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

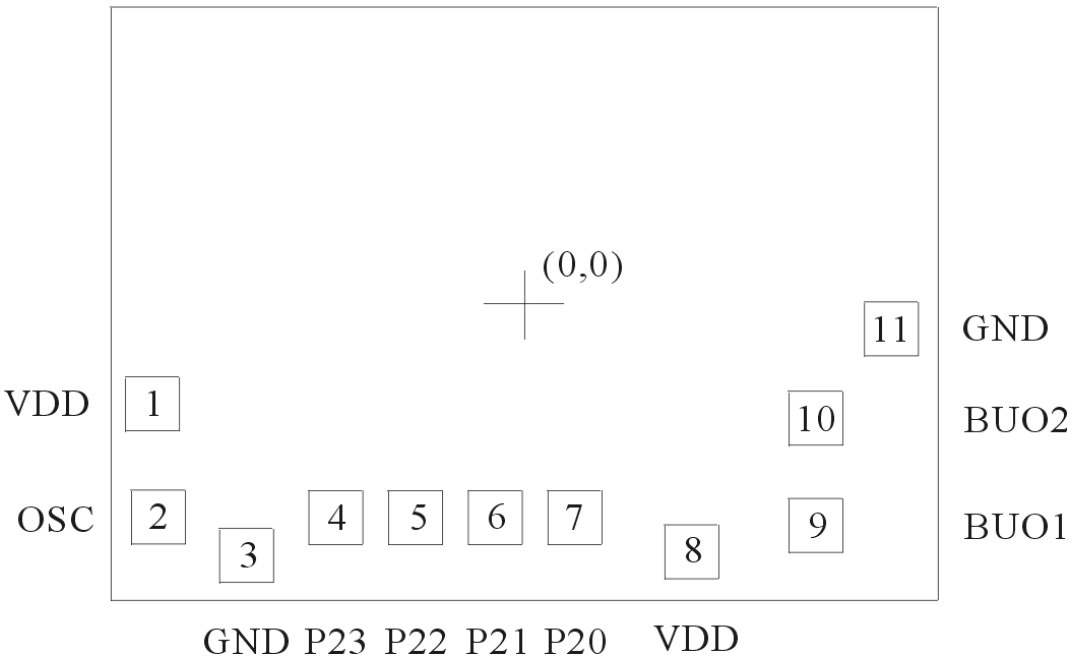
Items	Symbol	Min	Max	Unit.
Supply Voltage	V_{DD}	-0.3	6.0	V
Input Voltage	V_{IN}	V_{SS}-0.3	V_{DD}+0.3	V
Operating Temperature	T_{OP}	-20.0	70.0	°C
Storage Temperature	T_{STG}	-55.0	125.0	°C

■ 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	*u*A	V_{DD}=3V, no load
Operating Current	I_{OPR}	-	250	-	*u*A	V_{DD}=3V, no load
Input Current of P2	Ii	-	3	-	*uA*	V_{DD}=3V
Drive Current of P2	I_{OD}	1.5	2	-	*m*A	V_{DD}=3V,V_O=2.4V
Sink Current of P2	I_{OS}	2.0	3	-	*m*A	V_{DD}=3V,V_O=0.4V
Drive current of Buo1	I_{BU1D}	100	120	-	*m*A	VDD=3V,Buo1=1.5V
Sink Current of Buo1	I_{BU1S}	100	120	-	*m*A	VDD=3V,Buo1=1.5V
Drive Current of Buo2	I_{BU2D}	100	120	-	*m*A	VDD=3V,Buo2=1.5V
Sink Current of Buo2	I_{BU2S}	100	120	-	*m*A	VDD=3V,Buo2=1.5V
Oscillation Freq.*	F_{OSC}	-	2.0	-	MHz	V_{DD}=3V

*: Instruction Based clock: 2.0MHz÷2=1.0MHz

■ BONDING PAD



SN68d04

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

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