

**■ 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

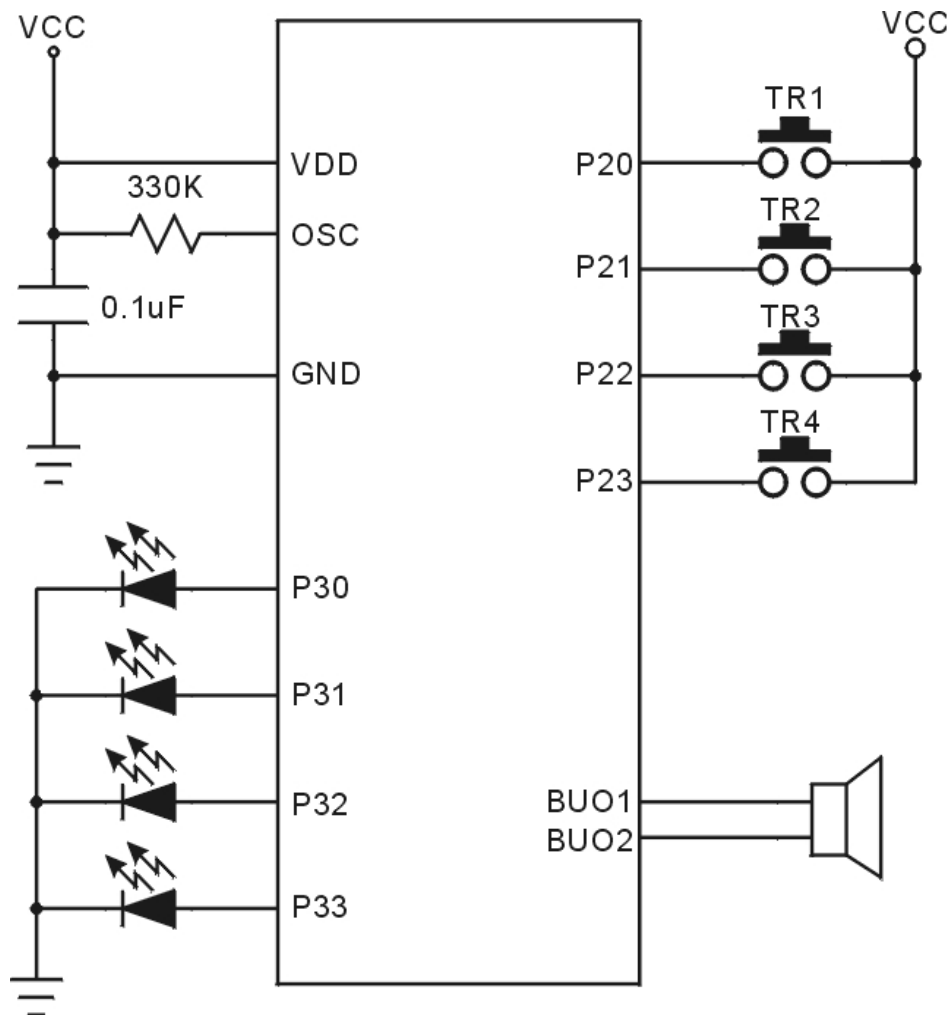
Items	Symbol	Min	Max	Unit.
Supply Voltage	$V_{DD}-V$	-0.3	6.0	V
Input Voltage	V_{IN}	GND-0.3	$V_{DD}+0.3$	V
Operating Temperature	T_{OP}	-20.0	70.0	°C
Storage Temperature	T_{STG}	-55.0	125.0	°C

■ 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	$V_{DD}=3V, V_O=0.7V$
Oscillation Freq.	F_{OSC}	-	1.0	-	MHz	$V_{DD}=3V$

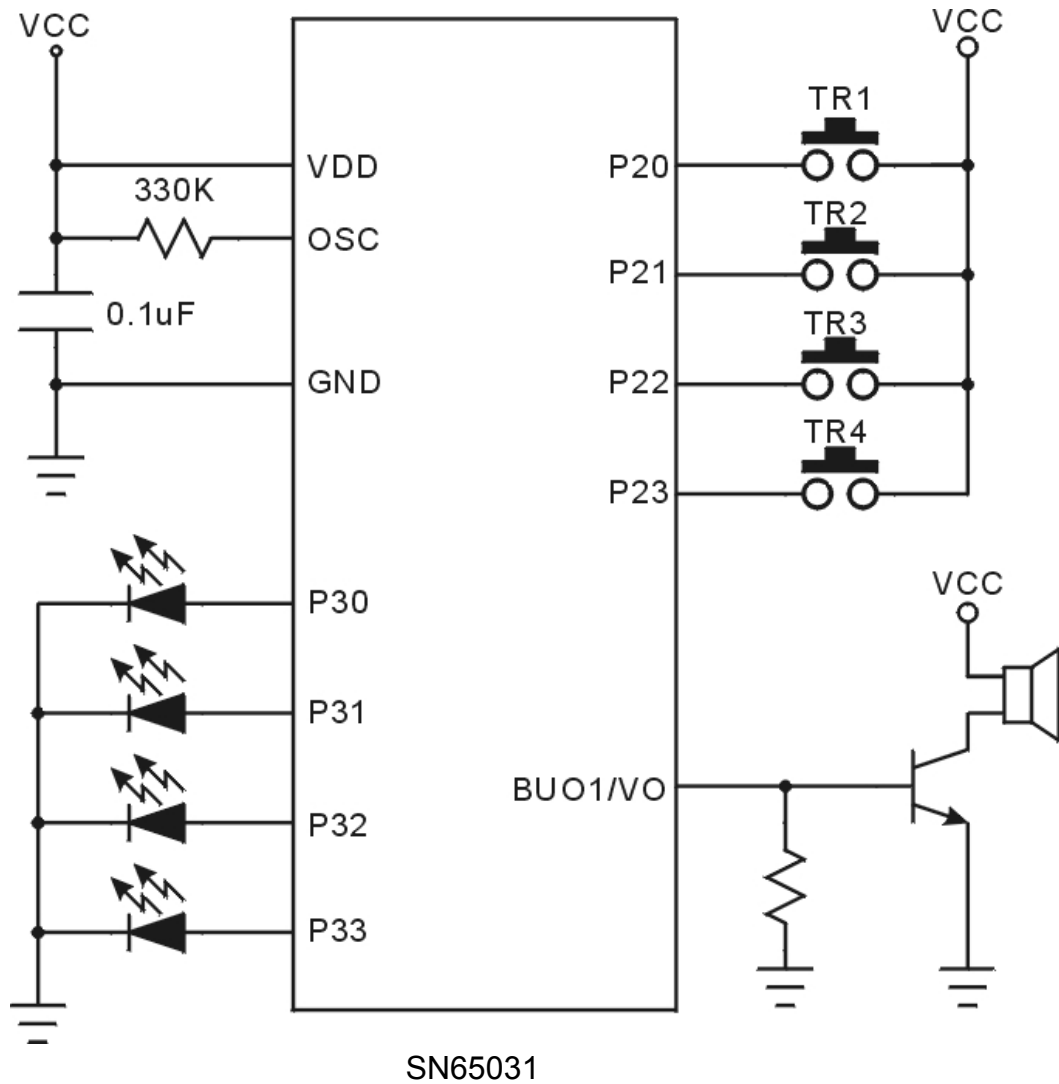
■ APPLICATION CIRCUIT

- ◆ PWM Direct Drive Output

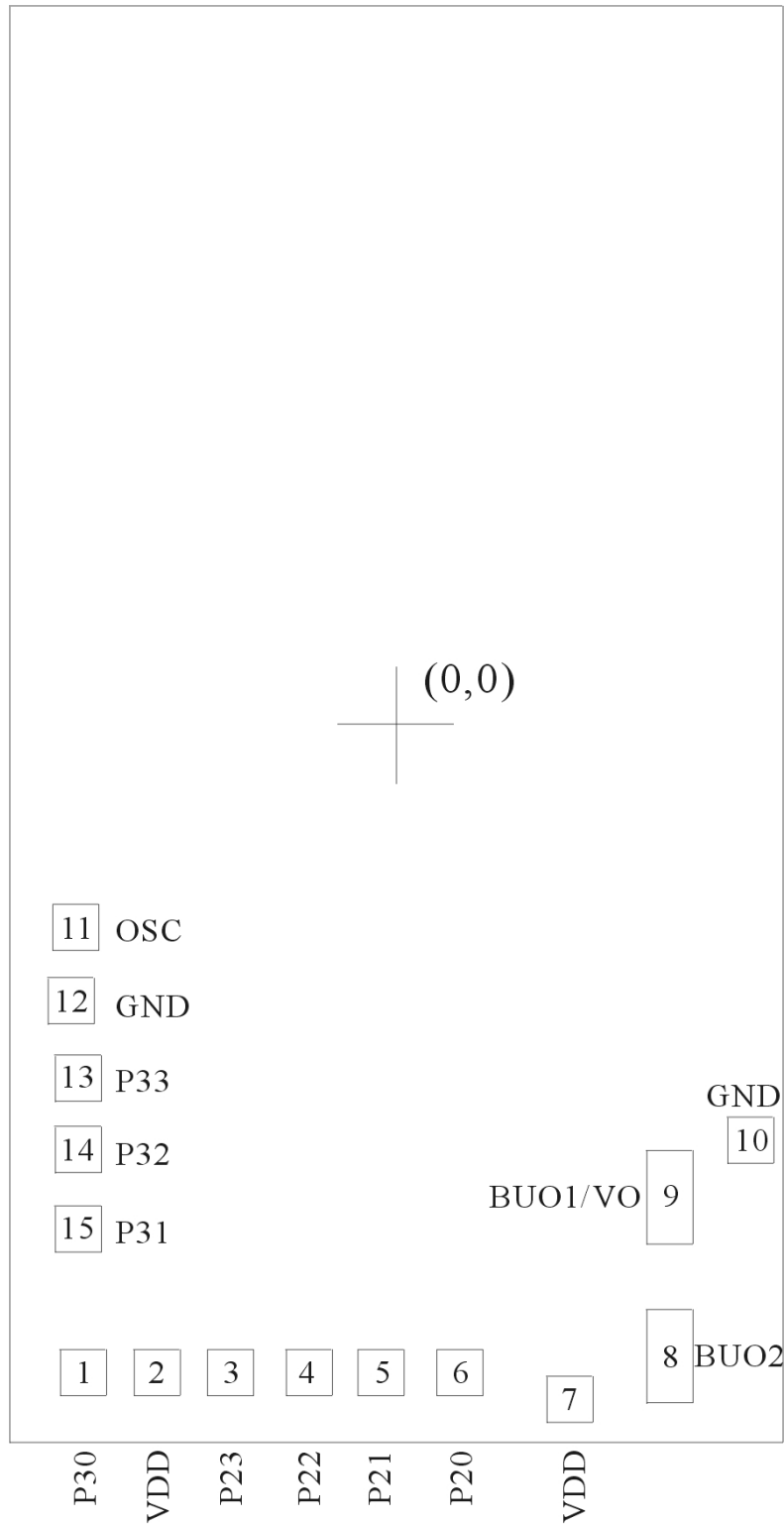

SN65031

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.

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