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## NTE712 Integrated Circuit TV/FM Sound IF Detector

**Description:**

The NTE712 is a versatile device in a 14-Lead DIP type package incorporating IF limiting, detection, electronic attenuation, audio amplifier, and audio driver capabilities.

**Features:**

- Differential Peak Detector Requiring a Single Tuned Circuit
- Electronic Attenuator Replaces Conventional AC Volume Control: Range > 60dB
- Excellent AM Rejection @ 4.5 and 5.5MHz
- High Stability
- Low Harmonic Distortion
- Audio Drive Capability: 6.0mA<sub>P-P</sub>
- Minimum Undesirable Output Signal @ Maximum Attenuation

**Absolute Maximum Ratings:** (T<sub>A</sub> = +25°C unless otherwise specified)

Input Signal Voltage (Pin1 and Pin2) .....	±3V
Power Supply Current .....	50mA
Power Dissipation, P <sub>D</sub> .....	625mW
Derate Above 25°C .....	5mW/°C
Operating Ambient Temperature Range, T <sub>opr</sub> .....	-20° to +75°C
Storage Temperature Range, T <sub>stg</sub> .....	-65° to +150°C

**Electrical Characteristics:** (V<sub>+</sub> = 24V, T<sub>A</sub> = +25°C unless otherwise specified)

Parameter	Pin	Test Conditions	Min	Typ	Max	Unit
Regulated Voltage	5		10.3	11.0	12.2	V
DC Supply Current	5	V <sub>+</sub> = 9V, R <sub>S</sub> = 0	10	16	24	mA
Quiescent Output Voltage	12		5.1	-	-	V

**Dynamic Characteristics:** (V<sub>+</sub> = 24V, T<sub>A</sub> = +25°C unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
<b>IF Amplifier and Detector</b> (f <sub>o</sub> = 4.5MHz, Δf = ±25kHz)					
AM Rejection	V <sub>in</sub> = 10mV <sub>rms</sub> , Note 1	40	51	-	dB
Input Limiting Threshold Voltage		-	200	400	μV <sub>rms</sub>
Recovered Audio Output Voltage	V <sub>in</sub> = 10mV <sub>rms</sub>	0.5	0.7	-	V <sub>rms</sub>
Output Distortion	V <sub>in</sub> = 10mV <sub>rms</sub>	-	0.4	2.0	%

Note 1. 100% FM, 30% AM Modulation.

**Dynamic Characteristics (Cont'd):** ( $V_+ = 24V$ ,  $T_A = +25^\circ C$  unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
<b>IF Amplifier and Detector</b> ( $f_o = 5.5MHz$ , $\Delta f = \pm 50kHz$ )					
AM Rejection	$V_{in} = 10mV_{rms}$ , Note 1	40	53	–	dB
Input Limiting Threshold Voltage		–	200	400	$\mu V_{rms}$
Recovered Audio Output Voltage	$V_{in} = 10mV_{rms}$	0.5	0.91	–	$V_{rms}$
Output Distortion	$V_{in} = 10mV_{rms}$	–	0.9	–	%
Input Impedance Components	$f = 4.5MHz$ , measurement between Pin1 and Pin2	–	17	–	$k\Omega$
Parallel Input Resistance					
Parallel Input Capacitance		–	4	–	pF
Output Impedance Components	$f = 4.5MHz$ , measurement between Pin9 and GND	–	3.25	–	$k\Omega$
Parallel Output Resistance					
Parallel Output Capacitance		–	3.6	–	pF
Output Resistance		–	7.5	–	$k\Omega$
Pin7					
Pin8		–	250	–	$\Omega$
<b>Attenuator</b>					
Volume Reduction Range	DC Volume Control = $\infty$	60	–	–	dB
Maximum Undesirable Signal	DC Volume Control = $\infty$ , Note 2	–	0.07	1.0	mV
<b>Audio Amplifier</b>					
Voltage Gain	$V_{in} = 0.1V_{rms}$ , $f = 400Hz$	17.5	20.0	–	dB
Total Harmonic Distortion	$V_O = 2V_{rms}$ , $f = 400Hz$	–	2.0	–	%
Output Voltage	THD = 5%, $f = 400Hz$	2.0	3.0	–	$V_{rms}$
Input Resistance	$f = 400Hz$	–	70	–	$k\Omega$
Output Resistance	$f = 400Hz$	–	270	–	$\Omega$

Note 1. 100% FM, 30% AM Modulation.

Note 2. Undesirable signal is measured at Pin8 when volume control is set for minimum output.



