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/VO	O	PWM output 1 / DA current output
BUO2	O	PWM output 2

■ ABSOLUTE MAXIMUM RATINGS

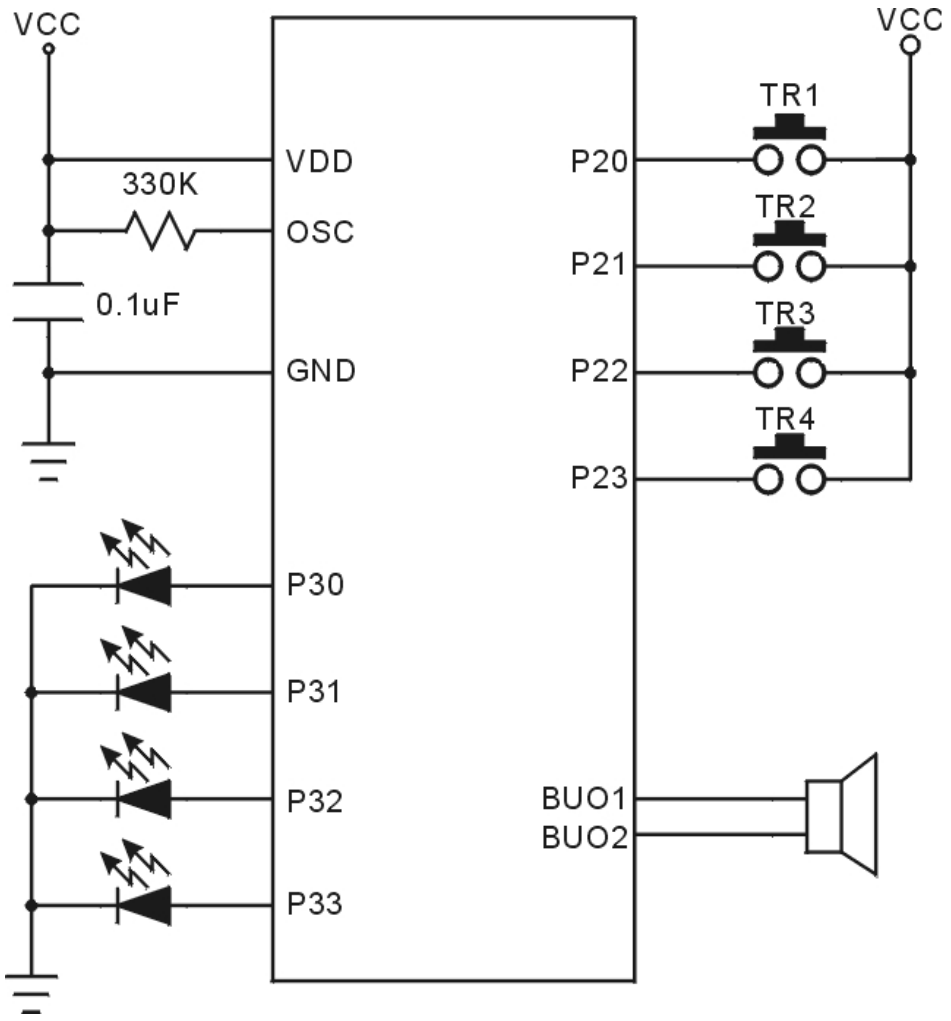
Items	Symbol	Min	Max	Unit.
Supply Voltage	V_{DD}-V	-0.3	6.0	V
Input Voltage	V_{IN}	GND-0.3	V_{DD}+0.3	V
Operating Temperature	T_{OP}	-20.0	70.0	°C
Storage Temperature	T_{STG}	-55.0	125.0	°C

■ 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	*u*A	V_{DD}=3V, no load
Operating Current	I_{OPR}	-	-	250	*u*A	V_{DD}=3V, no load
Input current of P2, P3	I_{IH}	-	3.0	10.0	*u*A	V_{DD}=3V,V_{IN}=3V
Drive current of P2, P3	I_{OD}	1.5	2	-	*m*A	V_{DD}=3V,V_O=2.4V
Sink Current of P2, P3	I_{OS}	2.0	3	-	*m*A	V_{DD}=3V,V_O=0.4V
Drive current of Buo1	I_{OD}	100	120	-	*m*A	VDD=3V,Buo1=1.5V
Sink Current of Buo1	I_{OS}	100	120	-	*m*A	VDD=3V,Buo1=1.5V
Drive Current of Buo2	I_{OD}	100	120	-	*m*A	VDD=3V,Buo2=1.5V
Sink Current of Buo2	I_{OS}	100	120	-	*m*A	VDD=3V,Buo2=1.5V
Output current of VO	Ivo	2.0	3.0	4.0	*m*A	VDD=3V,VO=0.7V
Oscillation Freq.	F_{OSC}	-	1.0	-	MHz	V_{DD}=3V

■ APPLICATION CIRCUIT

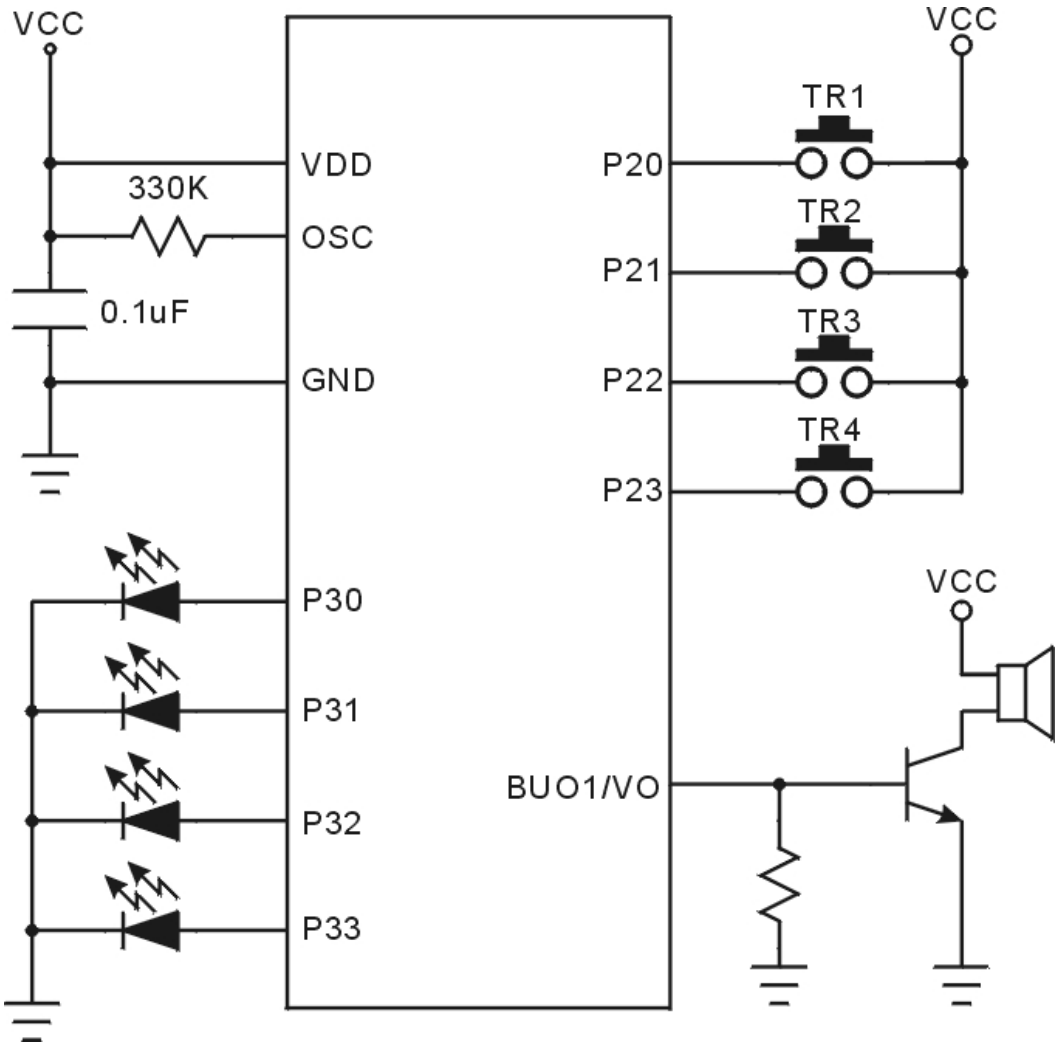
- PWM Direct Drive Output



SN65031

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

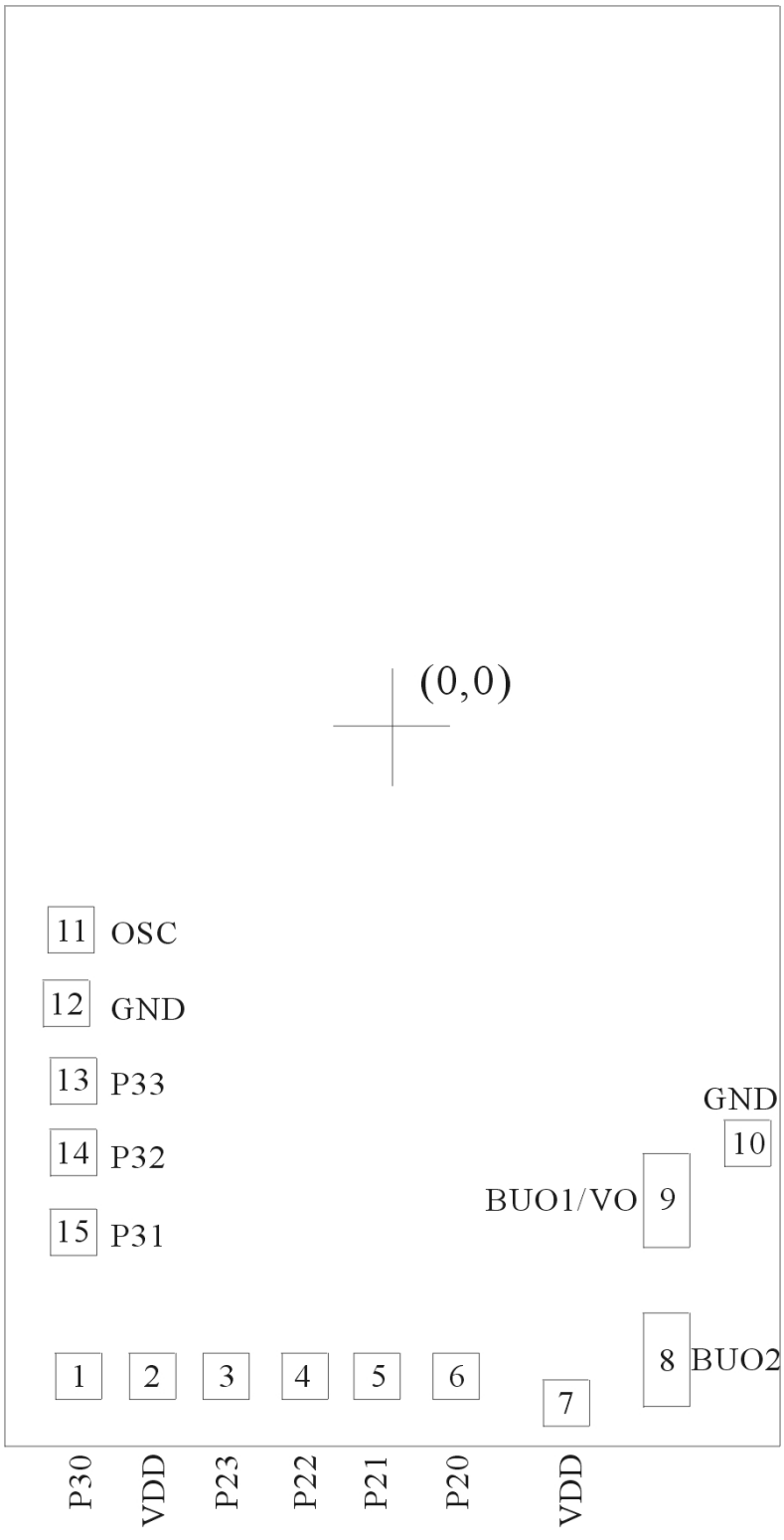
- Fixed current D/A output



SN65031

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

■ BONDING PAD



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

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