

INTRODUCTION

SN65004 Series is 4 seconds one-channel single chip voice synthesizer IC which contains a PWM Direct Drive Circuit. There is one 2-bit I/O port 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
- 4 seconds voice capacity is provided
- Built in a tiny controller
- One 2-bit I/O port is provided
- 32*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
- Built in a PWM Direct Drive circuit output BUO1 and BUO2 directly connected to Speaker for sound output
- System clock: 1MHZ

■ 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 |
| V_{DD} | I | Positive power supply |
| OSC | I | Oscillation component connection pin |
| TEST | I | For testing only |
| GND | I | Negative power supply |
| BUO1 | 0 | PWM output 1 |
| BUO2 | 0 | PWM output 2 |



■ ABSOLUTE MAXIMUM RATINGS

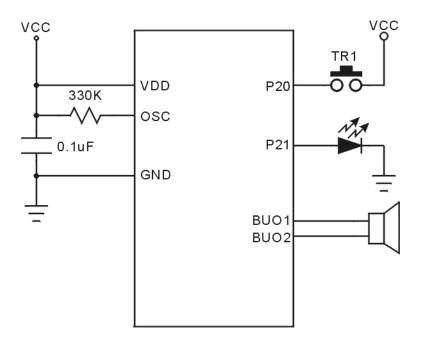
| Items | Symbol | Min | Max | Unit. |
|-----------------------|--------------------|---------|----------------------|-------|
| Supply Voltage | V _{DD} -V | -0.3 | 6.0 | V |
| Input Voltage | V_{IN} | GND-0.3 | V _{DD} +0.3 | V |
| Operating Temperature | T _{OP} | -20.0 | 70.0 | °C |
| Storage Temperature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

■ ELECTRICAL CHARACTERISTICS

| Item | Sym. | Min. | Тур. | Max. | Unit | Condition |
|-----------------------|------------------|------|------|------|------|-----------------------------------|
| Operating Voltage | V_{DD} | 2.4 | 3.0 | 5.1 | > | |
| Standby current | I _{SBY} | - | - | 1.0 | иA | V _{DD} =3V, no load |
| Operating Current | I _{OPR} | ı | - | 250 | иA | V _{DD} =3V, no load |
| Input current of P2 | I _{IH} | ı | 3.0 | 10.0 | иA | V_{DD} =3 V , V_{IN} =3 V |
| Drive current of P2 | I _{OD} | 1.5 | 2 | - | mΑ | V_{DD} =3V, V_{O} =2.4V |
| Sink Current of P2 | Ios | 2.0 | 3 | - | mΑ | $V_{DD} = 3V, V_{O} = 0.4V$ |
| Drive current of Buo1 | I _{OD} | 100 | 120 | - | mΑ | VDD=3V,Buo1=1.5V |
| Sink Current of Buo1 | Ios | 100 | 120 | - | mA | VDD=3V,Buo1=1.5V |
| Drive Current of Buo2 | I _{OD} | 100 | 120 | - | mA | VDD=3V,Buo2=1.5V |
| Sink Current of Buo2 | Ios | 100 | 120 | - | mA | VDD=3V,Buo2=1.5V |
| Oscillation Freq. | Fosc | - | 1.0 | - | MHz | V _{DD} =3V |



■ APPLICATION CIRCUIT

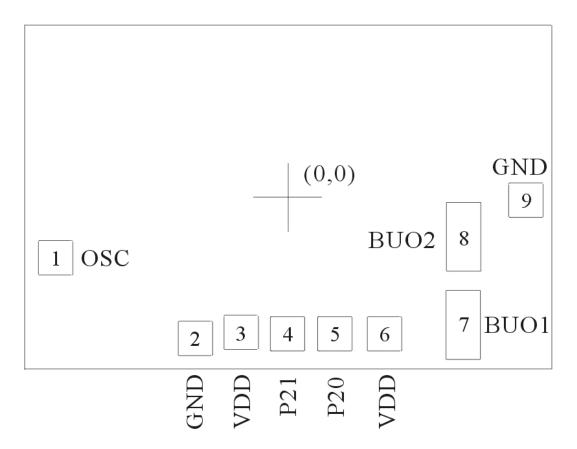


Note: Please bonds all of V_{DD} and V_{SS} pins.

SN65004



■ BONDING PAD



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



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