AUK Semiconductor

S567P

TONE DECODER

Description

The S567 is general purpose tone decoders designed to provide a saturated transistor switch to ground when an input signal is present within the passband.

Features

- Logic compatible output with 100mA current sinking capability
- 20 to 1 frequency range with an external resistor
- Bandwidth adjustable from 0 to 14%
- High rejection of out of band signals and noise.
- Immunity to false signals
- Highly stable center frequency
- Center frequency adjustable from 0.01Hz to 500KHz

Applications

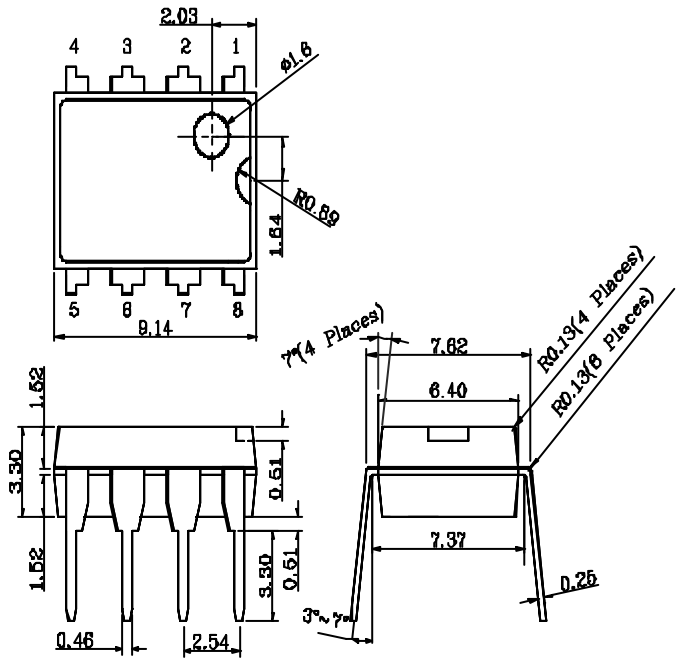
- Touch tone decoding
- Frequency monitoring and control
- Ultrasonic controls
- Communications paging decoders
- Precision oscillator
- Wide band FSK demodulation
- carrier current remote controls

Ordering Information

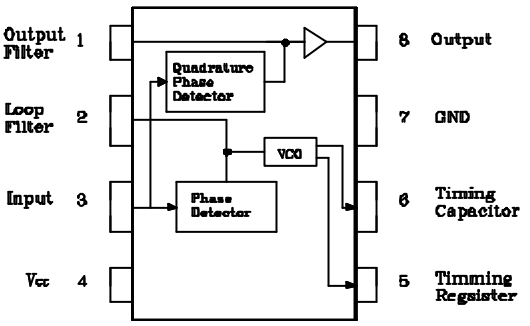
Type NO.	Marking	Package Code
S567P	S567P	DIP-8

Outline Dimensions

unit : mm



¨ **Block Diagram**



Absolute Maximum Ratings

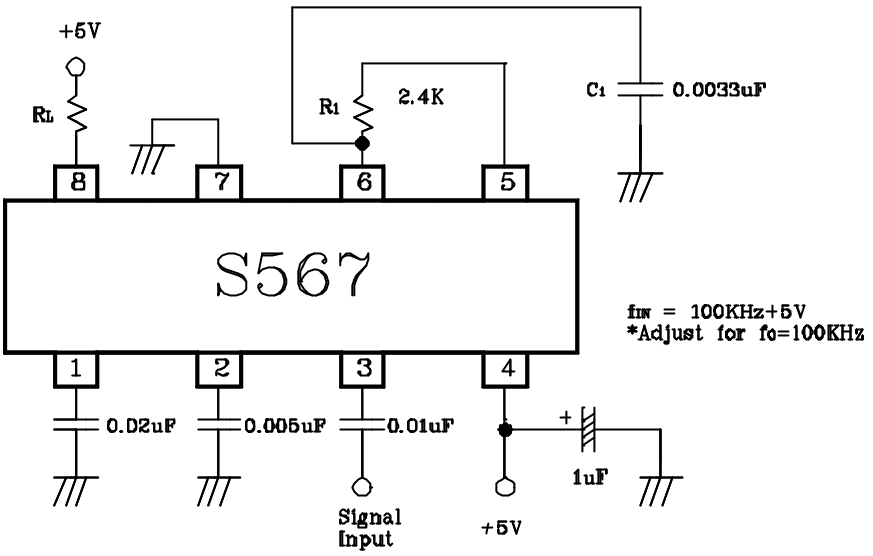
Characteristic	Symbol	Ratings	Unit
Supply Voltage	V_{IN}	10	V
Power Dissipation	P_D	300	mW
V_8	-	15	V
V_3	-	-10	V
V_3	-	V_8+0.5	V
Storage Temperature	T_{stg}	-55 ~ +150	℃

Electrical Characteristics

(※ AC Test Circuit, Ta=25℃, V_{CC}= 5V)

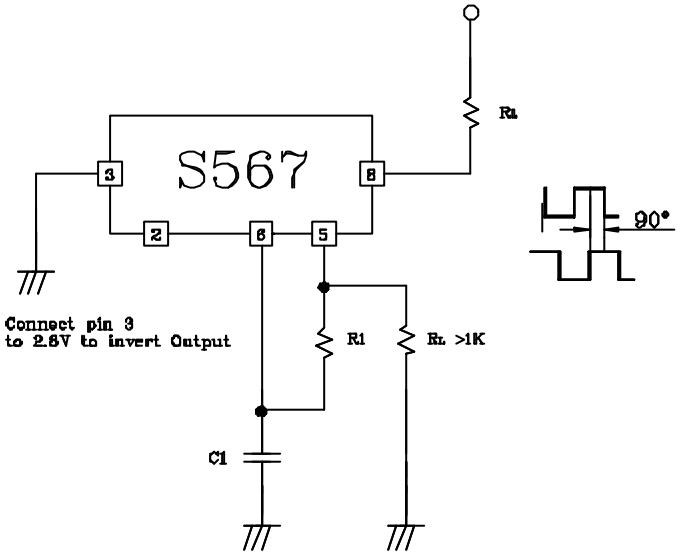
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Power Supply Voltage Range	V_{CC}	-	4.75	5	9	V
Power Supply Current Quiescent	I_{CCQ}	R_L=20KΩ	-	6	8	mA
Power Supply Current Activated	I_{CC}	R_L=20KΩ	-	11	13	mA
Input Resistance	R_{IN}	-	15	20	25	KΩ
Smallest Detectable Input Voltage	V_{IN-1}	I_L=100mA, f=f_O	-	20	25	mV_{rms}
Largest No Output Input Voltage	V_{IN-2}	I_C=100mA, f=f_O	10	15	-	mV_{rms}
Largest Simultaneous Outband Signal to Inband Signal Ratio	S_I/S_O	-	-	6	-	dB
Minimum Input Signal to Wideband Noise Ratio	S/N	B_n = 140KHz	-	-6	-	dB
Largest Detection Bandwith	B.W	-	10	14	18	%of fo
Largest Detection Bandwith Skew	$B.W_S$	-	-	2	3	%of fo
Largest Detection Bandwith Variation With Temperature	$B.W_T$	-	-	±0.1	±0.25	%1℃
Largest Detection Bandwith Variation With Supply Voltage	$B.W_V$	4.75V ~ 6.75V	-	±1	±2	%/V
Highest Center Frequency	f_{O-H}	-	100	500	-	KHz
Center Frequency Stability	f_{O-S}	0℃< T_a <70℃	-	35±60	-	ppm/℃
		-55℃< T_a <+125℃	-	35±140	-	ppm/℃
Center Frequency Shift with Supply Voltage	f_{O-V}	4.75V ~ 6.75V	,-	0.5	2	%/V
Fastest ON-OFF Cycling Rate	CR_{ON-OFF}	-	-	f_O/20	-	-
Output Leakage Current	I_{LEAK}	V_8=15V	-	0.01	25	uA
Output Saturation Voltage	V_{SAT}	V_{IN}=25mV_{rms}, I_8=30mA	-	0.2	0.4	V
		V_{IN}=25mV_{rms}, I_8=100mA	-	0.6	1	V
Output Fall Time	t_F	-	-	30	-	ns
Output Rise Time	t_R	-	-	150	-	ns

TEST Circuit

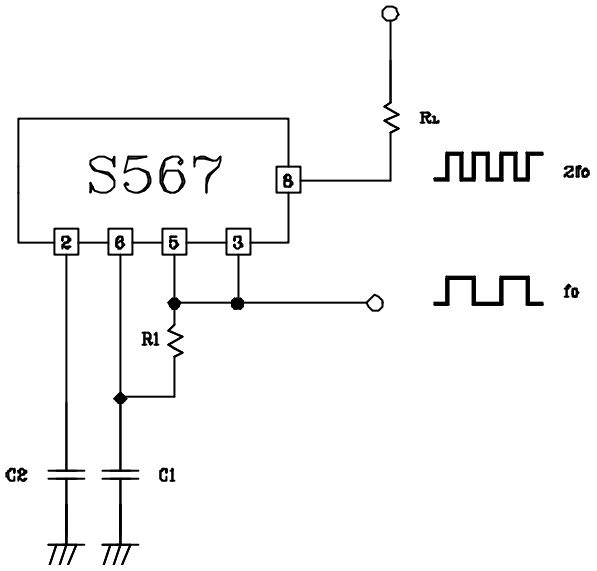


Applications

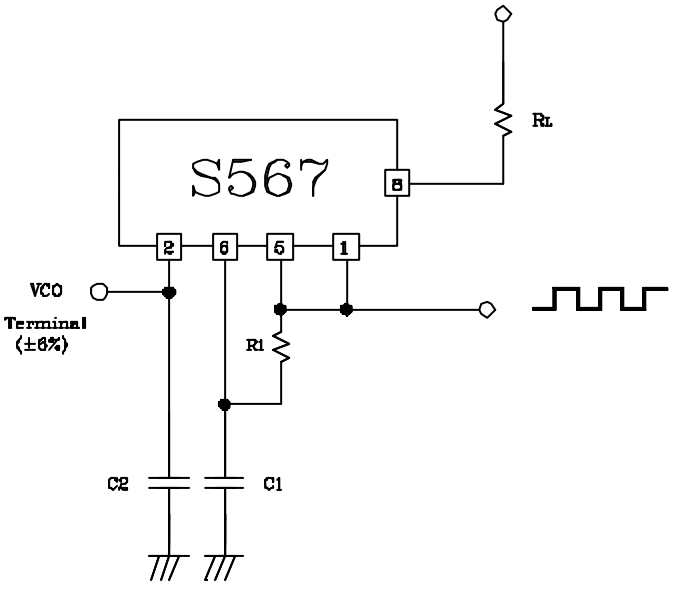
1. Oscillator with Quadrature Output



2. Oscillator with Double Frequency Output



3. Precision Oscillator to switch 100mA Loads



The center frequency of the tone decoder is equal to the free running frequency of the VCO.

This is given by $f_o = 1/(1.1R_1C_1)$

The bandwidth of the filter may be found from the approximation

$B.W = 1070(\sqrt{V_{IN} / f_0 C_2})$ in % of f_O

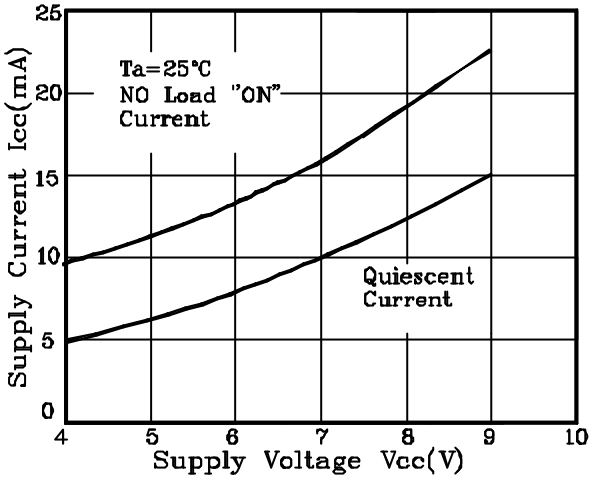
Where

V_{IN} = Input voltage(Volts $_{rms}$), $V_{IN} \leq 200mV$

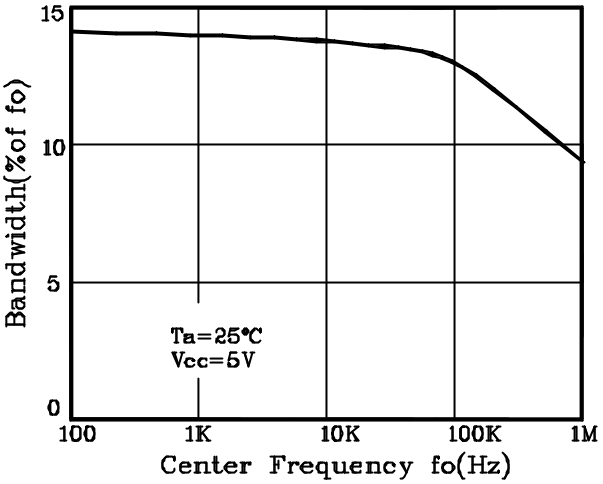
C_2 = Capacitance at pin2(uF)

Electrical Characteristic Curves

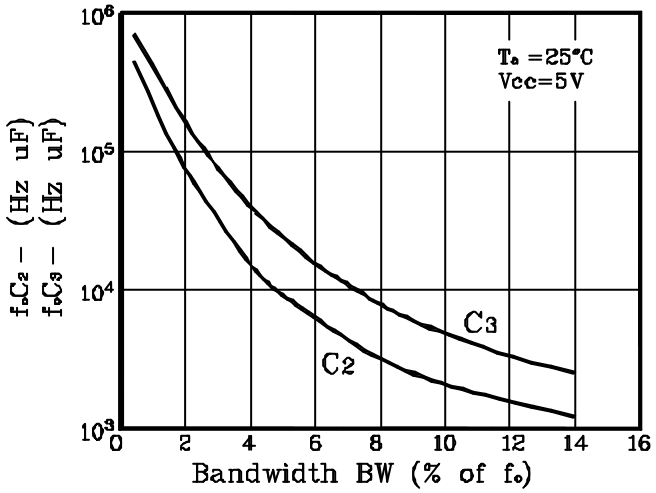
1. I_{CC} - Vcc



2. BW - f_O



3. BW (C_2,C_3 Function)



4. V_{IN} - BW