

NTE1842 Integrated Circuit FM/AM IF System

Description:

The NTE1842 is a FM/AM IF system IC in a 16-Lead DIP type package designed for portable use. As compared with conventional ICs, this device is greatly improved in external parts counts and electrical characteristics, especially in overvoltage and overload distortions.

Features:

- Low Supply Current, AM: 7mA, FM: 10mA (Typ)
- Low Number of External Components
- Excellent Tweed
- Low Overvoltage Distortion
- Tuning Indicator LED Driving Capability: $I_{LAMP} = 10\text{mA}$ (Max)
- Built-In FM/AM Mode Switch
- Common Output for FM/AM
- Operating Supply Voltage Range: $V_{CC(9opr)} = 3\text{V}$ to 8V

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

Supply Voltage, V_{CC}	8V
Lamp Current, I_{LAMP}	10mA
Power Dissipation, P_D	750mW
Derate Above 25°C	6mW/ $^\circ\text{C}$
Operating Temperature Range, T_{opr}	-25°C to $+75^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ\text{C}$

DC Characteristics: ($V_{CC} = 5\text{V}$, Pin Voltage at No Signal)

Parameter	Symbol	Typical		Unit
		AM	FM	
Pin1 Voltage (AM Mix Input)	V_1	1.5	0	V
Pin2 Voltage (AM Mix Bypass)	V_2	1.5	0	V
Pin3 Voltage (AM OSC)	V_3	2.3	2.3	V
Pin4 Voltage (Reg)	V_4	2.3	2.3	V

DC Characteristics (Cont'd): ($V_{CC} = 5V$, Pin Voltage at No Signal)

Parameter	Symbol	Typical		Unit
		AM	FM	
Pin5 Voltage (AM IF Output)	V_5	1.0	0.9	V
Pin6 Voltage (Meter Output)	V_6	1.0	0.9	V
Pin7 Voltage (LED)	V_7	–	–	V
Pin8 Voltage (GND)	V_8	0	0	V
Pin9 Voltage (Detector Output)	V_9	1.4	1.5	V
Pin10 Voltage (V_{CC})	V_{10}	5.0	5.0	V
Pin11 Voltage (FM Detector)	V_{11}	5.0	5.0	V
Pin12 Voltage (AM IF Bypass)	V_{12}	1.5	1.5	V
Pin13 Voltage (AM IF Input)	V_{13}	1.5	1.5	V
Pin14 Voltage (FM IF Bypass)	V_{14}	1.5	1.5	V
Pin15 Voltage (FM IF Input)	V_{15}	1.5	1.5	V
Pin16 Voltage (AM Mix Output)	V_{16}	5.0	5.0	V

AC Characteristics: ($V_{CC} = 5V$, $T_A = +25^\circ C$ FM: $f = 10.7MHz$, $\Delta f = \pm 22.5kHz$, $f_m = 400Hz$
AM: $f = 1MHz$, MOD = 30%, $f_m = 400Hz$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Current	I_{CC}	FM $V_{IN} = 0$	–	10	15	mA
		AM $V_{IN} = 0$	–	7	10	mA
Pin5 Output Resistance	R_{09}	$f = 1kHz$	–	3.0	–	k Ω
FM						
Input Limiting Voltage	$V_{IN(lim)}$	–3dB Limiting	–	40	46	dB μ
Recovered Output Voltage	V_{OD}	$V_{IN} = 66dB\mu V$	57	85	114	mV _{rms}
Signal-to-Noise Ratio	S/N	$V_{IN} = 80dB\mu V$	–	65	–	dB
Total Harmonic Distortion	THD	$V_{IN} = 80dB\mu V$	–	0.05	–	%
AM Rejection Ratio	AMR	$V_{IN} = 80dB\mu V$	–	38	–	dB μ
Meter Drive Voltage	V_M	$V_{IN} = 100dB\mu V$	–	1.8	–	V
Lamp ON Sensitivity	V_L	$I_L = 1mA$	–	46	52	dB
AM						
Gain	G_V	$V_{IN} = 26dB\mu V$	15	30	75	mV _{rms}
Recovered Output Voltage	V_{OD}	$V_{IN} = 60dB\mu V$	65	95	125	mV _{rms}
Signal-to-Noise Ratio	S/N	$V_{IN} = 60dB\mu V$	–	47	–	dB
Total Harmonic Distortion	THD	$V_{IN} = 60dB\mu V$	–	1.0	–	%
Meter Drive Voltage	V_M	$V_{IN} = 100dB\mu V$	–	1.8	–	V
Lamp ON Sensitivity	V_L	$I_L = 1mA$	–	28	–	dB μ
Local OSC Stop Voltage	V_{stop}	$R_{DUMP} = \infty$	–	1.5	–	V

Pin Connection Diagram

