UMC

UM3763

Voice Control(Whistle)

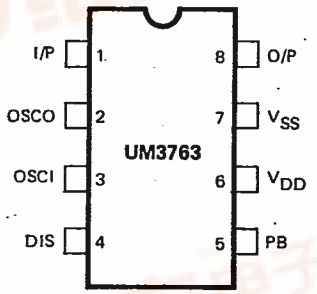
Features

- Typical 3V operating voltage
- A motor can be driven by connecting an NPN transistor
- RC Oscillator with one external resistor
- On-chip analog signal amplifiers
- Use of whistle for controlling
- The output state will change when the device senses effective frequency

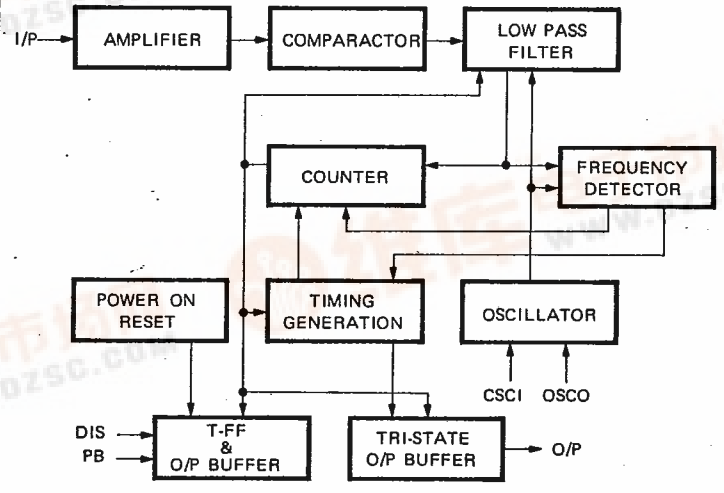
General Description

The UM3763 is a CMOS LSI circuit which contains analog signal amplifiers and frequency detector for driving motor. It is designed for use in electronic devices and other similar applications. It is packaged with 8 pins DIP.

Pin Configuration



Block Diagram



Absolute Maximum Ratings*

DC 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°C, F_{OSC} = 18 KHz, unless otherwise specified.)

Parameter	Symbol	Min.	Typ.	Max.	Conditions
Operating Voltage	V_{DD}	2.7V	3V	3.3V	
Operating Current	I_{DD}	–	–	100μA	V_{DD} = 3V No Load
Stand-by Current	I_{STB}	–	–	50μA	V_{DD} = 3V
I/P Sensitivity	V_{SEN}	–	10m V_{PP}	–	@ fin ≅ 1.2 KHz
Effective I/P Frequency	$F_{I/P}$	1.2 KHz	–	1.8 KHz	$F_{OSC}/10 \sim F_{OSC}/15$
Disable Sink Current	I_{DS}	1μA	–	–	V_{DD} = 3V V_{DIS} = 3V
PB Drive Current	I_{PD}	1μA	–	–	V_{DD} = 3V V_{PS} = 0V
O/P Drive Current	I_{OD}	400μA	–	–	V_{DD} = 3V $V_{O/P}$ = 2.4V
O/P Sink Current	I_{OS}	400μA	–	–	V_{DD} = 3V $V_{O/P}$ = 0.6V

Functional Description

Oscillating Circuit

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

Modulator Circuit

The input signal is put through the amplifier and comparactor circuit. The relation between input waveform and output waveform is shown in Fig. 1.

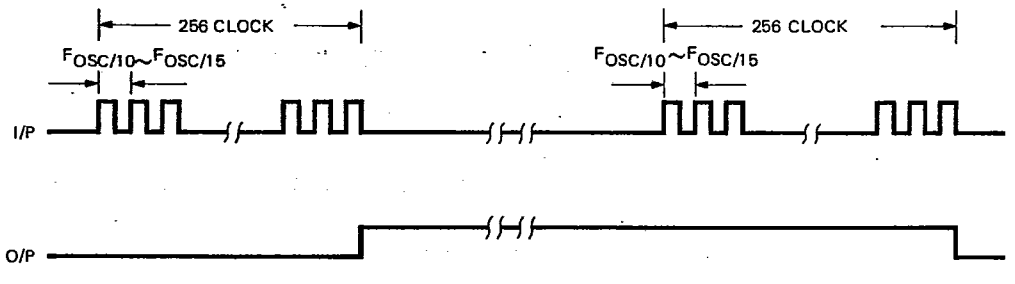


Figure 1. Waveform at I/P and O/P

Pin Description

Pin No.	Designation	Description
1	I/P	Piezo buzzer input
2	OSCO	RC oscillator pin or inverted clock output
3	OSCI	RC oscillator pin
4	DIS	I/P pin is disabled if DIS pin is connected to V_{DD}
5	PB	When negative going edge is applied to this pin, the device will generate output flag if I/P pin is disabled
6	V_{DD}	Positive power supply
7	V_{SS}	Negative power supply
8	O/P	The output state will change when the I/P pin senses effective frequency

Test Circuit

The signal of desired frequency ($F_{OSC}/10-F_{OSC}/15$) is input to I/P pin of the device (F_{OSC} = 18 KHz). The test circuit is shown in Fig. 2.

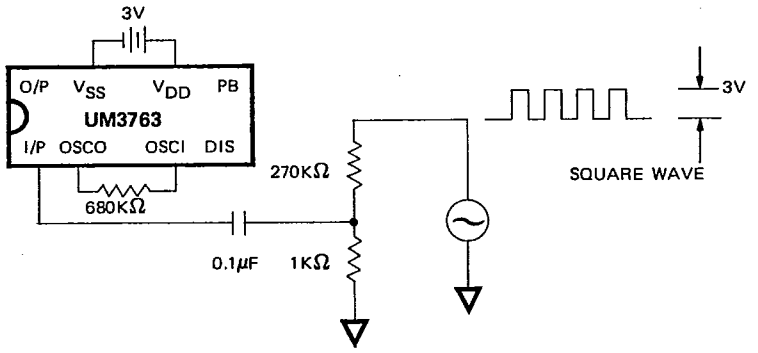
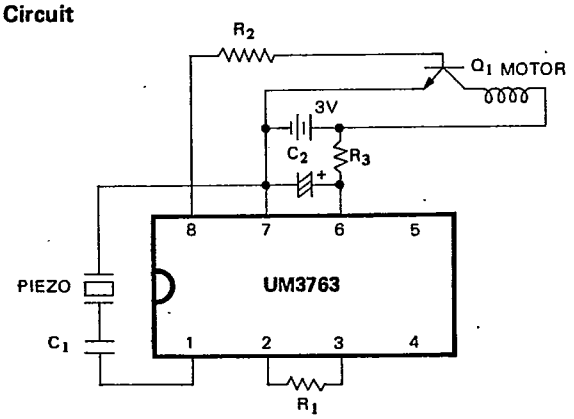


Figure 2. Circuit

Application Circuit



C_1 = 6.8nF
C_2 = 10μF
R_1 = 560KΩ~680KΩ
R_2 = 1.5KΩ~2.2KΩ
R_3 = 220Ω
Q_1 = NPN Transistor 8050