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# NTE721
# Integrated Circuit
# Dual, Low Noise, Low Level Pre–Ampilfier

**Description:**

The NTE721 dual pre–amplifier is a linear monolithic circuit designed for use with low–level signals in low–noise applications. The device offers outstanding value, performance and reliability in both comnsumer and industrial products such as stereo tape players/recorders, dictating equipment, movie projectors, record players, microphone amplifiers and FM stereo receivers. An internal voltage regulator eliminates the need for audio r–f decoupling while providing a typical channel separation of 60dB. The guarenteed minimum gain of 65dB per channel is defined by internal resistors. External feedback is used only for NAB or RIAA equalization.

**Features:**

- Single Power Supply Operation
- High Input Impedance
- Wide Power Supply Range
- Matched Open Loop Voltage Gain
- Turn–On Delay

**Absolute Maximum Ratings:**

Supply Voltage, $V_{CC}$ . . . . . 24V
Output Current (Pin 2) . . . . . 10mA
Storage Temperature Range, $T_{stg}$ . . . . . –65° to +125°C
Operating Temperature Range, $T_{opr}$ . . . . . –30° to +85°C

**Electrical Characteristics:** ($T_A$ = +25°C, +10V ≤ $V_{CC}$ +24V, unless otherwise specified)

| Parameter | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Supply Current | $V_{CC}$ = +12V | – | 16 | – | mA |
| Voltage Gain | | 65 | 68 | 71 | dB |
| Gain Balance | | – | 0.3 | 2 | dB |
| Channel Separation | f = 1kHz | – | 90 | – | dB |
| Input Resistance | | – | 250 | – | kΩ |
| Output Resistance | | – | 100 | – | Ω |
| Power Supply Rejection | f = 1kHz | 45 | 55 | – | dB |
| Total Harmonic Distortion | No feedback, $V_{OUT}$ = 300m$V_{rms}$ into 3kΩ load | – | 0.5 | – | % |
| Input D–C Bias Current | | – | 0.8 | 3 | mA |
| Impedance at Feedback. Terminal | | – | 30 | – | kΩ |

**Electrical Characteristics (Cont'd):** ($T_A$ = +25°C, +10V ≤ $V_{CC}$ +24V, unless otherwise specified)

| Parameter | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Amplifier Noise Figure | f = 100Hz to 10kHz, $R_s$ = 5kΩ | – | 1.8 | – | dB |
| Amplifier Noise Out | f = 100Hz to 10kHz, $R_s$ = 470kΩ | – | 1.5 | – | mV |
| Turn–On Delay Time | (Note 1) | 2 | 3 | 4 | Sec. |

Note 1. This is the interval between the time supply voltage is applied to pin 1 and the time the device functions properly. Included to aid in avoiding poor audio quality as tape drive speed is attaining quiescent operating speed.

**Pin Connection Diagram**