

■ INTRODUCTION

SN68d04 is a 4 seconds single chip voice synthesizer IC which contains I/O pins, a tiny controller and a PWM Direct Drive Circuit. By programming through the tiny controller, users' applications including section combination, trigger modes, output status, and other logic functions can then be easily implemented.

■ FEATURES

- ◆ Single power supply 2.4V - 5.1V
- ◆ Built in a tiny controller
- ◆ 4 seconds voice capacity are provided
- ◆ One 4-bit I/O ports are provided
- ◆ 64*4 bits RAM are provided
- ◆ Maximum 12k program ROM is provided
- ◆ Readable ROM code data
- ◆ Built in a high quality speech synthesizer
- ◆ Adaptive playing speed from 2.5k-20kHz is provided
- ◆ Built in a dual tone melody generator
- ◆ Speech/Dual tone melody mixer is provided
- ◆ Built in a PWM Direct Drive circuit output BUO1 and BUO2 directly connected to Speaker for sound output

■ 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
V _{DD}	I	Positive power supply
OSC	I	Oscillation component connection pin
GND	I	Negative power supply
BUO1	O	PWM output 1
BUO2	O	PWM output 2

■ ABSOLUTE MAXIMUM RATING

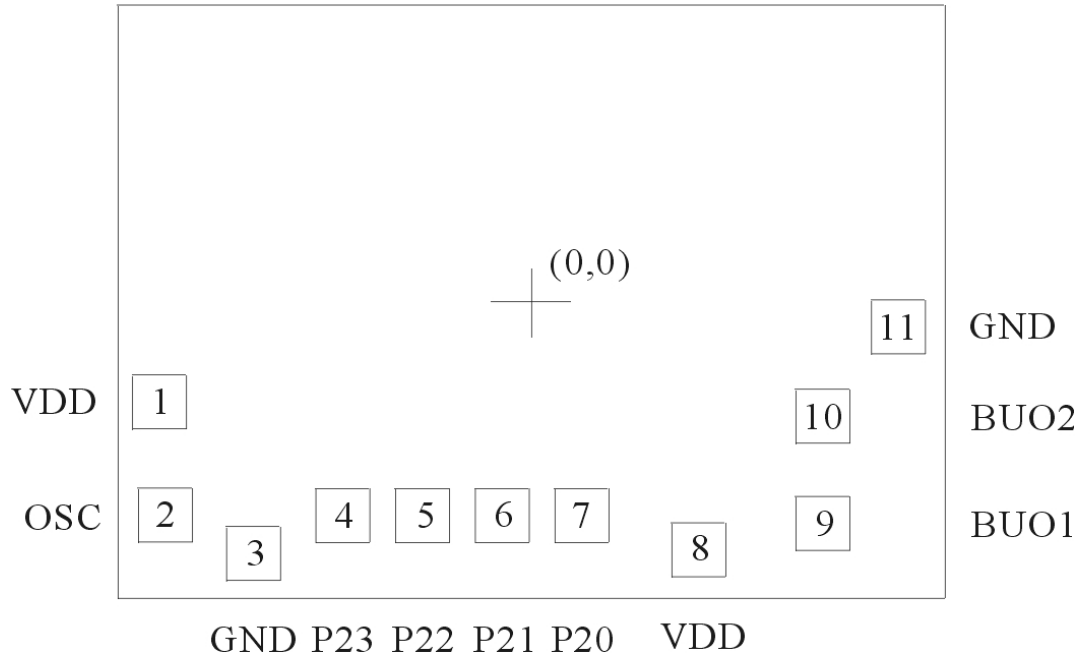
Items	Symbol	Min	Max	Unit.
Supply Voltage	V_{DD}	-0.3	6.0	V
Input Voltage	V_{IN}	$V_{SS}-0.3$	$V_{DD}+0.3$	V
Operating Temperature	T_{OP}	-20.0	70.0	°C
Storage Temperature	T_{STG}	-55.0	125.0	°C

■ 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	I_i	-	3	-	μA	$V_{DD}=3V$
Drive Current of P2	I_{OD}	1.5	2	-	mA	$V_{DD}=3V, V_O=2.4V$
Sink Current of P2	I_{OS}	2.0	3	-	mA	$V_{DD}=3V, V_O=0.4V$
Drive current of Buo1	I_{BU1D}	100	120	-	mA	$V_{DD}=3V, Buo1=1.5V$
Sink Current of Buo1	I_{BU1S}	100	120	-	mA	$V_{DD}=3V, Buo1=1.5V$
Drive Current of Buo2	I_{BU2D}	100	120	-	mA	$V_{DD}=3V, Buo2=1.5V$
Sink Current of Buo2	I_{BU2S}	100	120	-	mA	$V_{DD}=3V, Buo2=1.5V$
Oscillation Freq.*	F_{OSC}	-	2.0	-	MHz	$V_{DD}=3V$

*: Instruction Based clock: $2.0MHz \div 2 = 1.0MHz$

■ BONDING PAD



SN68d04

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

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