

## NTE725 Integrated Circuit Dual Low Noise Preamp/OP Amp

**Description:**

The NTE725 consists of two identical high-gain operational amplifiers constructed on a single chip. These 3-stage amplifiers use Class A PNP transistor output stages with uncommitted collectors. This enables a variety of loads to be employed for general purpose applications from DC to 10MHz, where two high performance operation amplifiers are required. In addition, the outputs may be wired-OR for use as a dual comparator or they may function as diodes in low threshold rectifying circuits such as absolute value amplifiers, peak detectors, etc.

**Features:**

- Single or Dual Supply Operation
- Low Power Consumption
- High Gain
- Large Common Mode Range: +11V, -13V
- Excellent Gain Stability vs. Supply Voltage
- No Latch-Up
- Output Short Circuit Protected

**Absolute Maximum Ratings:**

Supply Voltage .....	±18V
Internal Power Dissipation .....	650mW
Differential Input Voltage .....	±5V
Input Voltage (Note 1) .....	±15V
Output Short Circuit Duration (T <sub>A</sub> = +25°C, Note 2) .....	30sec
Operating Temperature Range .....	0° to +70°C
Storage Temperature Range .....	-55° to +125°C
Lead temperature (During Soldering, 60sec) .....	+260°C

Note 1. For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

Note 2. Short circuit may be to GND or either supply.

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $V_+ = \pm 15\text{V}$ ,  $R_L = 5\text{k}\Omega$  to Pin7 unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
Input Offset Voltage	$R_S = 200\Omega$	–	1.0	6.0	mV
	$V_+ = \pm 4\text{V}$ , $R_L = 10\text{k}\Omega$ to Pin7, $R_S = 200\Omega$	–	1.0	6.0	mV
Input Offset Current		–	50	1000	nA
	$V_+ = \pm 4\text{V}$ , $R_L = 10\text{k}\Omega$ to Pin7	–	50	1000	nA
Input Bias Current		–	0.3	2.0	$\mu\text{A}$
	$V_+ = \pm 4\text{V}$ , $R_L = 10\text{k}\Omega$ to Pin7	–	300	–	$\mu\text{A}$
Input Resistance		37	150	–	$\text{k}\Omega$
Large Signal Voltage Gain	$V_{\text{OUT}} = \pm 10\text{V}$	6.5k	20k	–	V/V
	$V_+ = \pm 4\text{V}$ , $R_L = 10\text{k}\Omega$ to Pin7, $V_{\text{OUT}} = \pm 2\text{V}$	2.5k	15k	–	V/V
Positive Output Voltage Swing		+12	+13	–	V
	$V_+ = \pm 4\text{V}$ , $R_L = 10\text{k}\Omega$ to Pin7	+2.5	+2.8	–	V
Negative Output Voltage Swing		–14	–15	–	V
	$V_+ = \pm 4\text{V}$ , $R_L = 10\text{k}\Omega$ to Pin7	–3.6	–4.0	–	V
Output Resistance	$f = 1\text{kHz}$	–	5.0	–	$\text{k}\Omega$
Common Mode Rejection Ratio	$R_S = 200\Omega$ , $V_{\text{IN}} = +11.5\text{v}$ to $-13.5\text{V}$	70	90	–	dB
Supply Voltage Rejection Ratio	$R_S = 200\Omega$	–	50	–	$\mu\text{V/V}$
Input Voltage Range		–10	–	+11	V
Internal Power Dissipation	$V_+ = \pm 4\text{V}$ , $R_L = 10\text{k}\Omega$ to Pin7, $V_{\text{OUT}} = 0$	–	20	–	mW
Supply Current	$V_{\text{OUT}} = 0$	–	9	14	mA
	$V_+ = \pm 4\text{V}$ , $R_L = 10\text{k}\Omega$ to Pin7, $V_{\text{OUT}} = 0$	–	2.5	–	mA
Broadband Noise Figure	$R_S = 10\text{k}\Omega$ , BW = 10Hz to 10kHz	–	2.0	–	dB
Turn-On Delay	Open Loop, $V_{\text{IN}} = \pm 20\text{mV}$	–	0.2	–	$\mu\text{s}$
Turn-Off Delay	Open Loop, $V_{\text{IN}} = \pm 20\text{mV}$	–	0.3	–	$\mu\text{s}$
Slew Rate (Unity Gain)	$C_1 = 0.02\mu\text{F}$ , $R_1 = 33\Omega$ , $C_2 = 10\text{pF}$	–	1.0	–	$\text{V}/\mu\text{s}$
Channel Separation	$R_S = 1\text{k}\Omega$ , $f = 10\text{kHz}$	–	140	–	dB

**Pin Connection Diagram**



