

■ INTRODUCTION

SN65031 is a 31 seconds two-channel single chip voice synthesizer IC which contains a PWM Direct Drive Circuit and fixed current D/A output. There are two 4-bit I/O ports and built in a tiny controller. By programming through the tiny controller, user's applications including section combination, trigger modes, output status, and other logic functions can be easily implemented.

■ FEATURES

- ◆ Single power supply 2.4V – 5.1V
- ◆ 31 seconds voice capacity is provided
- ◆ Built in a tiny controller
- ◆ Two 4-bit I/O ports are provided
- ◆ 64*4 bits RAM are provided
- ◆ Maximum 16k program ROM is provided
- ◆ Readable ROM code data
- ◆ Built in a high quality speech synthesizer
- ◆ Adaptive playing speed from 2.5k-20kHz is provided
- ◆ Two independent voice channels (Channel 1 + Channel 2→Buo1,Buo2)
- ◆ Built in a PWM Direct Drive circuit and a fixed current D/A output
- ◆ Low Voltage Reset
- ◆ System clock : 2MHZ

**■ PIN ASSIGNMENT**

Symbol	I/O	Function Description
P20	I/O	Bit0 of I/O port 2
P21	I/O	Bit1 of I/O port 2
P22	I/O	Bit2 of I/O port 2
P23	I/O	Bit3 of I/O port 2
P30	I/O	Bit0 of I/O port 3
P31	I/O	Bit1 of I/O port 3
P32	I/O	Bit2 of I/O port 3
P33	I/O	Bit3 of I/O port 3
V _{DD}	I	Positive power supply
OSC	I	Oscillation component connection pin
GND	I	Negative power supply
BUO1/I/O	O	PWM output 1 / DA current output
BUO2	O	PWM output 2

**■ ABSOLUTE MAXIMUM RATINGS**

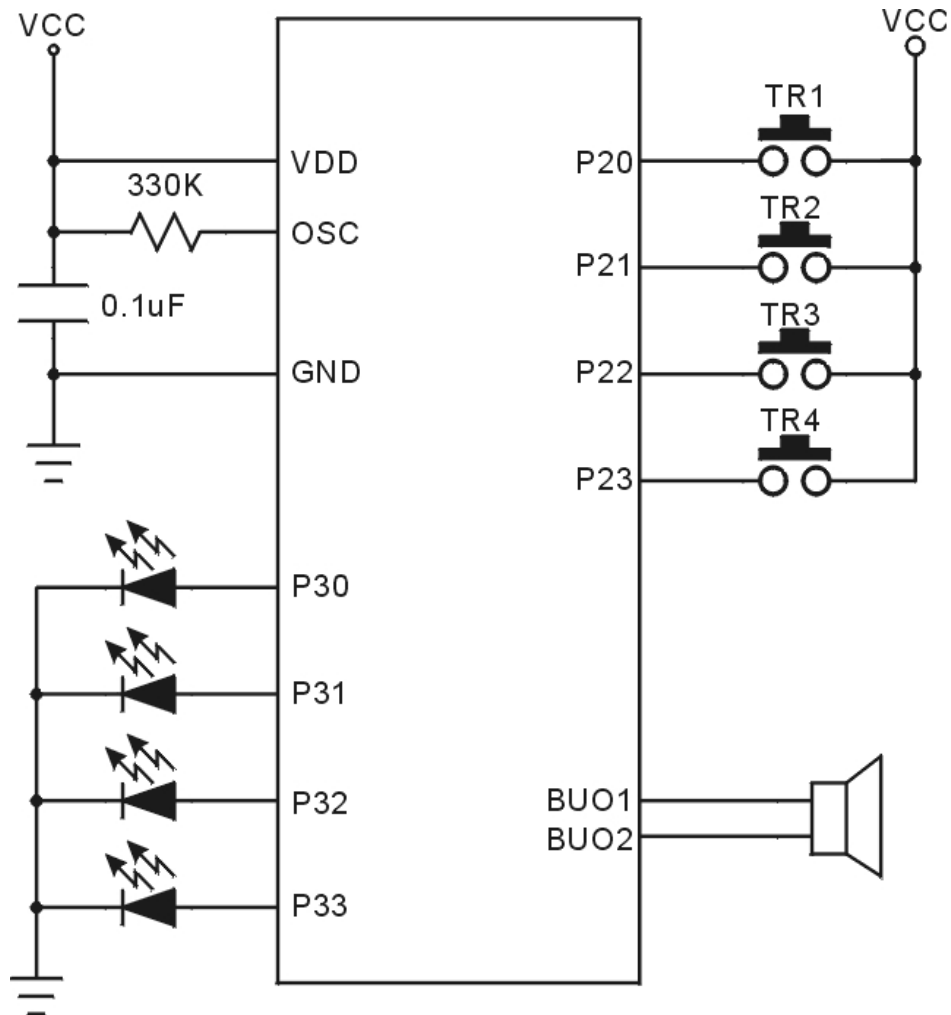
Items	Symbol	Min	Max	Unit.
Supply Voltage	V_{DD-V}	-0.3	6.0	V
Input Voltage	V_{IN}	GND-0.3	$V_{DD}+0.3$	V
Operating Temperature	T_{OP}	-20.0	70.0	°C
Storage Temperature	T_{STG}	-55.0	125.0	°C

■ ELECTRICAL CHARACTERISTICS

Item	Sym.	Min.	Typ.	Max.	Unit	Condition
Operating Voltage	V_{DD}	2.4	3.0	5.1	V	
Standby current	I_{SBY}	-	-	2.0	μA	$V_{DD}=3V$, no load
Operating Current	I_{OPR}	-	-	250	μA	$V_{DD}=3V$, no load
Input current of P2, P3	I_{IH}	-	3.0	10.0	μA	$V_{DD}=3V, V_{IN}=3V$
Drive current of P2, P3	I_{OD}	1.5	2	-	mA	$V_{DD}=3V, V_O=2.4V$
Sink Current of P2, P3	I_{OS}	2.0	3	-	mA	$V_{DD}=3V, V_O=0.4V$
Drive current of Buo1	I_{OD}	100	120	-	mA	$V_{DD}=3V, Buo1=1.5V$
Sink Current of Buo1	I_{OS}	100	120	-	mA	$V_{DD}=3V, Buo1=1.5V$
Drive Current of Buo2	I_{OD}	100	120	-	mA	$V_{DD}=3V, Buo2=1.5V$
Sink Current of Buo2	I_{OS}	100	120	-	mA	$V_{DD}=3V, Buo2=1.5V$
Output current of VO	I_{VO}	2.0	3.0	4.0	mA	$V_{DD}=3V, VO=0.7V$
Oscillation Freq.	F_{OSC}	-	1.0	-	MHz	$V_{DD}=3V$

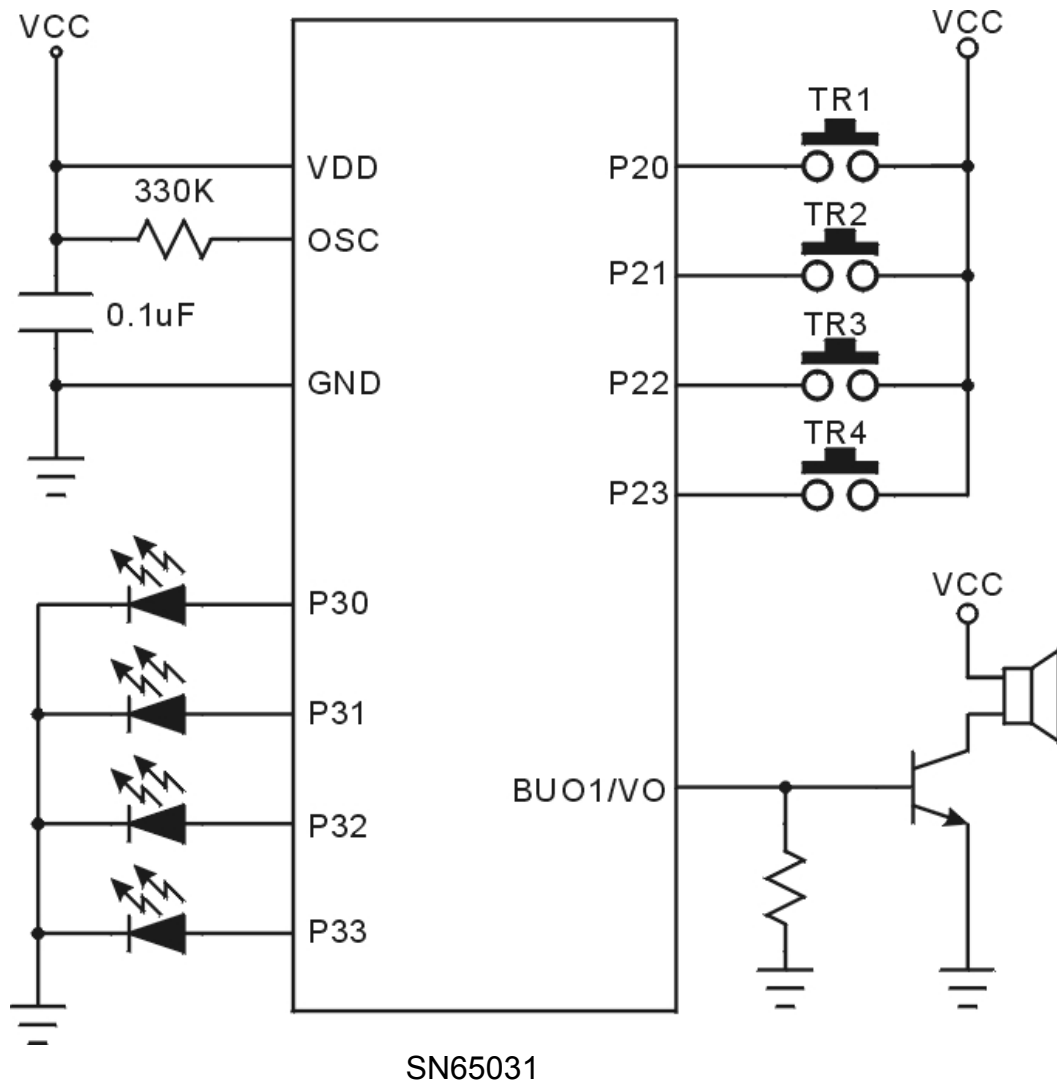
■ APPLICATION CIRCUIT

- ◆ PWM Direct Drive Output


SN65031

Note: Please bonds all of V_{DD} and V_{SS} pins.

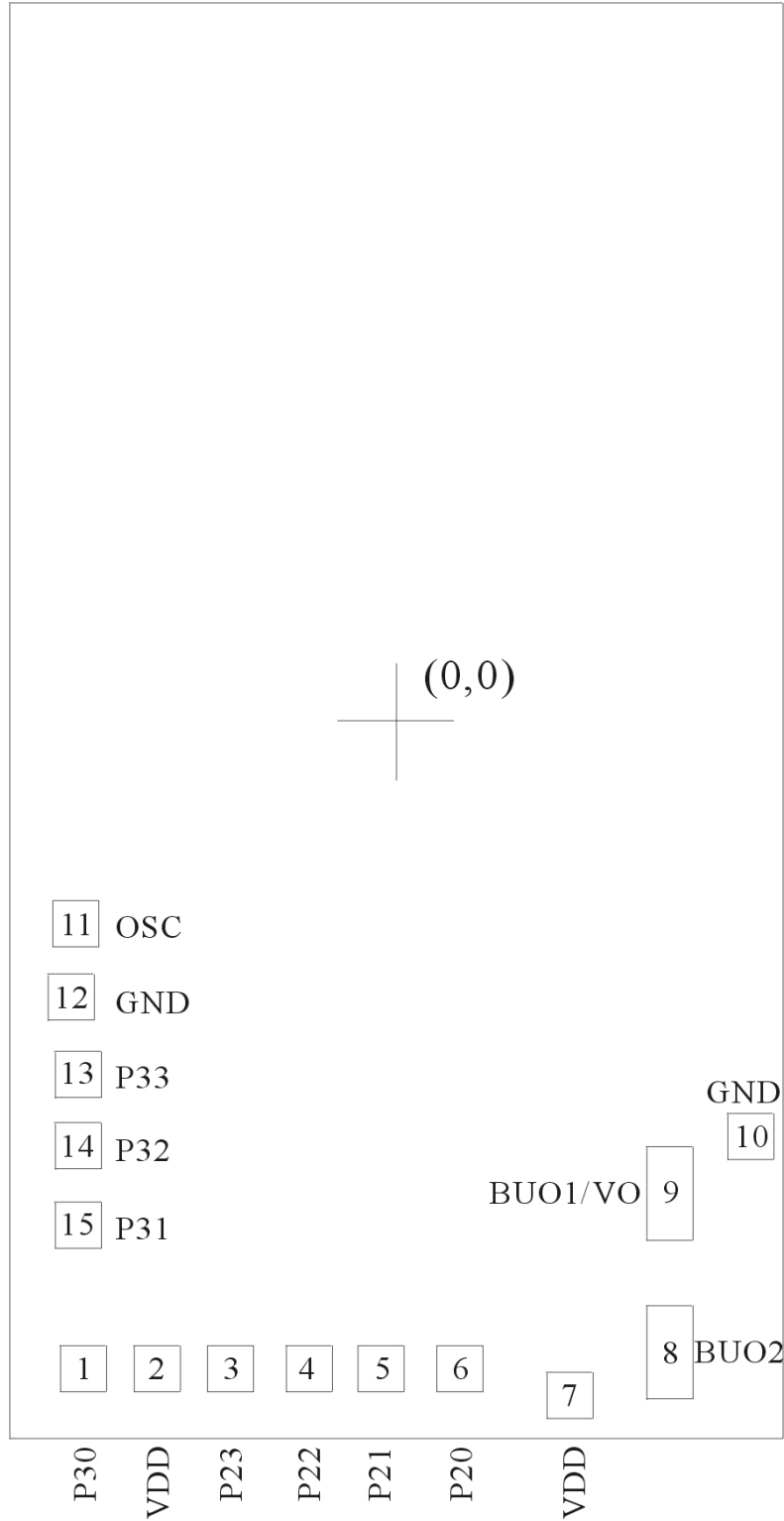
- ◆ Fixed current D/A output



Note: Please bonds all of V_{DD} and V_{SS} pins.



■ BONDING PAD



SN65031

Note: The substrate MUST be connected to Vss in PCB layout.

**DISCLAIMER**

The information appearing in SONiX web pages (“this publication”) is believed to be accurate.

However, this publication could contain technical inaccuracies or typographical errors.

The reader should not assume that this publication is error-free or that it will be suitable for any particular purpose. SONiX makes no warranty, express, statutory implied or by description in this publication or other documents which are referenced by or linked to this publication. In no event shall SONiX be liable for any special, incidental, indirect or consequential damages of any kind, or any damages whatsoever, including, without limitation, those resulting from loss of use, data or profits, whether or not advised of the possibility of damage, and on any theory of liability, arising out of or in connection with the use or performance of this publication or other documents which are referenced by or linked to this publication. This publication was developed for products offered in Taiwan. SONiX may not offer the products discussed in this document in other countries. Information is subject to change without notice. Please contact SONiX or its local representative for information on offerings available. Integrated circuits sold by SONiX are covered by the warranty and patent indemnification provisions stipulated in the terms of sale only.

The application circuits illustrated in this document are for reference purposes only. SONiX DISCLAIMS ALL WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE. SONiX reserves the right to halt production or alter the specifications and prices, and discontinue marketing the Products listed at any time without notice. Accordingly, the reader is cautioned to verify that the data sheets and other information in this publication are current before placing orders.

Products described herein are intended for use in normal commercial applications. Applications involving unusual environmental or reliability requirements, e.g. military equipment or medical life support equipment, are specifically not recommended without additional processing by SONiX for such application.