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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_{P-P}
- Minimum Undesirable Output Signal @ Maximum Attenuation

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

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

Electrical Characteristics: (V₊ = 24V, T_A = +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 ₊ = 9V, R _S = 0	10	16	24	mA
Quiescent Output Voltage	12		5.1	-	-	V

Dynamic Characteristics: (V₊ = 24V, T_A = +25°C unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
IF Amplifier and Detector (f _o = 4.5MHz, Δf = ±25kHz)					
AM Rejection	V _{in} = 10mV _{rms} , Note 1	40	51	-	dB
Input Limiting Threshold Voltage		-	200	400	μV _{rms}
Recovered Audio Output Voltage	V _{in} = 10mV _{rms}	0.5	0.7	-	V _{rms}
Output Distortion	V _{in} = 10mV _{rms}	-	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
IF Amplifier and Detector ($f_o = 5.5MHz$, $\Delta f = \pm 50kHz$)					
AM Rejection	$V_{in} = 10mV_{rms}$, Note 1	40	53	–	dB
Input Limiting Threshold Voltage		–	200	400	μV_{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	–	Ω
Attenuator					
Volume Reduction Range	DC Volume Control = ∞	60	–	–	dB
Maximum Undesirable Signal	DC Volume Control = ∞ , Note 2	–	0.07	1.0	mV
Audio Amplifier					
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	–	Ω

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

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



