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## 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 $\mu$ 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
<b>Static Characteristics</b>						
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
<b>Dynamic Characteristics</b> ( $f_O = 10.7\text{MHz}$ , $f_{\text{mod}} = 400\text{Hz}$ , Deviation = $\pm 75\text{kHz}$ )						
Input Limiting Voltage	$V_1$ (lim)	-3dB Point	-	12	25	$\mu\text{V}$
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

