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## **NTE824**

### **Integrated Circuit**

### **Low Noise Dual Preamplifier**

**Description:**

The NTE824 is a dual preamplifier for the amplification of low level signals in applications requiring optimum noise performance. Each of the two amplifiers is completely independent, with an internal power supply decoupler-regulator, providing 110dB supply rejection and 60dB channel separation. Other outstanding features include high gain (104dB), large output voltage swing ( $V_{CC} - 2V$ )<sub>p-p</sub>, and wide power bandwidth (75kHz, 20V<sub>p-p</sub>). The device operates from a single supply across the wide range of 9V to 30V.

The amplifiers are internally compensated for gains greater than 10.

**Features:**

- Low Noise: 1.0μV Total Input Noise
- High Gain: 104dB Open Loop
- Single Supply Operation
- Wide Supply Range: 9V to 30V
- Power Supply Rejection: 110dB
- Large Output Voltage Swing ( $V_{CC} - 2V$ )<sub>p-p</sub>
- Wide Bandwidth 15MHz Unity Gain
- Power Bandwidth 75kHz, 20V<sub>p-p</sub>
- Internally Compensated
- Short Circuit Protected

**Absolute Maximum Ratings:**

Supply Voltage, $V_{CC}$ .....	+30V
Power Dissipation (Note 1), $P_D$ .....	660mW
Operating Temperature Range, $T_{opr}$ .....	0° to +70°C
Storage Temperature Range, $T_{stg}$ .....	-65° to +150°C
Lead Temperature (During Soldering, 10sec), $T_L$ .....	+300°C

Note 1 For operation in ambient temperatures above 25°C, the device must be derated based on a 150°C maximum junction temperature and a thermal resistance of 187°C/W junction to ambient.

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $V_{CC} = 14\text{V}$ , unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
Voltage Gain	Open Loop, $f = 100\text{Hz}$	–	160,000	–	
Supply Current	$V_{CC} = 9\text{V to } 30\text{V}$ , $R_L = \infty$	–	10	–	mA
Input Resistance					
Positive Input		50	100	–	k $\Omega$
Negative Input		–	200	–	k $\Omega$
Input Current, Negative Input		–	0.5	3.1	$\mu\text{A}$
Output Resistance	Open Loop	–	150	–	$\Omega$
Output Current	Source	–	8	–	mA
	Sink	–	2	–	mA
Output Voltage Swing	Peak-to-Peak	–	$V_{CC}-2$	–	V
Unity Gain Bandwidth		–	15	–	MHz
Large Signal Frequency Response	$20V_{P-P}$ ( $V_{CC} > 24\text{V}$ ), THD $\leq 1\%$	–	75	–	kHz
Maximum Input Voltage	Linear Operation	–	–	300	mV <sub>rms</sub>
Supply Rejection Ratio Input Referred	$f = 1\text{kHz}$	–	110	–	dB
Channel Separation	$f = 1\text{kHz}$	40	60	–	dB
Total Harmonic Distortion	60dB Gain, $f = 1\text{kHz}$	–	0.1	0.5	%
Total Equivalent Input Noise (Flat Gain Circuit)	10 to 10,000Hz	–	1.0	1.2	$\mu\text{V}_{rms}$

**Pin Connection Diagram**

