	dB
			f = 100Hz	–	5.8	–	dB
			f = 1kHz	–	2.0	–	dB
			f = 10kHz	–	1.1	–	dB
			f = 100kHz	–	0.6	–	dB
Inter–Amplifier Audio Separation “Crosstalk”	CT	V_{CC} = 12V, f = 1kHz, 0dB = 0.78V		–	<–45	–	dB
Inter–Amplifier Capacitance (Any amplifier output to any *other* amplifier input)	C	V_{CC} = 12V, f = 1MHz		–	<0.02	–	pF

Note 1. Pin3, Pin7, Pin10, and Pin14 are bypassed to GND.

Pin Connection Diagram