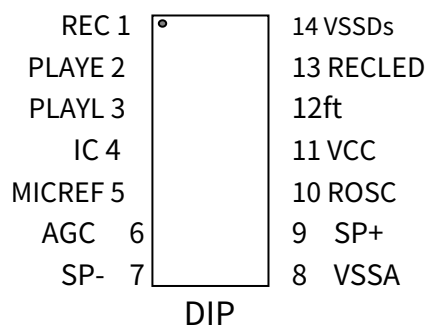


## ISD1820P 8~20 seconds single-segment voice circuit

### 1. Main features

1. Automatic power saving, maintain current 0.5uA
2. Edge/level trigger playback
3. External resistor to adjust the recording time (see attached table for details)
4. 3v single power supply operation

### 2. Package form



### 3. Pin description

**Power (VCC):** The different power buses used by the analog and digital circuits inside the chip converge at this pin, so that have the least noise. The decoupling capacitor should be as close as possible to the chip.

**Ground wire (VSSA, VSSD):** The different ground wires of the analog and digital circuits inside the chip are combined at this pin.

**Recording (REC):** High level is effective, as long as REC becomes high (regardless of whether the chip is in power-saving state or playing), the core recording starts. REC must be kept high during recording. When the REC becomes low or the internal memory is full, the recording period ends, and the chip automatically writes an end-of-message flag (EOM), so that subsequent playback operations can be stopped in time. Then the chip automatically enters the power saving state.

**Note:** The rising edge of REC has 84 milliseconds anti-vibration to prevent false triggering of keys. **Edge-triggered playback (PLAYE):** When there is a rising edge at this terminal, the chip starts to play. Playback continues until the EOM mark or

After saving, the chip automatically enters the power-saving state. After playback, you can release PLAYE. **Level-triggered playback (PLAYL):**

When this terminal changes from low to high, the chip starts to play. Continue until this terminal returns to low level or encounters

to the EOM flag, or the end of memory. Automatically enter the power-saving state after playback ends. **Recording indicator (/RECLE):**

When in the recording state, this terminal is low and can drive the LED. Additionally, playback encounters an EOM

When flag, this end outputs a low level pulse. This pulse can be used to trigger PLAYE to realize loop playback.

**Microphone input (MIC):** This end is connected to the on-chip preamplifier. On-chip automatic gain control circuit (AGC) controls the preamplifier Amplifier gain. An external microphone should be coupled to this terminal via a series capacitor. The value of the coupling capacitor and the 10KΩ input impedance at this end determine the low-frequency cut-off point of the chip's frequency band.

**Microphone reference (MIC REF):** This end is the reverse input of the preamplifier. When connecting microphones differentially, the Small noise, improve common mode rejection ratio.

**Automatic Gain Control (AGC):** AGC dynamically adjusts pre-gain to compensate for wide variations in microphone input level, making recording Distortion is kept to a minimum even at widely varying volume levels (from whispers to blares). Generally, a capacitor of 4.7uF can obtain satisfactory results in most occasions.

**Speaker output (SP+, SP-):** The output terminal can directly drive a speaker above 8Ω. Single-ended use must be done at the output and la There is an indirect coupling capacitor between the horns, and the double-ended output can increase the power by 4 times without using a capacitor. SP+ and SP- are connected through an internal 50KΩ resistor, and they are suspended when no sound is played.

Oscillating resistor (ROSC): This terminal connects the oscillating resistor to VSS, and the recording and playback time is determined by the resistance of the oscillating resistor.

Straight-through mode (FT): This port allows the external voice signal connected to the MIC input to pass through the AGC circuit inside the chip,

filter and speaker driver directly to the speaker output. Usually FT terminal is low, to realize the through function, FT terminal needs to be connected to high level, while REC, PLAYE and PLAYL keep low.

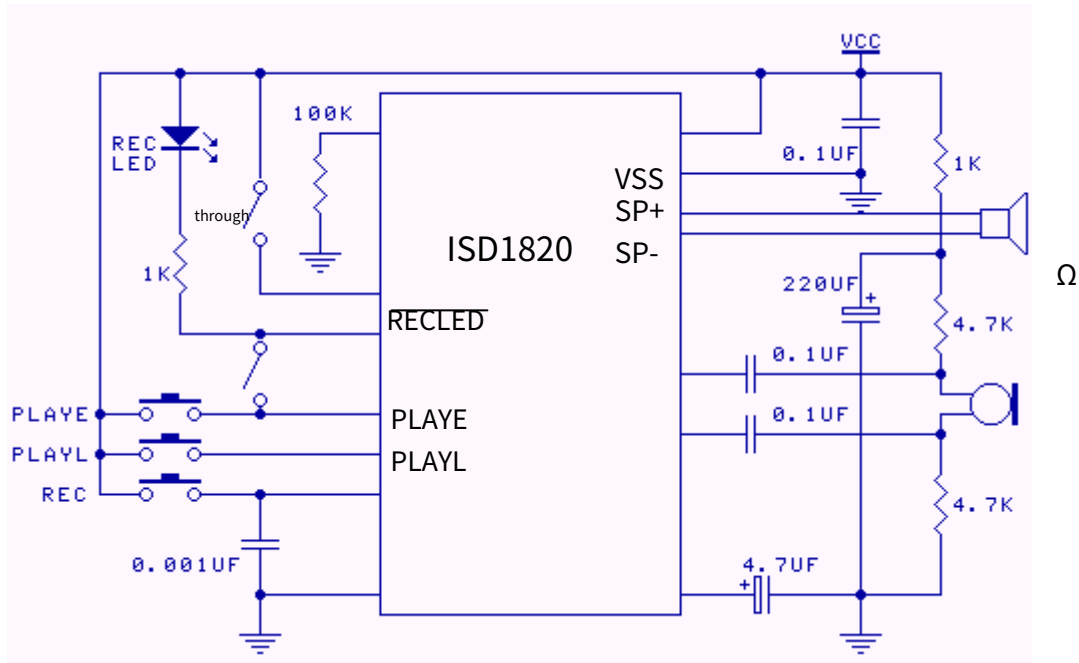
**4. Operation method of recording and playback**

Press and hold the REC recording button to record, the REC LED light will light up, release the button to stop recording. There are three situations for playback:

- 1, Trigger the playback along the edge, press the PE key once to play the whole section, unless the power is cut off or the playback ends, otherwise the playback will not stop;
- 2, Level trigger playback, press and hold the PL button to play, release the button to stop; loop playback, set the
3. loop playback switch to close, press the PE button to start loop playback, only power off to stop.

In the direct mode, the direct switch is closed, and speaking to the microphone will be amplified and played from the speaker, forming a megaphone function. Since the microphone in this mode is amplified by AGC automatic gain adjustment and band-pass filter at the same time, its sound quality is better than the usual one. Mic amps are much better and don't overload the speakers.

**5. Application circuit diagram**



**Schedule:**

ROSC	Recording time	Sampling frequency	typical bandwidth
80kΩ	8 seconds	8.0KHZ	3.4KHZ
100 kΩ	10 seconds	6.4KHZ	2.6KHZ
120 kΩ	12 seconds	5.3KHZ	2.3KHZ
160 kΩ	16 seconds	4.0KHZ	1.7KHZ
200 kΩ	20 seconds	3.2KHZ	1.3KHZ