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NTE870 Integrated Circuit Dual Operational Transconductance Amp

Description:

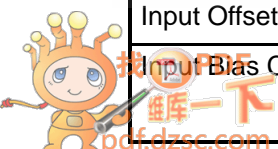
The NTE870 consists of two current controlled transconductance amplifiers each with differential inputs and a push-pull output. The two amplifiers share common supplies but otherwise operate independently. Linearizing diodes are provided at the inputs to reduce distortion and allow higher input levels resulting in a 10dB signal-to-noise improvement referenced to 0.5 percent THD. Controlled impedance buffers are provided which are especially designed to complement the dynamic range of the amplifiers.

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Supply Voltage, V_+/V_-	36V or $\pm 18\text{V}$
Differential Input Voltage, V_{ID}	$\pm 5\text{V}$
Diode Bias Current, I_D	2mA
Amp Bias Current, I_{ABC}	2mA
Buffer Output Current, I_o	20mA
Power Dissipation, P_D	570mW
DC Input Voltage, V_{IN}	V_+ to V_-
Operating Temperature Range, T_{opr}	-20° to $+75^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+125^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Offset Voltage (V_{OS})	V_{IO}		–	0.4	5.0	mV
Input Offset Voltage		$I_{ABC} = 5\mu\text{A}$	–	0.3	5.0	mV
V_{OS} Including Diodes		Diode Base Current, $I_D = 500\mu\text{A}$	–	0.5	5.0	mV
Input Offset Change		$5\mu\text{A} \leq I_{ABC} \leq 500\mu\text{A}$	–	0.1	–	mV
Input Bias Current	I_B		–	0.4	5.0	μA
		$T_A = -20^\circ$ to $+75^\circ\text{C}$	–	1.0	8.0	μA



Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$, $V_+/V_- = \pm 15\text{V}$, $I_{ABC} = 500\mu\text{A}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Transconductance (gm)	gm		6700	9600	13000	μhos
		$T_A = -20^\circ$ to $+75^\circ\text{C}$	5400	–	–	μhos
gm Tracking		$R_L = 0$, $I_{ABC} = 5\mu\text{A}$	–	0.3	–	dB
Peak Output Current	I_{OP}	$R_L = 0$, $I_{ABC} = 5\mu\text{A}$	–	5.0	–	μA
		$R_L = 0$, $I_{ABC} = 500\mu\text{A}$	350	500	650	μA
		$R_L = 0$, $T_A = -20^\circ$ to $+75^\circ\text{C}$	300	–	–	μA
Peak Output Voltage Positive	V_{OP}	$R_L = \infty$, $5\mu\text{A} \leq I_{ABC} \leq 500\mu\text{A}$	+12	± 14.2	–	V
Peak Output Voltage Negative		$R_L = \infty$, $5\mu\text{A} \leq I_{ABC} \leq 500\mu\text{A}$	–12	-14.4	–	V
Supply Current	I_{CC}	$I_{ABC} = 500\mu\text{A}$, two circuit	–	2.6	–	mA
V_{OS} Sensitivity Positive	SVR	$\Delta V_{OS}/\Delta V_+$	76.5	94.0	–	dB
V_{OS} Sensitivity Negative		$\Delta V_{OS}/\Delta V_-$	76.5	94.0	–	dB
Input Offset Current	I_{IO}		–	0.1	0.6	μA
CMMR	CMR		80	110	–	dB
Common Mode Range	V_{ICM}		± 12.0	± 13.5	–	V
Cross Talk	CT	$20\text{Hz} < f < 20\text{kHz}$, Note 2	–	–100	100	dB
Differential Input Current	I_{ID}	$I_{ABC} = 0$, Input = $\pm 4\text{V}$	–	0.02	100	nA
Leakage Current	I_{LEAK}	$I_{ABC} = 0$	–	0.2	0	nA
Input Resistance	R_{IN}		10	26	–	$\text{k}\Omega$
Open Loop Bandwidth			–	2	–	MHz
Slew Rate	SR		–	50	–	$\text{V}/\mu\text{s}$
Buffer Input Current		Note 2	–	0.4	5.0	μA
Peak Buffer Output Voltage		Note 2	10	–	–	V

Note 1. Open unless otherwise specified. The inputs to the buffers are grounded and the outputs are open.

Note 2. $R_{OUT} = 5\text{k}\Omega$ connected from the buffer output to V_- and the input buffer is connected to the transconductance amplifier output. $I_{ABC} = 500\mu\text{A}$.

Pin Connection Diagram

