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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
- Frequency 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:

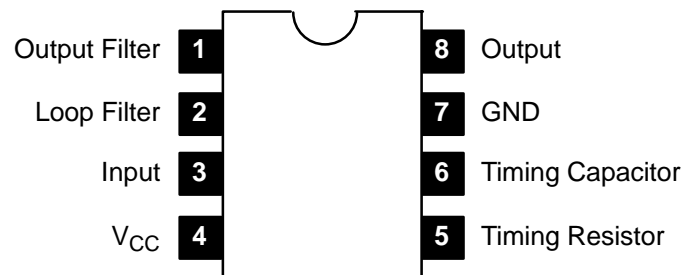
Operating Voltage, V_{CC}	10V
Input Voltage, V_{IN}	-10V to $V_{CC} + 0.5V$
Output Voltage, V_O	15V
Power Dissipation (Note 1), P_D	300mW
Operating Temperature Range, T_{opr}	0° to +70°C
Storage Temperature Range, T_{stg}	-65° to +150°C

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.

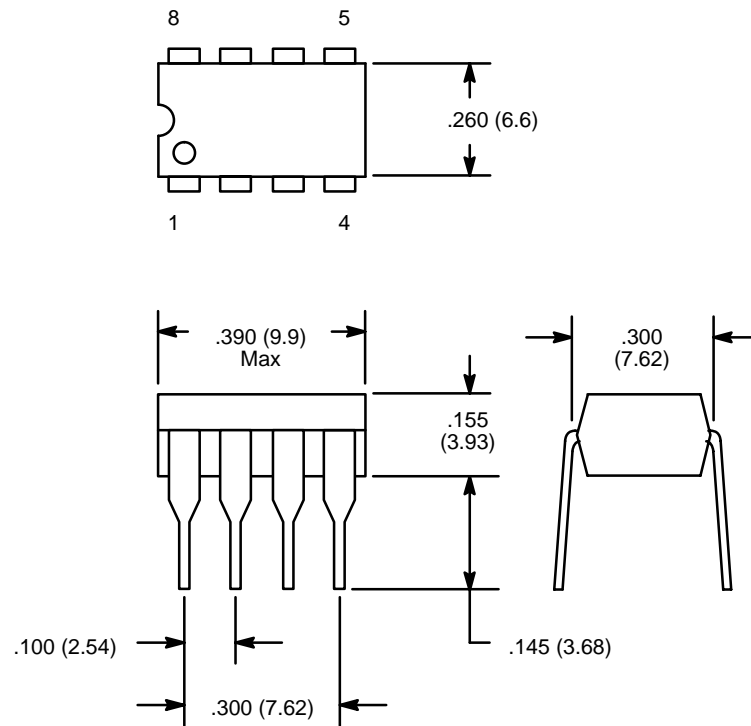
Electrical Characteristics: ($V_{CC} = 5V$, $T_A = +25^\circ C$, unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
Power Supply Voltage		4.75	5.00	9.00	V
Power Supply Current, Quiescent	$R_L = 20k\Omega$	–	7	10	mA
Power Supply Current, Activated		–	12	15	mA
Quiescent Power Dissipation		–	35	–	mW
Input Resistance		15	20	25	$k\Omega$
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	$R_L = 20k\Omega$	–	+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	%/ $^\circ C$
Largest Detection bandwidth with Variation with Supply Voltage	4.75V to 6.75V	–	± 1	± 5	%/V
Highest Center Frequency	$R_L = 20k\Omega$	100	500	–	kHz
Center Frequency Stability	$0^\circ < T_A, +70^\circ C$	–	35 ± 60	–	ppm/ $^\circ C$
	$-55^\circ < T_A < +125^\circ C$	–	35 ± 140	–	ppm/ $^\circ C$
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	$V_g = 15V$	–	0.01	25.0	μA
Output Saturation Voltage	$e_i = 25mV$, $I_g = 30mA$	–	0.2	0.4	V
	$e_i = 25mV$, $I_g = 100mA$	–	0.6	1.0	V
Output Fall Time		–	30	–	ns
Output Rise Time		–	150	–	ns

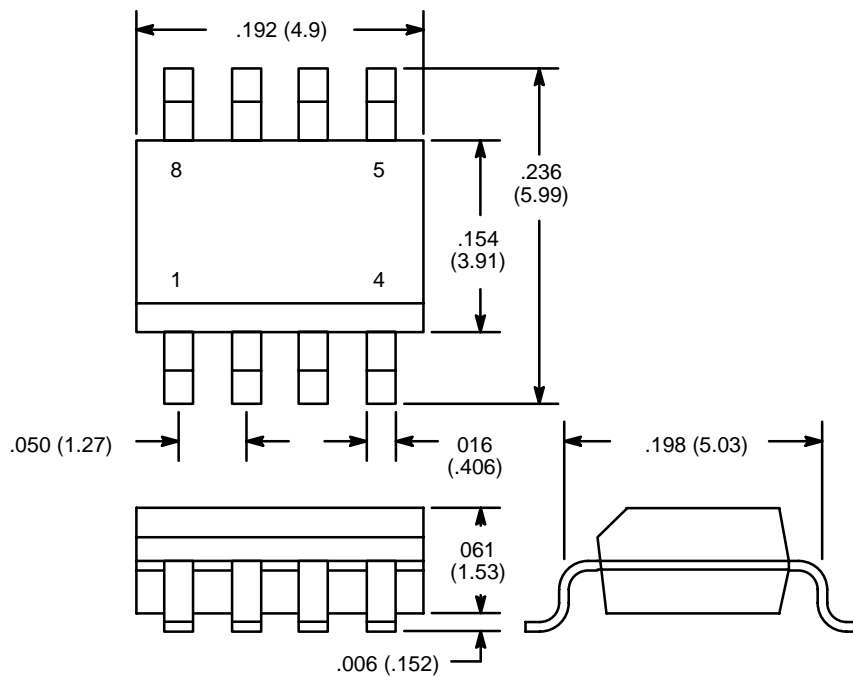
Pin Connection Diagram



NTE832 (8-Lead DIP)



NTE832SM (SOIC-8)



NOTE: Pin1 on Beveled Edge