



**ELECTRONICS, INC.**  
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## NTE704 Integrated Circuit TV Sound, IF Amp

### Features & Applications:

- Exceptionally High Gain: Power Gain at 4.5Hz – 75dB typ.
- Excellent Limiting Characteristics: Input Limiting Voltage (Knee) = 300μV at 4.5MHz
- Excellent AM Rejection: > 50dB at 4.5MHz
- High Audio–Voltage Recovery: 20mV Typ at 4.5MHz, 25kHz Deviation
- Wide Frequency Capability: 100kHz to > 20MHz
- Comprehensive Circuit Functions:
  - IF Amplifier
  - AM and Noise Limiter
  - FM Detector
  - Audio PreAmplifier

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

Maximum Input–Signal Voltage (Between Pin1 and Pin2) .....  $\pm 3\text{V}$   
 Maximum Device Dissipation ..... 300mW  
 Recommended Minimum DC Supply Voltage ( $V_{CC}$ ) ..... 5.5V  
 Operating Temperature Range,  $T_{opr}$  .....  $-55^\circ$  to  $+125^\circ\text{C}$   
 Storage Temperature Range,  $T_{stg}$  .....  $-65^\circ$  to  $+150^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Total Device Dissipation	$P_T$	Note 1	$V_{CC} = 6\text{V}$	73	90	110	mW
			$V_{CC} = 7.5\text{V}$	106	120	150	mW
			$V_{CC} = 10\text{V}$	165	190	230	mW
Voltage Gain	A	$f = 1\text{Mc/s}$ , Note 2	$V_{CC} = 6\text{V}$	60	66	–	dB
			$V_{CC} = 7.5\text{V}$	65	70	–	dB
			$V_{CC} = 10\text{V}$	65	71	–	dB
		$V_{CC} = 7.5\text{V}$ , Note 2	$f = 4.5\text{Mc/s}$	60	67	–	dB
			$f = 10.7\text{Mc/s}$	55	60	–	dB

Note 1. Total current drain may be determined by dividing  $P_T$  by  $V_{CC}$ .

Note 2. Recommended minimum DC supply voltage ( $V_{CC}$ ) is 5.5V. Nominal load current flowing into Pin5 is 1.5mA at 7.5V.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Parallel Input Resistance	$R_{IN}$	$f = 4.5\text{Mc/s}, V_{CC} = 7.5\text{V}$	–	3	–	$\text{k}\Omega$	
Parallel Input Capacitance	$C_{IN}$		–	7	–	$\text{pF}$	
Parallel Output Resistance	$R_{OUT}$	$f = 4.5\text{Mc/s}, V_{CC} = 7.5\text{V}$	–	31.5	–	$\text{k}\Omega$	
Parallel Output Capacitance	$C_{OUT}$		–	4.2	–	$\text{pF}$	
Noise Figure	NF	$f = 4.5\text{Mc/s}, V_{CC} = 7.5\text{V}$	–	8.7	–	dB	
Input Limiting Voltage (Knee)	$V_{i(lim)}$	$f = 4.5\text{Mc/s}, V_{CC} = 7.5\text{V}$	–	300	400	$\mu\text{V}$	
Recovered AF	$V_{o(af)}$	$f = 4.5\text{Mc/s}$	$V_{CC} = 6\text{V}$	–	155	–	mV
			$V_{CC} = 7.5\text{V}$	135	188	–	mV
			$V_{CC} = 10\text{V}$	–	220	–	mV
Amplitude Modulation Rejection	AMR	$f = 4.5\text{Mc/s}, V_{CC} = 7.5\text{V}$	–	50	–	dB	
Discriminator Output Resistance	$R_{O(dics)}$	$f = 4.5\text{Mc/s}, V_{CC} = 7.5\text{V}$	–	60	–	$\Omega$	
Total Harmonic Distortion	THD	$f = 4.5\text{Mc/s}, V_{CC} = 7.5\text{V}$	–	1.8	–	%	

**Pin Connection Diagram**  
(Top View)

