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NTE832 & NTE832SM
Integrated Circuit
Tone Decoder

Description:

The NTE832 and NTE832SM are general purpose tone decoders designed to provide a saturated transistor switch to GND when an input signal is present within the passband. The circuit consists of an I and Q detector driven by a voltage controlled oscillator which determines the center frequency of the decoder. External components are used to independently set center frequency, bandwidth, and output delay.

Features:

- Logic Compatible Output with 100mA Current Sinking Capability
- Bandwidth Adjustment from 0 to 14%
- Inherent Immunity to False Signals
- High Stable Center Frequency
- High Rejection of Out–Of–Band Signals and Noise
- Center Frequency Adjustable from 0.01Hz to 500kHz
- Frequecny Range Adjustable over 20:1 range by an External Resistor
- Available in Standard 8–Lead DIP (NTE832) and Surface Mount SOIC–8 (NTE832SM)

Applications:

- Touch Tone Decoder
- Precision Oscillator
- Frequency Monitoring and Control
- Wide Band FSK Demodulation
- Communications Paging Decoders
- Carrier Current Remote Controls
- Ultrasonic Controls (Remote TV, etc.)

Absolute Maximum Ratings:

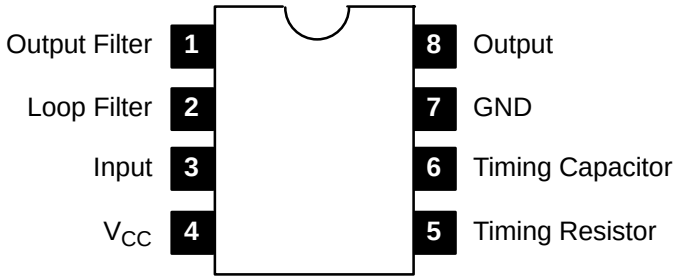
Operating Voltage, V_{CC} 10V
Input Voltage, V_{IN} . . . . . –10V to V_{CC} +0.5V
Output Voltage, V_O 15V
Power Dissipation (Note 1), P_D 300mW
Operating Temperature Range, T_{opr} . . . . . 0° to +70°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C

Note 1. The maximum junction temperature of these devices is +100°C. For operating at elevated temperatures, devices must be derated on a thermal resistance of +187°C/W, junction–to–ambient.

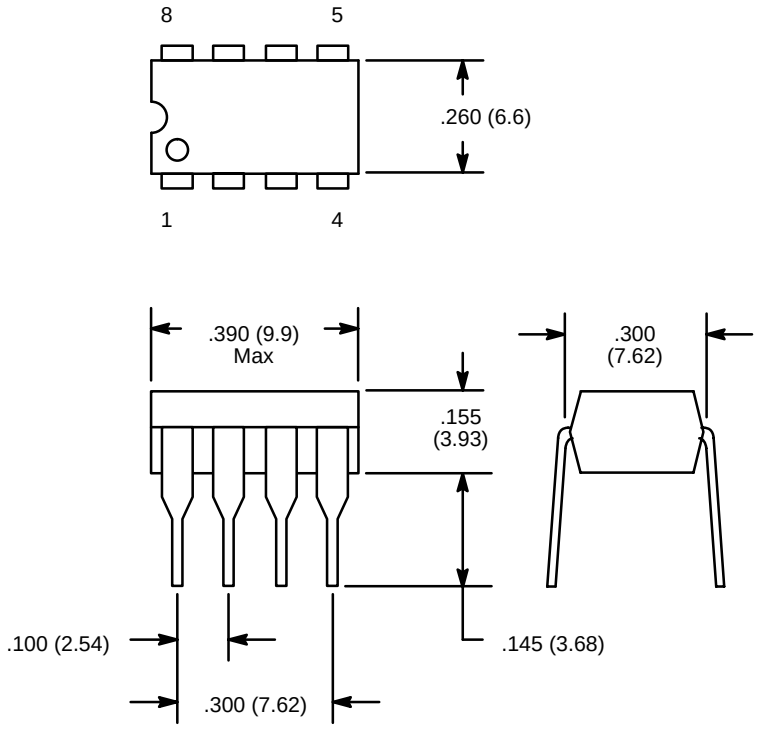
Electrical Characteristics: (V_{CC} = 5V, T_A = +25°C, unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
Power Supply Voltage		4.75	5.00	9.00	V
Power Supply Current, Quiescent	R_L = 20kΩ	–	7	10	mA
Power Supply Current, Activated		–	12	15	mA
Quiescent Power Dissipation		–	35	–	mW
Input Resistance		15	20	25	kΩ
Smallest Detectable Input Voltage	I_L = 100mA, $f_i = f_o$	–	20	25	mV_{rms}
Largest No Output Input Voltage	I_C = 100mA, $f_i = f_o$	10	15	–	mV_{rms}
Largest Simultaneous Outband Signal to Inband Signal Ratio	R_L = 20kΩ	–	+6	–	dB
Minimum Input Signal to Widband Noise Ratio	B_n = 140kHz	–	–6	–	dB
Largest Detection Bandwidth		10	14	18	% of f_o
Largest Detection Bandwidth Skew		–	2	3	% of f_o
Largest Detection Bandwidth with Variation with Temperature		–	±0.1	±0.5	%/°C
Largest Detection bandwidth with Variation with Supply Voltage	4.75V to 6.75V	–	±1	±5	%/V
Highest Center Frequency	R_L = 20kΩ	100	500	–	kHz
Center Frequency Stability	0° < T_A , +70°C	–	35±60	–	ppm/°C
	–55° < T_A < +125°C	–	35±140	–	ppm/°C
Center Frequency Shift with Supply Voltage	4.75V to 6.75V	–	0.4	2.0	%/V
Fastest ON–OFF Cycling Rate		–	f_o/20	–	
Output Leakage Current	V_8 = 15V	–	0.01	25.0	µA
Output Saturation Voltage	e_i = 25mV, I_8 = 30mA	–	0.2	0.4	V
	e_i = 25mV, I_8 = 100mA	–	0.6	1.0	V
Output Fall Time		–	30	–	ns
Output Rise Time		–	150	–	ns

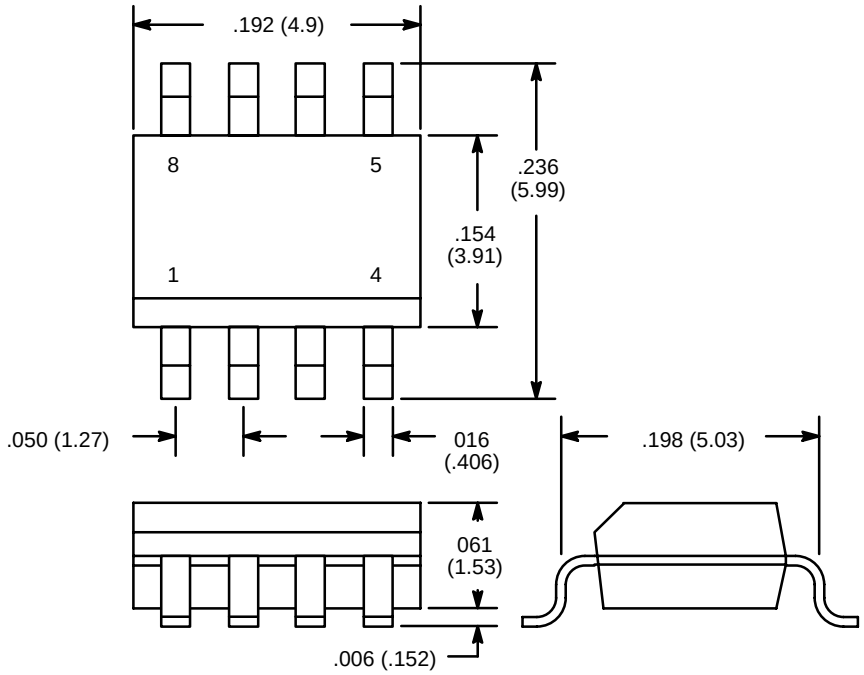
Pin Connection Diagram



NTE832 (8–Lead DIP)



NTE832SM (SOIC–8)



NOTE: Pin1 on Beveled Edge