

TONE DECODER

The LM567C is a monolithic phase locked loop system designed to provide a saturated transistor switch to GND, when an input signal is present within the passband. External components are used to independently set center frequency bandwidth and output delay.

FEATURES

- Wide frequency range (0.01Hz — 500kHz).
- Bandwidth adjustable from 0 to 14%
- Logic compatible output with 100mA current sinking capability.
- Inherent immunity to false signals.
- High rejection of out-of-band signals and noise.
- Frequency range adjustable over 20:1 range by an external resistor.

APPLICATIONS

- Touch Tone Decoder
- Wireless Intercom.
- Communications paging decoders
- Frequency monitoring and control.
- Ultrasonic controls (remote TV etc.)
- Carrier current remote controls.
- Precision oscillator.

BLOCK DIAGRAM

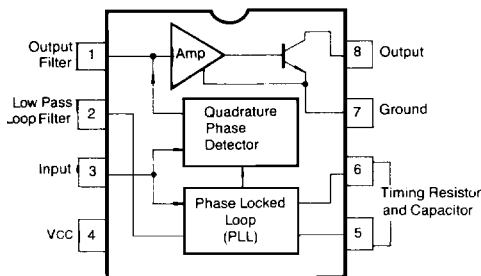
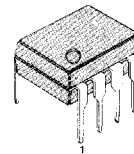
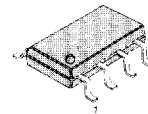


Fig. 1

8 DIP



8 SOP



ORDERING INFORMATION

Device	Package	Operating Temperature
LM567CN	8 DIP	0 ~ +70°C
LM567CD	8 SOP	

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Value	Unit
Operating Voltage	V_{CC}	10	V
Input Voltage	V_{IN}	$-10 \sim V_{CC} + 0.5$	V
Output Voltage	V_O	15	V
Power Dissipation	P_d	300	mW
Operating Temperature	T_{opr}	$0 \sim +70$	$^\circ\text{C}$
Storage Temperature	T_{stg}	$-65 \sim +150$	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS

($V_{CC} = 5.0\text{V}$, $T_a = 25^\circ\text{C}$ unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Operating Voltage Range	V_{CC}		4.75	5.0	9.0	V
Supply Current Quiescent	I_{CC-1}	$R_L = 20\text{K}$	2.0	7	10	mA
Supply Current Activated	I_{CC-2}		5.0	12	15	mA
Quiescent Power Dissipation	P_{OD}			35		mW
Highest Center Frequency	H_{FO}	$R_L = 20\text{K}$ 0°C to 70°C	100	500		KHz
Center Frequency Stability	F_{SE}			± 60		ppm/ $^\circ\text{C}$
Center Frequency Shift With Supply Voltage	F_{CS}			0.7	2	%/V
Largest Detection Bandwidth	B.W		10	14	18	% of f_o
Largest Detection B.W Skew	B.Ws			2	3	% of f_o
Largest Detection Bandwidth Variation With Supply Voltage	B.Wv			± 2	± 5	%/V
Largest Detection Bandwidth Variation With Temperature	B.Wt			± 0.1		%/ $^\circ\text{C}$
Input Resistance	R_{IN}			20		Kohm
Smallest Detectable Input Voltage	V_{IN-1}	$I_L = 100\text{mA}$, $f_i = f_o$		20	25	mVrms
Largest No Output Input Voltage	V_{IN-2}		10	15		mVrms
Greatest Simultaneous Outband Signal To Inband Signal Ratio	S1/Sd	$R_L = 20\text{k}$ $V_{IN} = 300\text{mV}_{RMS}$ $f_i = f_o = 100\text{KHz}$ $f_{i1} = 140\text{KHz}$ $f_{i2} = 60\text{KHz}$		+ 6		dB
Minimum Input Signal to Wideband Noise Ratio	S2/Sd			- 6		dB
Fastest On-Off Cycling Rate	F_{OUT}	$R_L = 20\text{K}$ $V_{IN} = 25\text{mV}_{RMS}$		$f_o/20$		
Output Leakage Current	I_{CO}			0.01	25	μA
Output Saturaton Voltage	V_{SAT-1}	$I_L = 30\text{mA}$, $V_{IN} = 25\text{mVrms}$ $I_L = 100\text{mA}$, $V_{IN} = 25\text{mVrms}$		0.2	0.4	V
	V_{SAT-2}			0.6	1.0	V
Output Fall Time	T_F	$R_L = 50$ $R_L = 50$		30		nS
Output Rise Time	T_R			150		nS

AC TEST CIRCUIT

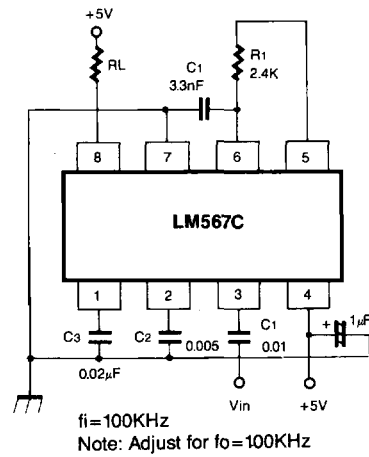


Fig. 2