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NTE996

Linear Integrated Circuit

Operational Transconductance Amplifier

Description:

The NTE996 is a programmable transconductance block intended to fulfill a wide variety of variable gain applications. This device has differential inputs and high impedance push-pull outputs. The NTE996 has high input impedance and its transconductance (g_m) is directly proportional to the amplifier bias current (I_{ABC}).

High slew rate together with programmable gain make the NTE996 an ideal choice for variable gain applications such as sample and hold, multiplexing, filtering, and multiplying,

Features:

- Slew Rate (Unity Gain Compensated): 50V/ μ s
- Fully Adjustable Gain: 0 to $g_m \bullet R_L$ Limit
- Extended g_m Linearity: 3 Decades
- Flexible Supply Voltage Range: $\pm 2V$ to $\pm 18V$
- Adjustable Power Consumption

Absolute Maximum Ratings:

DC Supply Voltage, V_S	$\pm 18V$
Power Dissipation, P_D	250mW
Differential Input Voltage	$\pm 5V$
Amplifier Bias Current, I_{ABC}	2mA
DC Input Voltage	$+V_S$ to $-V_S$
Output Short Circuit Duration	Indefinite
Operating Temperature Range, T_{opr}	0° to $+70^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ C$
Lead Temperature (During Soldering, 10sec), T_L	$+260^\circ C$



Electrical Characteristics: ($V_S = \pm 15V$, $I_{ABC} = 500\mu A$, $T_A = +25^\circ C$ unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
Input Offset Voltage		–	0.4	5.0	mV
	$T_A = 0^\circ \text{ to } +70^\circ C$, $I_{ABC} = 5\mu A$	–	0.3	–	
Input Offset Voltage Charge	$5\mu A \leq I_{ABC} \leq 500\mu A$	–	0.1	–	mV
Input Offset Current		–	0.1	–	μA
Input Bias Current		–	0.4	5.0	μA
	$T_A = 0^\circ \text{ to } +70^\circ C$	–	1.0	7.0	
Forward Transconductance (g_m)		6700	9600	13000	μmho
	$T_A = 0^\circ \text{ to } +70^\circ C$	5400	–	–	
Peak Output Current	$R_L = 0$, $I_{ABC} = 5\mu A$	–	5	–	μA
	$R_L = 0$	350	500	650	
	$R_L = 0$, $T_A = 0^\circ \text{ to } +70^\circ C$	300	–	–	
Peak Output Voltage Positive	$R_L = \infty$, $5\mu A \leq I_{ABC} \leq 500\mu A$	+12.0	+14.2	–	V
Negative	$R_L = \infty$, $5\mu A \leq I_{ABC} \leq 500\mu A$	–12.0	–14.4	–	
Amplifier Supply Current		–	1.1	–	mA
Input Offset Voltage Sensitivity Positive	$\Delta V_{OFFSET}/\Delta V+$	–	20	150	$\mu V/V$
Negative	$\Delta V_{OFFSET}/\Delta V-$	–	20	150	
Common Mode Rejection Ratio		80	110	–	dB
Common Mode Range		± 12	± 14	–	V
Input Resistance		10	26	–	k Ω
Magnitude of Leakage Current	$I_{ABC} = 0$	–	0.2	100	nA
Differential Input Current	$I_{ABC} = 0$, Input = $\pm 4V$	–	0.02	100	nA
Open Loop Bandwidth		–	2.0	–	MHz
Slew Rate	Unity Gain Compensated	–	50	–	V/ μs

Pin Connection Diagram

