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## NTE1624 Integrated Circuit AM/FM Radio Circuit <sup>w</sup>/Power Amp

**Features:**

- Suitable for Use in AM/FM Portable Radios or Main-fed AM/FM Clock Radios.
- Incorporates AM RF Amp, AM Local Oscillator, AM Mixer, AM/FM IF Amp, AM/FM Detector, AM AGC Circuit, FM AFC Circuit and B Class-Audio Power Amplifier.
- Using the NTE1624, Plus the Discrete Input Stage (for FM: RF Amp and Converter), It is Possible to Construct a Complete AM/FM Radios Receivers.
- Wide Operating Voltage Range: 3V to Approx 13V, Depending on the Internal Regulator Tolerance.
- As the Internal Shunt Voltage Regulator Circuit is Connected to the Supply Voltage Terminal, it Permits a Constant Current Mode (Approximately 42mA) of Operation which is Desirable for Line-Operated Equipments.
- AM to FM Switching is Accomplished by Switching Only DC Circuitry.

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

Supply Voltage, $V_{CC}$ .....	11V
Supply Current, $I_{CC}$ .....	44mA
Power Dissipation ( $T_A \leq +65^\circ\text{C}$ ), $P_D$ .....	600mW
Derate Above $25^\circ\text{C}$ .....	10mW/ $^\circ\text{C}$
Operating Temperature Range, $T_{opr}$ .....	$-18^\circ$ to $+65^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+125^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	100 $^\circ\text{C}/\text{W}$

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $f_{(AM)} = 1\text{MHz}$ , Mod=30%,  $f_{(FM)} = 10.7\text{MHz}$   $\Delta F = 22.5\text{kHz}$ ,  $f_M = 1\text{kHz}$ ,  $V_{IN} = \text{SG}$  Open Voltage -6dB unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Current	$I_{CCQ}$	SW $\rightarrow$ FM, $V_{CC} = 3\text{V}$	7	12	17	mA
		SW $\rightarrow$ FM, $V_{CC} = 9\text{V}$	10	17	23	mA
Terminal Voltage (Pin16)	$V_{16(FM)}$	SW1 $\rightarrow$ FM, $I_{CC} = 42\text{mA}$ , No Signal	2.0	2.4	3.1	V
Limiting Voltage	$V_{IN(lim)}$	SW $\rightarrow$ FM, $V_{CC} = 5.5\text{V}$ , -3dB, $V_{16} = 2.4\text{V}$ , VR = Min	-	57	-	dB $\mu\text{V}$
Internal Regulated Voltage	$V_{CC}$	SW1 $\rightarrow$ AM, $I_{CC} = 42\text{mA}$	12.5	13.2	14.0	V
Terminal Voltage (Pin16)	$V_{16(AM)}$	SW1 $\rightarrow$ AM, $V_{CC} = 9\text{V}$ , No Signal	1.4	-	1.9	V

**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$ ,  $f_{(AM)} = 1\text{MHz}$ ,  $\text{Mod} = 30\%$ ,  $f_{(FM)} = 10.7\text{MHz}$ ,  $\Delta F = 22.5\text{kHz}$ ,  $f_M = 1\text{kHz}$ ,  $V_{IN} = \text{SG Open Voltage} - 6\text{dB}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Maximum Sensitivity	$V_O$	SW $\rightarrow$ AM, $V_{CC} = 12\text{V}$ , $V_{IN} = 37\text{dB}$ , SW $\rightarrow 45\Omega$ , $V_{16} = 1.4\text{V}$	1.5	3.0	–	V
Quieting Sensitivity	S/N	SW1 $\rightarrow$ AM, $V_{CC} = 5.5\text{V}$ , SW $\rightarrow 8\Omega$ , $V_{IN} = 37.5\text{dB}$	15	20	–	dB
Output Power	$P_{OUT}$	SW $\rightarrow 8\Omega$ , $V_{CC} = 5.5\text{V}$ , $f = 1\text{kHz}$ , $V_H = \text{Min.}$ , THD = 10%	0.28	–	–	W
Total Harmonic Distortion	THD	SW $\rightarrow 45\Omega$ , $I_{CC} = 42\text{mA}$ , $f = 1\text{kHz}$ , $V_R = \text{Min.}$ , $V_{OUT} = 2\text{V}$	–	0.5	4.0	%
Voltage Gain	$G_V$	SW $\rightarrow 8\Omega$ , $V_{CC} = 5.5\text{V}$ , $f = 1\text{kHz}$ , $V_R = \text{Min.}$	–	40	–	dB
Pin2 Input Impedance (AM)	$R_{ip2 (AM)}$	$f = 455\text{kHz}$	–	200	–	k $\Omega$
	$C_{ip2 (AM)}$		–	3.0	–	pF
Pin2 Input Impedance (FM)	$R_{ip2 (FM)}$	$f = 10.7\text{MHz}$	–	30	–	k $\Omega$
	$C_{ip2 (FM)}$		–	3.5	–	pF
Pin4 Output Impedance	$R_{op4}$	$f = 455\text{kHz}$	–	300	–	k $\Omega$
	$C_{op4}$		–	6.0	–	pF
Pin6 Input Impedance	$R_{ip6}$	$f = 1\text{MHz}$	–	50	–	k $\Omega$
	$C_{ip6}$		–	5.0	–	pF
Pin14 Input Impedance (AM)	$R_{ip14 (AM)}$	$f = 455\text{kHz}$	–	300	–	k $\Omega$
	$C_{ip14 (AM)}$		–	3.5	–	pF
Pin14 Input Impedance (FM)	$R_{ip14 (FM)}$	$f = 10.7\text{MHz}$	–	300	–	k $\Omega$
	$C_{ip14 (FM)}$		–	4.0	–	pF
Pin15 Output Impedance (AM)	$R_{op15 (AM)}$	$f = 455\text{kHz}$	–	300	–	k $\Omega$
	$C_{op15 (AM)}$		–	5.5	–	pF
Pin15 Output Impedance (FM)	$R_{op15 (FM)}$	$f = 10.7\text{MHz}$	–	300	–	k $\Omega$
	$C_{op15 (FM)}$		–	6.0	–	pF

### Pin Connection Diagram



