

NTE788 Integrated Circuit IF System for FM Receiver

Description:

The NTE788 is a monolithic integrated circuit in a 16-Lead DIP type package that provides all the functions of a comprehensive FM-IF system. This device features a three-stage FM-IF amplifier/limiter configuration with level detectors for each stage, a doubly-balanced quadrature FM detector, and an audio amplifier that features the optional use of a muting (squelch) circuit.

The advanced circuit design of the IF system includes desirable deluxe features such as delayed AGC for the RF tuner, an AFC drive circuit, and an output signal to drive a tuning meter and/or provide stereo switching logic. In addition, internal power supply regulators maintain a nearly constant current drain over the voltage supply range of +8.5V to +16V.

Features:

- Exceptional limiting sensitivity: 12 μ V typ. at -3dB point
- Low distortion: 0.1% typ. (with double-tuned coil)
- Single-coil tuning capability
- Improved S + N/N Radio
- Externally programmable recovered audio level
- Provides specific signal for control of interchannel muting (squelch)
- On channel step for search control
- Provides programmable AGC voltage for RF amplifier
- Internal supply-voltage regulators
- Externally programmable "ON" channel step width, and deviation at which muting occurs

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

DC Supply Voltage	
Between Pin11 and Pin4	16V
Between Pin11 and Pin14	16V
DC Current (Out of Pin15)	2mA
Power Dissipation (Up to $T_A = 85^\circ\text{C}$), P_D	640mW
Derate Above $T_A = +85^\circ\text{C}$	9.9mW/ $^\circ\text{C}$
Operating Ambient Temperature Range, T_{opr}	-40 $^\circ$ to +85 $^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65 $^\circ$ to +150 $^\circ\text{C}$
Lead Temperature (During Soldering, 1.32" from case, 10sec max), T_L	+265 $^\circ\text{C}$

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, $V^+ = 12\text{V}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Quiescent Circuit Current	I_{11}	No Signal Input, Non Muted	20	31	40	mA
DC Voltages IF Input	V_1		1.2	1.9	2.4	V
AC Return to Input	V_2		1.2	1.9	2.4	V
DC Bias to Input	V_3		1.2	1.9	2.4	V
RF AGC	V_{15}		7.5	9.5	11.0	V
DC Reference	V_{10}		5.0	5.6	6.0	V
Dynamic Characteristics ($f_O = 10.7\text{MHz}$, $f_{\text{mod}} = 400\text{Hz}$, Deviation = $\pm 75\text{kHz}$)						
Input Limiting Voltage	V_1 (lim)	-3dB Point	-	12	25	μV
AM Rejection	AMR	$V_{\text{IN}} = 0.1\text{V}$, AM Mod = 30%	45	55	-	dB
Recovered AF Voltage	V_O (AF)	$V_{\text{IN}} = 0.1\text{V}$	300	400	500	mV
Total Harmonic Distortion Single Tuned	THD	$V_{\text{IN}} = 0.1\text{V}$, Note 1	-	0.5	1.0	%
Double Tuned			-	0.1	-	%
Signal Plus Signal-to-Noise Ratio		$V_{\text{IN}} = 0.1\text{V}$	60	67	-	dB

Note 1. THD characteristics are essentially a function of the phase characteristics of the network connected between Pin8, Pin9, and Pin10.

Pin Connection Diagram

