

9325812 UNITED MICROELECTRONICS

92D 00613 D7-77-13

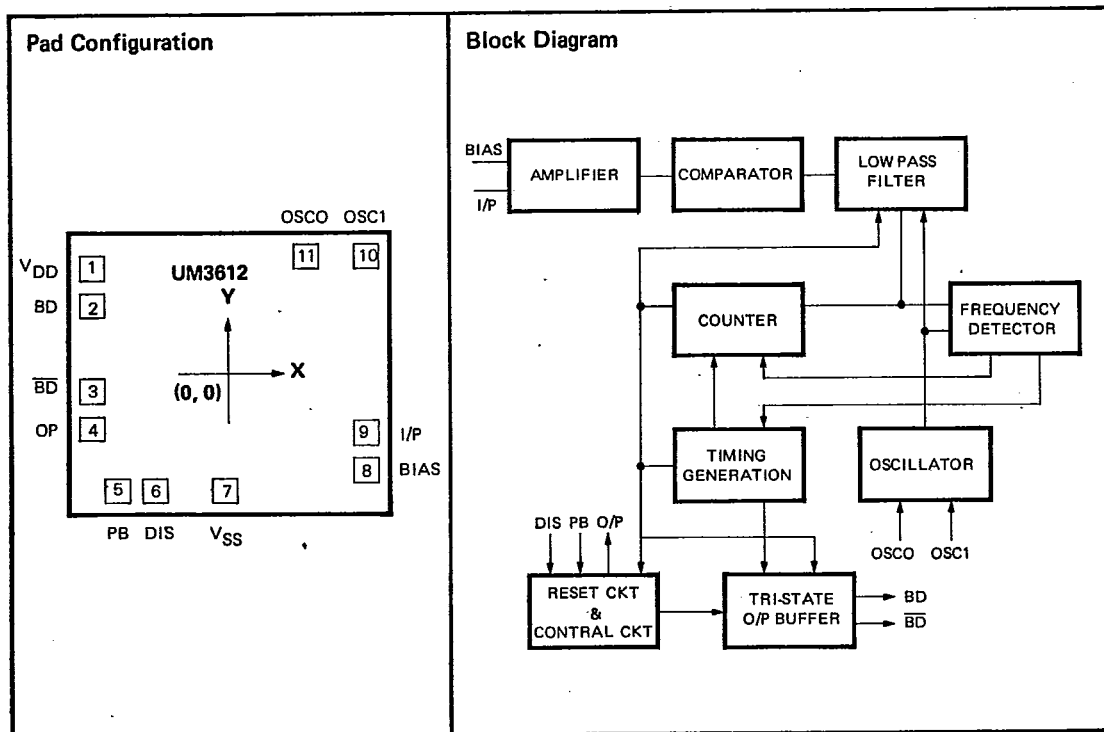
**UM3612****Voice Control (Whistle)****Features**

- Typical 3V operating voltage and low stand-by current
- Bi sounds 8 times per successful whistle
- Piezo direct drive capability (push-pull)
- RC oscillator with one external resistor
- On-chip analog signal amplifiers
- Use of whistle for controlling
- Adjustable tracking frequency
- High input sensitivity

General Description

The UM3612 is a CMOS LSI circuit which contain analog signal amplifiers and frequency detector for generating output signal.

CMOS technology used to produce these devices results in very low power consumption. A compact detector module can be constructed with a few external components.



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D7-77-13



UM3612

Absolute Maximum Ratings*

Supply Voltage -0.3V to +5.0V
 Applied Voltage at any Pin
 $V_{SS} - 0.3V$ to $V_{DD} + 0.3V$
 Ambient Temperature under Bias -10°C to 60°C
 Storage Temperature -55°C to 125°C

***Comments**

Stress above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Electrical Characteristics

($V_{SS} = 0V$, $T_A = 25^\circ C$, $F_{OSC} = 18KHz$, unless otherwise specified.)

Parameter	Symbol	Min.	Typ.	Max.	Conditions
Operating Voltage	V_{DD}	2.7V	3V	3.3V	
Operating Current	I_{DD}	—	—	100 μA	$V_{DD} = 3V$ No Load
Stand-by Current	I_{STB}	—	5 μA	10 μA	$V_{DD} = 3V$
I/P Sensitivity	V_{SEN}	—	10mV _{pp}	—	@ $f_{in} \cong 1.5KHz$
Effective I/P Frequency	$F_{I/P}$	1.5KHz	—	2KHz	$F_{OSC/9} \sim F_{OSC/12}$
Disable Sink Current	I_{DS}	1 μA	—	—	$V_{DD} = 3V$, $V_{DIS} = 3V$
PB Drive Current	I_{PD}	1 μA	—	—	$V_{DD} = 3V$, $V_{PB} = 0V$
BD Drive Current ($\overline{BD}$)	I_{BD}	1mA	—	—	$V_{DD} = 3V$, $V_{BD} = 2.4V$
BD Sink Current ($\overline{BD}$)	I_{BD}	1mA	—	—	$V_{DD} = 3V$, $V_{BD} = 0.6V$

Pad Description

Pad No.	Designation	Description
1	V_{DD}	Positive power supply
2	BD	Bi-Bi output 1
3	$\overline{BD}$	Bi-Bi output 2
4	O/P	A negative pulse will be produced when the I/P pad senses effective frequency
5	PB	A positive going edge applied to this pad the device will produce output flag if I/P pad disable.
6	DIS	I/P pad disable if DIS pad connected to V_{DD}
7	V_{SS}	Negative power supply
9	I/P	Piezo buzzer input
10	OSCI	RC oscillator pad
11	OSCO	RC oscillator pad or inverted clock output

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92D 00615

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UM3612

Function Description

Oscillating Circuit

Frequency is generated by an astable multivibrator which depends on an on-chip capacitor and a resistor connected between OSCO pad and OSC1 pad. Frequency is usually 18KHz.

Modulator Circuit

The input signal is put through the Amplifier and comparator circuit, and the relation between input waveform and output waveform is shown in Fig. 1.

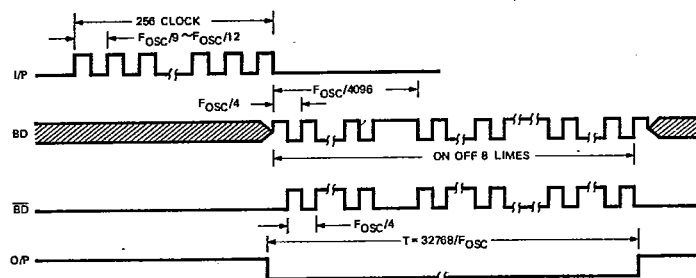


Figure 1. Waveform at I/P and O/P

Test Circuit

The signal of desired frequency ($F_{OSC}/8 - F_{OSC}/12$) is input to I/P pin of the device. ($F_{OSC} = 18\text{KHz}$). The test

circuit is shown in Fig. 2.

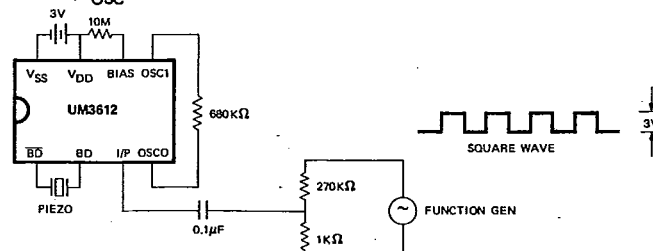
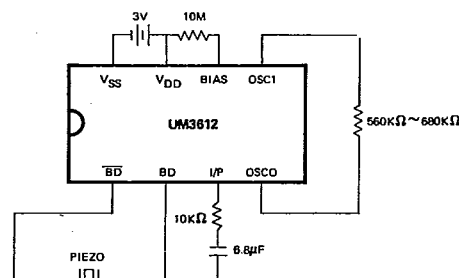
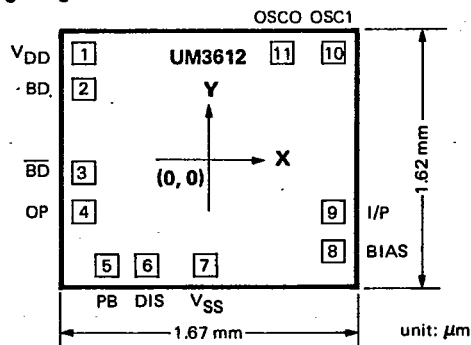


Figure 2. Test Circuit

Application Circuit



Bonding Diagram



Pad No.	Designation	X	Y
1	VDD	17780	16510
2	BD	10414	15824.2
3	BD	-5842	16510
4	OP	-12293.6	15824.2
5	PB	-17780	12700
6	DIS	-17780	7620
7	VSS	-17780	2844.8
8	BIAS	-17780	-16560.8
9	I/P	-12700	-16611.6
10	OSC1	17780	16916.4
11	OSCO	17780	11836.4