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## NTE744 Integrated Circuit RF/IF Amp

**Description:**

The NTE744 is a monolithic silicon integrated circuit that provides an rf amplifier, if amplifier, mixer, oscillator, AGC detector, and voltage regulator on a single chip. It is intended for use in super-heterodyne AM radio receiver applications particularly in automobiles. The NTE744 is supplied in a 14-lead dual-in-line plastic package and operates over the temperature range of -55° to 125°C.

**Features:**

- Low-noise, low- $R_b$ , rf stage in cascode connection—eliminates Miller-Effect regeneration and allows controlled power rise by the choice of external components.
- Mixer-oscillator stage with internal feedback—eliminates need for tapped or multi-winding oscillator coils
- Cascode if amplifier with controlled output impedance and negligible Miller Effect—eliminates regeneration and selectivity skewing
- Frequency-counter AGC circuit—allows control of AGC response by selection of the coupling capacitor.
- Integral regulation with built-in surge protection
- Separately accessible amplifiers

**Absolute Maximum Ratings:**

DC Supply Voltage (Pin3), $V_+$ .....	9V
DC Supply Voltage (IF Output, Pin6) .....	40V
DC Supply Voltage (RF Output, Pin13) .....	20V
DC Supply Voltage (Mixer Output, Pin14) .....	20V
DC Current (Pin3) .....	35mA
Power Dissipation (Up to $T_A = +55^\circ\text{C}$ ), $P_D$ .....	750mW
Derate Above $T_A = 55^\circ\text{C}$ .....	6.67mW/°C
Operating Ambient Temperature Range, $T_{opr}$ .....	-55° to +125°C
Storage Temperature Range, $T_{stg}$ .....	-65° to +150°C
Lead Temperature (During Soldering, 1/16" (1.59mm)from case, 10sec max), $T_L$ .....	+265°C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
DC Voltage At Pin1, Pin4	$V_1, V_4$		–	4.7	–	V
At Pin2, Pin3, Pin14	$V_2, V_3, V_{14}$		–	6.8	–	V
At Pin5	$V_5$		–	0.25	–	V
At Pin6	$V_6$		–	12	–	V
At Pin7	$V_7$		–	0.76	–	V
At Pin8, Pin9	$V_8, V_9$		–	0	–	V
At Pin10, Pin11	$V_{10}, V_{11}$		–	0.71	–	V
At Pin12	$V_{12}$		–	0.71	–	V
At Pin13	$V_{13}$		–	4.0	–	V
DC Current Into Pin1, Pin4, Pin5, Pin7, Pin8, Pin9, Pin10, Pin11, Pin12	$I_1, I_4, I_5, I_7,$ $I_8, I_9, I_{10}, I_{12}$		–	0	–	mA
Into Pin2	$I_2$		–	1.2	–	mA
Into Pin3	$I_3$		–	15	–	mA
Into Pin6	$I_6$		–	4.3	–	mA
Into Pin13	$I_{13}$		–	4.5	–	mA
Into Pin14	$I_{14}$		–	0.17	–	mA
<b>Performance Characteristics</b>						
Sensitivity		Input Signal to Dummy Antenna at $f_{IN} = 1\text{MHz}$ , 30% AM Modulation at $f_{MOD} = 400\text{Hz}$ , for 11mV Output at $V_O$	–	2.3	–	$\mu\text{V}$
Signal-to-Noise Ratio	S/N	Ratio of Output at $V_O$ with Modulation ON & the OFF, Input Signal = $100\mu\text{V}$ , 30% AM Modulation at $f_{MOD} = 400\text{Hz}$	34	43	–	dB
Overload Distortion		Input Signal set at 1MHz, 90% AM Modulation, Distortion at $V_O$ must be $\leq 10\%$	160k	400k	–	$\mu\text{V}$

**Pin Connection Diagram**



