

NTE784 Integrated Circuit Wide-Band Power Amplifier

Description:

The NTE784 is a multistage, multipurpose, wide-band power amplifier on a single monolithic silicon chip. This device employs a highly versatile and stable direct-coupled circuit configuration featuring wide frequency range, high voltage and power gain, and high power output. These features plus inherent stability over a wide temperature range make the NTE784 extremely useful for a wide variety of applications in military, industrial, and commercial equipment.

The NTE784 is particularly suited for service as a class B power amplifier and can provide a maximum power output of 1W from a 12V DC supply with a typical power gain of 75dB.

Features:

- High Power Output
- Wide Frequency Range
- High Power Gain
- Single Power Supply for Class B Operation with Transformer
- Built-In Temperature Tracking Voltage Regulator Provides Stable Operation

Applications:

- AF Power Amplifiers for Portable and Fixed Sound and Communications Systems
- Servo-Control Amplifier
- Wide-Band Linear Mixers
- Video Power Amplifiers
- Transmission-Line Driver Amplifier (Balanced and Unbalanced)
- Fan-In and Fan-Out Amplifiers for Computer Logic Circuits
- Lamp-Control Amplifiers
- Motor-Control Amplifiers
- Power Multivibrators
- Power Switches

Absolute Maximum Ratings:

Power Dissipation (Without Heatsink, $T_A = +25^\circ\text{C}$), P_D	1W
Derate Above 25°C	6.7mW/ $^\circ\text{C}$
Power Dissipation (With Heatsink, $T_C = +25^\circ\text{C}$), P_D	2W
Derate Above 55°C	16.7mW/ $^\circ\text{C}$
Operating Temperature Range, T_{opr}	-55° to $+125^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ\text{C}$
Maximum Thermal Resistance, Junction-to-Case, R_{thJC}	60 $^\circ\text{C/W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector–Emitter Breakdown Voltage	$V_{(BR)CER}$	(Q_6 & Q_7) $I_C = 10\text{mA}$	25	–	–	V
	$V_{(BR)CEO}$	(Q_1) $I_C = 0.1\text{mA}$	10	–	–	V
Idle Currents	I_4, I_7	(Q_6 & Q_7) $V_{CC1} = 9\text{V}, V_{CC2} = 2\text{V}$	–	5.5	–	mA
Peak Output Currents	I_4, I_7	(Q_6 & Q_7) $V_{CC1} = 9\text{V}, V_{CC2} = 2\text{V}$	180	–	–	mA
Cutoff Currents	I_4, I_7	(Q_6 & Q_7) $V_{CC1} = 9\text{V}, V_{CC2} = 2\text{V}$	–	–	1.0	mA
Differential Amplifier Current Drain	I_{CC1}	$V_{CC1} = 9\text{V}, V_{CC2} = 9\text{V}$	6.3	9.4	12.5	mA
Total Current Drain	$I_{CC1} + I_{CC2}$	$V_{CC1} = 9\text{V}, V_{CC2} = 9\text{V}$	14.5	21.5	30.0	mA
Differential Amplifier Input Pin Voltages	V_2, V_3	$V_{CC1} = 9\text{V}, V_{CC2} = 2\text{V}$	–	11.1	–	V
Regulator Pin Voltage	V_{11}	$V_{CC1} = 9\text{V}, V_{CC2} = 2\text{V}$	–	2.35	–	V
Collector–Emitter Cutoff Current	I_{CEO}	(Q) $V_{CC1} = 10\text{V}$	–	–	100	μA
Emitter–Base Cutoff Current	I_{EBO}	(Q) $V_{CC1} = 3\text{V}$	–	–	0.1	μA
Collector–Base Cutoff Current	I_{CBO}	(Q) $V_{CC1} = 3\text{V}$	–	–	0.1	μA
Forward Current Transfer Ratio	h_{FE1}	(Q_1) $I_C = 3\text{mA}, V_{CC1} = 6\text{V}$	30	75	–	
Bandwidth	BW	$V_{CC1} = 6\text{V}, V_{CC2} = 6\text{V}, -3\text{dB}$	–	8	–	MHz
Maximum Power Output	$P_{O(max)}$	$V_{CC1} = 6\text{V}, V_{CC2} = 6\text{V}, R_{CC} = 130\Omega$	200	300	–	mW
		$V_{CC1} = 9\text{V}, V_{CC2} = 9\text{V}, R_{CC} = 130\Omega$	400	550	–	mW
		$V_{CC1} = 9\text{V}, V_{CC2} = 12\text{V}, R_{CC} = 200\Omega$	800	1000	–	mW
Sensitivity	e_{IN}	$V_{CC1} = 9\text{V}, V_{CC2} = 12\text{V}, P_{OUT} = 800\text{mW}, R_{CC} = 200\Omega$	–	50	100	mV
Input Resistance	R_{IN3}	$V_{CC1} = 6\text{V}, V_{CC2} = 6\text{V}, \text{Pin3 to GND}$	–	1000	–	Ω

Pin Connection Diagram

(Top View)



