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## **NTE787**

### **Integrated Circuit**

### **AM Receiver Subsystem**

**For Applications** in a variety of AM broadcast and communications receivers and applications requiring an array of amplifiers.

#### **Description:**

The NTE787, a monolithic integrated circuit, is an AM subsystem that provides the converter, IF amplifier, detector, and audio preamplifier stages for an AM receiver. It also provides internal AGC for the first IF amplifier stage, delayed AGC for an optional external RF amplifier, a buffer stage to drive a tuning meter, and terminals facilitating the optional use of a tone control.

This device features four independent transistor amplifiers, each incorporating internal biasing for temperature tracking. These amplifiers are particularly useful in general-purpose amplifier, oscillator, and detector applications in a wide variety of equipment designs.

The NTE787 utilizes a 16-Lead DIP package and operates over an ambient temperature range of  $-40^{\circ}$  to  $+85^{\circ}\text{C}$ .

#### **Features:**

- Excellent overload characteristics
- AGC for IF amplifier
- Buffered output signal for tuning meter
- Internal Zener diode provides voltage regulation
- Two IF amplifiers stages
- Low-noise converter and first IF amplifier
- Low harmonic distortion (THD)
- Delayed AGC for RF amplifier
- Terminals for optional inclusion of tone control
- Operates from wide range of power supplies:  $V_{+} = 6$  to 16 volts
- Optional AC and/or DC feedback on wide-band amplifier
- Array of amplifiers for general-purpose applications
- Suitable for use with optional external RF stage, either MOS or bipolar

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

DC Supply Voltage (Across Pin5 and Pin3, Pin6, Pin13, Pin16 respectively) ..... 16V

DC Current

At Pin3, Pin6, Pin13, Pin16 respectively ..... 10mA

At Pin10 ..... 30mA

Device Dissipation (Up to  $T_A = +50^\circ\text{C}$ ),  $P_D$  ..... 760mW

Derate Above  $T_A = +50^\circ\text{C}$  ..... 7.6mW/ $^\circ\text{C}$

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>						
DC Voltage Pin1, Pin4, Pin9, Pin11	$V_1, V_4, V_9, V_{11}$		–	0.7	–	V
Pin2, Pin7, Pin8	$V_2, V_7, V_8$		–	1.4	–	V
Pin10	$V_{10}$		–	5.6	–	V
Pin12	$V_{12}$		–	0	–	V
Pin15	$V_{15}$		–	3.5	–	V
DC Current Pin3	$I_3$		–	0.35	–	mA
Pin6	$I_6$		–	1.0	–	mA
Pin10	$I_{10}$		–	20	–	mA
Pin13	$I_{13}$		–	0	–	mA
Pin16	$I_{16}$		–	1.2	–	mA
<b>Dynamic Characteristics</b>						
Detector Output		30% Modulation	–	75	–	mV <sub>rms</sub>
Audio Amplifier Gain	$A_{AF}$	$f = 1\text{kHz}$	–	30	–	dB
Audio Distortion		$V_{OUT} = 100\text{mV}$	–	0.2	–	%
Sensitivity At Converter Stage Input		$f_{IN} = 1\text{MHz}$ , Signal-to-Noise Ratio (S/N) = 20dB	–	200	–	$\mu\text{V/m}$
At RF Stage Input			–	100	–	$\mu\text{V/m}$
Total Harmonic Distortion	THD	30% Modulation	–	1.0	–	%
Input Resistance At Transistor Q1	$R_{IN}$	No AGC, Input Frequency Signal ( $f_{IN}$ ) = 1MHz	–	3500	–	$\Omega$
At Transistor Q5			–	2000	–	$\Omega$
Input Capacitance At Transistor Q1	$C_{IN}$		–	17	–	pF
At Transistor Q5			–	12	–	pF
Feedback Capacitance At Transistor Q1	$C_{FB}$		–	1.5	–	pF
At Transistor Q5			–	1.5	–	pF

### Pin Connection Diagram

