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NTE736
Integrated Circuit
FM IF Amp

Description:

The NTE736 is a high performance monolithic FM Gain Block using the planar epitaxial process. The FM gain block consist of a three stage direct coupled amplifier with 330Ω input and output terminations and the 7pF shunting capacitance required for a 10.7MHz FM IF strip utilizing commercially available ceramic filters. Included on the chip is a 7.8V active regulator providing up to 10mA of current to an external load such as an FM tuner.

The NTE736 features full temperature compensation for the IF amplifier and the 7.8V regulator. Excellent power supply rejection eliminates the need for an external regulated supply. An output from the second stage of the IF amplifier provides a means of external gain control without affecting the input or output terminations. The device is packaged in a 8–lead mini DIP.

Features:

- 50dB Voltage Gain at 10.7MHz
- 330Ω Input and Output Terminations
- Optimized Gain Vs. Temperature Characteristics
- Temperature Compensated 7.8V Active Regulator Providing up to 10mA of Current
- Short Circuit Protection for all External Connections

Absolute Maximum Ratings: (Note 1)

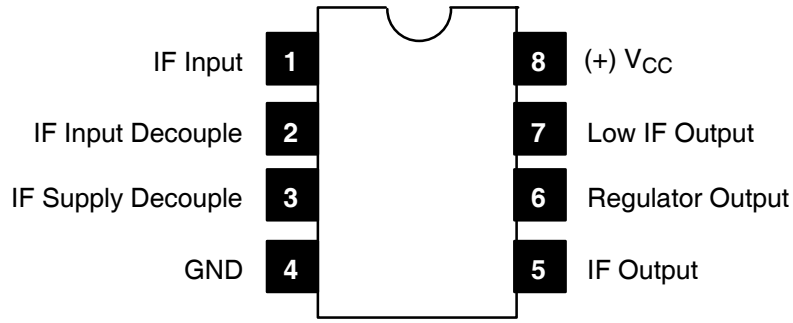
Supply Voltage, V+ 18V
Power Dissipation, P_D (Note 1) 430mW
Input Voltage (Pins 1 and 3) . . . . . ±3V
Regulator Output Current, I_{REG} 10mA
Regulator Short Circuit Duration . . . . . Indefinite
Operating Ambient Temperature Range, T_A . . . . . –40° to +85°C
Storage Temperature Range, T_{stg} . . . . . –55° to +125°C
Lead Temperature (Soldering, 10 seconds.) . . . . . +260°C

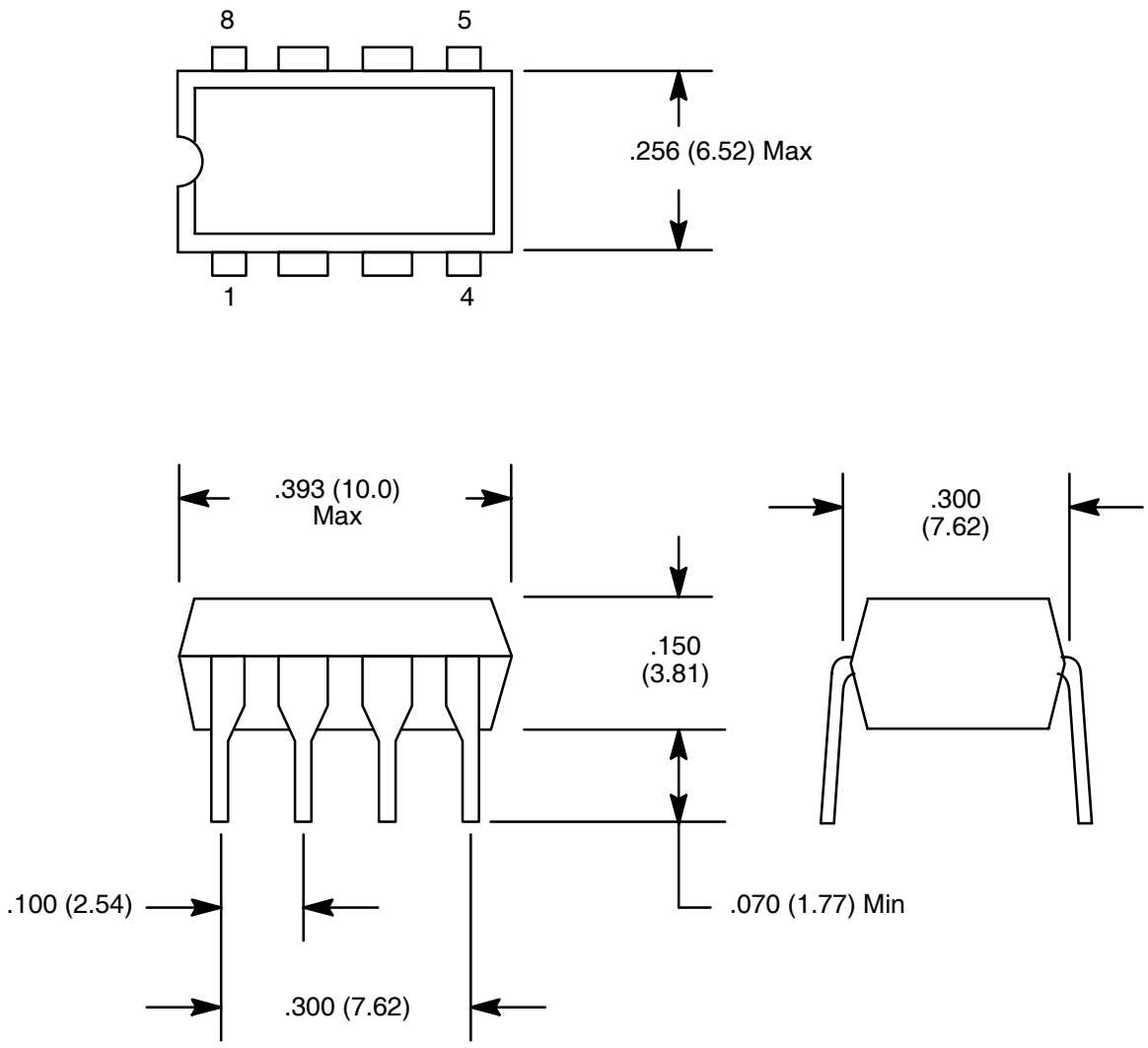
Note 1. Rating applies for ambient temperatures to 70°C. Above 70°C derate linearly at 6.3mW/°C

Electrical Characteristics: (T_A = +25°C, V+ = 24V unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
DC Characteristics					
Supply Voltage Operating Range		10	–	16	V
Supply Current	$R_L = \infty$	11	16	19	mA
Power Dissipation	$R_L = \infty$	–	190	230	mW
	I_L = 5mA	–	210	255	mW
Terminal Voltage Pin 1,2	I_L = 5mA	–	1.4	–	V
Pin 3		–	2.6	–	V
Pin 5		–	2.0	–	V
Pin 6		7.2	7.8	8.3	V
Pin 7		–	2.0	–	V
AC Characteristics IF Amplifier (f_o = 10.7MHz)					
–3dB Limiting Threshold		–	900	–	µV
Output Voltage Swing	V_{IN} = 100mV, $R_L = \infty$	1.1	1.4	–	V_{p-p}
Voltage Gain	V_{OUT} = 100mV	40	50	56	dB
Voltage Gain Change	–40°C ≤ T_A ≤ +25°C	–	6.0	–	dB
	+25°C ≤ T_A ≤ +85°C	–	1.0	–	dB
Input Impedance Parallel Input Resistance	Pin 1 to Pin 3	230	330	440	Ω
Parallel Input Capacitance		5.0	9.0	14	pF
Output Impedance Parallel Output Resistance	Pin 5 to Ground	230	330	440	Ω
Parallel Output Capacitance		5.0	9.0	14	pF
Output Noise Voltage		–	5.0	–	mV_{RMS}
AC Characteristics Regulator Section					
Line Regulation (V_6)	I_L = 5mA, V+ = 10V to 6V	–	3.0	30	mV
Load Regulation (V_6)	I_L = 0 to 5mA	–	–10	–	mV
Temperature Coefficent (V_6)	I_L = 5mA, –40°C ≤ T_A ≤ +85°C	–	–0.15	–	mV/°C

Pin Connection Diagram




8
5
.256 (6.52) Max
1
4
.393 (10.0)
Max
.300
(7.62)
.150
(3.81)
.100 (2.54)
.070 (1.77) Min
.300 (7.62)