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## NTE1236 Integrated Circuit TV Sound IF System

**Description:**

The NTE1236 monolithic TV/FM sound system consists of a multistage limiting IF amplifier, DC gain control, FM detector, and an audio driver constructed on a single silicon chip. Excellent sensitivity, high AM rejection and an internally regulated power supply coupled with low external component requirements makes the NTE1236 suitable for a wide variety of applications including TV sound channels, FM radios and mobile communications equipment.

**Features:**

- Electronic Attenuator Replaces Conventional Volume Control
- High Sensitivity
- Low Harmonic Distortion
- Excellent AM Rejection: (5-dB typ. at 4.5MHz)
- Internal Zener Diode Regulated Supply
- Differential Peak Detector Requires Only One Single-Turned Coil

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

Supply Voltage, $V_{CC}$ .....	$\pm 3\text{V}$
Input Current, $I_{CC}$ .....	30mA
Power Dissipation, $P_D$ .....	625mW
Operating Temperature Range, $T_{opg}$ .....	$-20^{\circ}$ to $+75^{\circ}\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^{\circ}$ to $+150^{\circ}\text{C}$

Note \*. Pin 5 may be connected to any positive voltage through a suitable dropping resistor, provided the dissipation rating is not exceeded.

Note \*\*. For temperatures above  $25^{\circ}\text{C}$ , derate linearly at  $5.0\text{mW}/^{\circ}\text{C}$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Supply Current	$I_{CC}$	$V_{CC} = 9V$	10	16	24	mA
Zener Regulating Characteristics	$V_Z$		10.3	11.2	12.2	V
Internal Power Dissipation	$P_D$		330	345	360	mW
<b>Dynamic Characteristics</b>						
Input Limiting Voltage at -3dB	$V_{IN(lim)}$	$f_o = 4.5\text{MHz}$ , $f_M = 400\text{Hz}$ , $\Delta f = \pm 25\text{kHz}$	-	200	400	$\mu\text{V}$
AM Rejection Ratio	AMR	$f = 4.5\text{MHz}$ , FM: $\Delta f = \pm 25\text{kHz}$ , AM: 30% @ 45MHz	40	50	-	dB
Recovered AF Voltage	$V_{OD}$	$f = 4.5\text{MHz}$ , $V_I = 0.1V$ , $\Delta f = \pm 25\text{kHz}$ , $f_M = 400\text{Hz}$	0.5	0.75	-	$V_{rms}$
Total Harmonic Distortion	THD		-	0.9	2.0	%
Input Impedance Parallel Resistance	$R_{ip}$	Terminal No. 1-2 $f = 4.5\text{MHz}$	-	17	-	$k\Omega$
Parallel Capacitance	$C_{ip}$		-	4	-	pF
Output Impedance Parallel Resistance	$R_{op}$	Terminal No. 9-GND $f = 4.5\text{MHz}$	-	3.25	-	$k\Omega$
Parallel Capacitance	$C_{op}$		-	7.5	-	pF
Output Impedance Pin 7	$z_o$	$f = 400\text{Hz}$	-	7.5	-	$k\Omega$
Pin 8			-	300	-	$\Omega$
Attenuation	ATT	$R_x = \infty$	60	80	-	dB
AF Voltage Gain	$G_{V(ATF)}$	$V_I = 0.1V_{rms}$ , $f = 400\text{Hz}$	17.5	20	-	dB
Total Harmonic Distortion	THD(2)	$V_O = 2V_{rms}$ , $f = 400\text{Hz}$	-	1.5	-	%
Undistorted Output Voltage	$V_O$	THD = 5%, $f = 400\text{Hz}$	2	2.5	-	$V_{rms}$
AF Input Resistance	$R_I$	$f = 400\text{Hz}$	-	70	-	$k\Omega$
AF Output Resistance	$R_O$		-	270	-	$\Omega$

### Pin Connection Diagram

