

## NTE1651 Integrated Circuit Dual Preamp for Tape Recorder

**Description:**

The NTE1651 is a dual preamplifier with ALC and muting in a 16-Lead DIP type package designed for use in the record/playback amplifier of a tape recorder. This device is suitable for stereo set and radio-cassette recorder applications.

**Features:**

- Built-In ALC Detector Circuit
- Built-In Muting Circuit
- Operating Supply Voltage Range:  $V_{CC} = 6V$  to  $15V$

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

Supply Voltage, $V_{CC}$ .....	16V
Power Dissipation, $P_D$ .....	750mW
Derate Above $25^\circ C$ .....	6mW/ $^\circ C$
Operating Temperature Range, $T_{opr}$ .....	$-25^\circ$ to $+75^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ C$

**Typical DC Voltage (Each Terminal):** ( $T_A = +25^\circ C$ ,  $V_{CC} = 9V$ , Note 1 unless otherwise specified)

Pin1 (Rec. GND), $V_1$ .....	0V
Pin2 ( $V_S$ ), $V_2$ .....	8.2V
Pin3 (Mute Out), $V_3$ .....	0V
Pin4 (Rec. Out Ch1), $V_4$ .....	3.3V
Pin5 (Pre. Out & Rec In), $V_5$ .....	1.3V
Pin6 (Pre. In NF), $V_6$ .....	1.3V
Pin7 (Pre. In), $V_7$ .....	0V
Pin8 (ALC), $V_8$ .....	0.9V
Pin9 (Pre. GND), $V_9$ .....	0V
Pin10 (Pre. In), $V_{10}$ .....	0V
Pin11 (Pre. In NF), $V_{11}$ .....	1.3V
Pin12 (Pre. Out & Rec. In), $V_{12}$ .....	1.3V
Pin13 (Rec. Out), $V_{13}$ .....	3.3V
Pin14 (Mute Out), $V_{14}$ .....	0V
Pin15 (Mute In), $V_{15}$ .....	2.4V
Pin16 ( $V_{CC}$ ), $V_{16}$ .....	9.0V

Note 1. Terminal voltage at no signal.

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $V_{CC} = 9\text{V}$ ,  $f = 1\text{kHz}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Current	$I_{CCQ}$	$V_{IN} = 0$	–	7	9	mA
<b>Preamplifier</b>						
Open Loop Voltage Gain	$G_{VO}$	$V_{IN} = -80\text{dBm}$	65	78	–	dB
Max. Output Voltage	$V_{OM}$	THD = 1%	0.5	0.8	–	$V_{rms}$
Total Harmonic Distortion	THD	$V_O = 0.2V_{rms}$	–	0.15	0.5	%
Output Noise Voltage	$V_{NO}$	$R_g = 2.2\text{k}\Omega$ , 30Hz to 20kHz	–	0.26	0.6	$\text{mV}_{rms}$
Crosstalk	CT	$R_g = 2.2\text{k}\Omega$	47	60	–	dB
<b>Rec. Amplifier</b>						
Closed Loop Voltage Gain	$G_V$	$R_L = 10\text{k}\Omega$	12.7	14.7	16.7	dB
Max. Output Voltage	$V_{OM}$	THD = 1%	2.0	2.5	–	$V_{rms}$
Total Harmonic Distortion	THD	$V_O = 1.5V_{rms}$	–	0.2	–	%
ALC Range	$R_{ALC}$	$V_{IN} = -60\text{dB}$ , $R_{IN} = 2.2\text{k}\Omega$ , Note 2	–	45	–	dB
Total Harmonic Distortion (ALC)	THD (ALC)	$V_{IN} = -20\text{dBm}$ , $R_{IN} = 2.2\text{k}\Omega$ , $R_L = 10\text{k}\Omega$	–	0.3	1.0	%
ALC Voltage	$V_{O(ALC)}$		0.9	1.1	1.42	$V_{rms}$
Muting Attenuation	ATT		45	55	–	dB
ALC balance	$B_{ALC}$	$V_{IN} = -20\text{dBm}$	–	0	2	dB

Note 2. Input voltage range from  $V_{IN} = -60\text{dB}$  to output voltage  $V_{OUT}$  3dB up.



