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NTE737
Integrated Circuit
FM IF Amplifier/Limiter & Quadrature Detector

Description:

The NTE737 is a FM IF amplifier/limiter and quadrature detector and is used wherever AFC stability and off–station noise are important considerations. The device consists of a three–stage IF amplifier/limiter, a quadrature FM detector, an emitter–follower audio output stage, and a regulated power supply capable of furnishing up to 20mA to external circuitry.

Features:

- Single Tuning Coil Design
- Good Line and Load Regulation
- Low Harmonic Distortion
- Good Sensitivity
- Excellent A–M Rejection
- 400mV Recovered Audio at 10.7MHz
- 14–Pin Dual In–Line Package

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Operating Temperature Range, T_{opr} . . . . . –40° to +85°C

Storage Temperature Range, T_{stg} . . . . . –65° to +150°C

Electrical Characteristics: (T_A = +25°C, V_{CC} = +12V, unless otherwise specified)

Parameter	Symbol	Test Pin	Test Conditions	Min	Typ	Max	Unit
Supply Current	I_{CC}	3	No Load at Pin 13	12	17	23	mA
Terminal Voltage	V_1	1		3.0	3.8	4.6	Ω
	V_2	2		–	3.65	–	kΩ
	V_6	6		–	1.45	–	V
	V_9	9		125	150	180	mV
	V_{10}	10		1.25	1.45	1.65	V
	V_{REG}	13	I_{13} = 5mA	7.2	7.8	8.3	V
Resistance, Detector Output	R_1	1		–	200	–	Ω
I–F Input	R_4	4		–	5.0	–	kΩ
I–F Output	R_{10}	10		–	60	–	Ω
Detector Input	R_{12}	12		–	70	–	kΩ
Power Supply	R_{13}	13		–	4.0	–	Ω
De–Emphasis	R_{14}	14		8.4	10.5	12.6	kΩ

Electrical Characteristics (Cont'd): (T_A = +25°C, V_{CC} = +12V, unless otherwise specified)

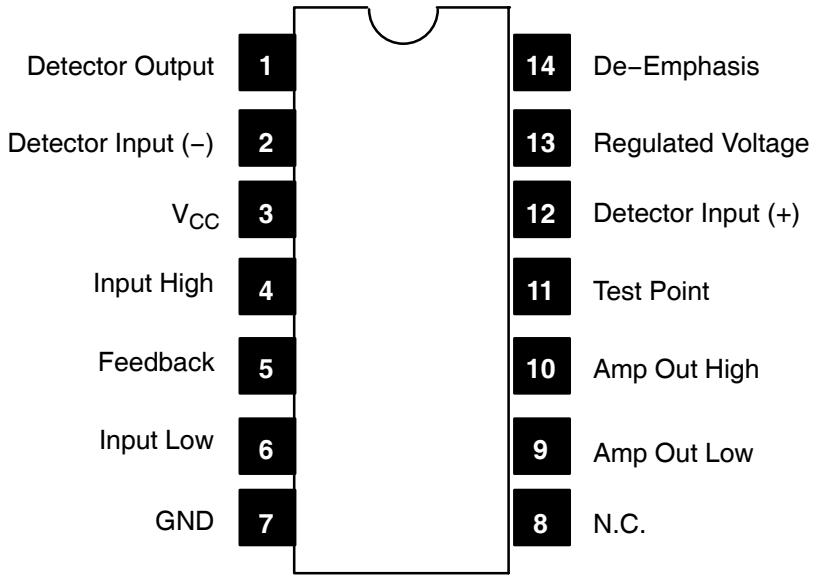
Parameter	Symbol	Test Pin	Test Conditions	Min	Typ	Max	Unit
Capacitance I–F Input	C_4	4		–	11	–	pF
Detector Input	C_{12}	12		–	2.7	–	pF
Voltage Regulation		13	I_{13} = 20mA	–	5.0	10	mV/V
Load Regulation		13	I_{13} = 0 to 20mA	–	–30	–	mV
Voltage Temp. Coefficient		1		–	+1.5	–	mV/°C
		13	I_{13} = 0	–	+1.5	–	mV/°C
Dynamic Characteristics (T_A = +25°C, V_{CC} = +12V, f_o = 10.7MHz, f_m =400Hz, Δf = ±75kHz, Peak Separation = 600kHz)							
Amplifier Voltage Gain	A_e	10	$V_{in} \leq 300\mu V_{rms}$	–	53	–	dB
Amplifier Output Voltage	V_{out}	10	V_{in} = 10mV_{rms}	–	1.45	–	V_{pp}
Input Limiting Threshold (Note 1)	V_{TH}	4		–	400	800	μV_{rms}
Recovered Audio Output	V_{out}	1	V_{12} = 60mV_{rms}	300	400	500	mV_{rms}
Output Distortion	THD	1	100% F–M Modulation	–	1.0	3.0	%
A–M Rejection (Note 2)	AMR	1	V_{in} = 10mV_{rms}	–	40	–	dB

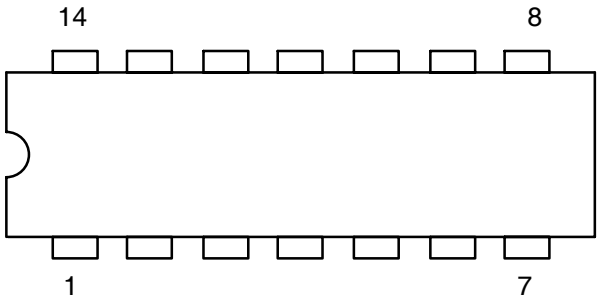
Note 1. The input imiting threshold is the F–M input voltage for a recovered audio output which is 3dB less than the recovered audio output for an F–M input voltage of 200mV_{rms}

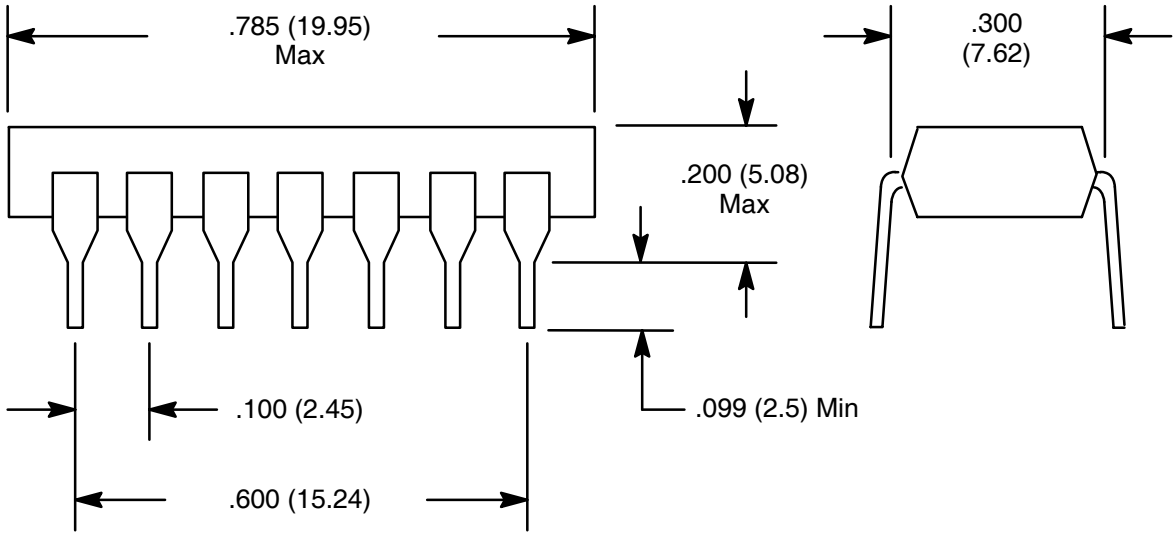
Note 2. The amplitude modulation rejection is determined by:

$$AMR_{dB} = 20\log \frac{V_{out} \text{ for 100\% F–M } V_{in}}{V_{out} \text{ for 30\% A–M } V_{in}}$$

Pin Connection Diagram




14
8
1
7


.785 (19.95)
Max
.300
(7.62)
.200 (5.08)
Max
.100 (2.45)
.099 (2.5) Min
.600 (15.24)