

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/ $^{\circ}\text{C}$
Operating Ambient Temperature Range, T_{opr}	-55° to $+125^{\circ}\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^{\circ}\text{C}$
Lead Temperature (During Soldering, 1/16" (1.59mm) from case, 10sec max), T_L	$+265^{\circ}\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
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
Performance Characteristics						
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	–	μV
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	–	μV

Pin Connection Diagram

