MODULE ISD1820.

Voice recording and playback module.

1. Introduction

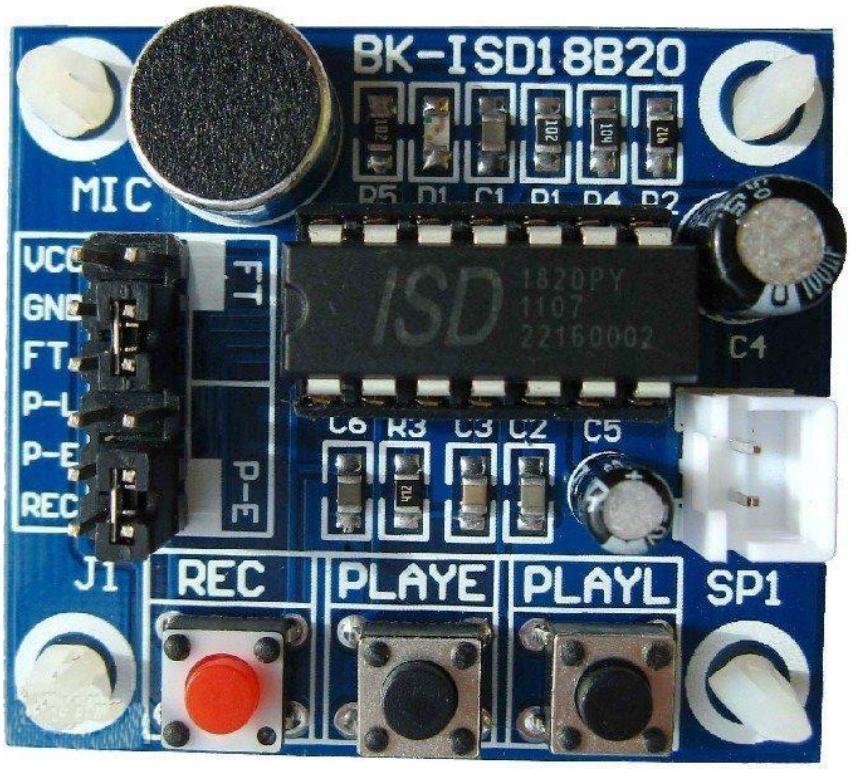
This module board is based on ISD18B20, which is a single-chip single-message record/playback device. Recordings are stored into on-chip non-volatile memory, providing zero-power message storage. With the embedded Flash memory employed, data retention up to 100 years and typical 100,000 erase/record cycles can be reached. Time for recording is 8-20 seconds.

Features:

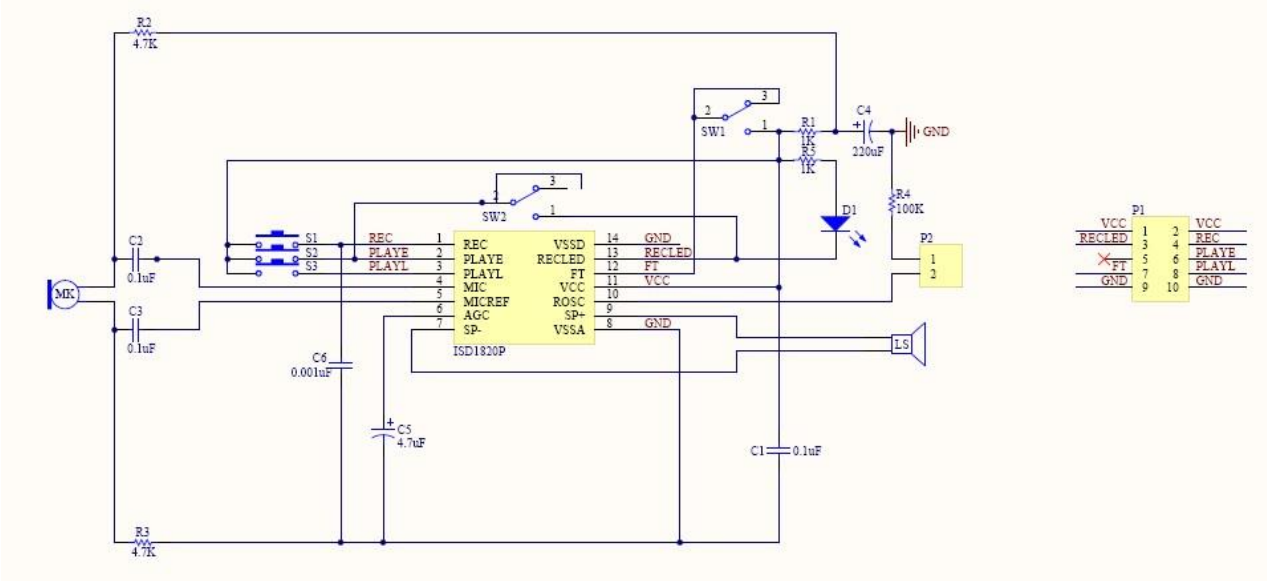
- Power input: DC 2.4-5.5V
- With internal audio amplifier, this board can drive 8 Ohm 0.5W speaker directly.
- Microphone is on board
- Board dimension: 54mm x 38mm
- All the pins of ISD1820 are extended out with an connector, which can powered and controlled by microprocessor directly.

2. Funtions

The following is the board picture.



The following is the schematic.



There are 3 keys on the board: REC, PLAYE and PLAYL

1) REC

The REC input is an active-HIGH record signal. The device records whenever REC is HIGH. This pin must remain HIGH for the duration of the recording. REC takes precedence over either playback (PLAYL or PLAYE) signal. If REC is pulled HIGH during a playback cycle, the playback immediately ceases and recording begins. A record cycle is completed when REC is pulled LOW. An End-of-Message (EOM) marker is internally recorded, enabling a subsequent playback cycle to terminate appropriately. The device automatically powers down to standby mode when REC goes LOW. This pin has an internal pull-down device. Holding this pin HIGH will increase standby current consumption.

2) PLAY

There are two modes to play the voice in the voice chip: edge activated mode controlled by PLAYE pin and level activated mode controlled by PLAYL pin.

(1) **Playback, Edge-activated**: When a HIGH-going transition is detected on this input pin, a playback cycle begins. Playback continues until an End-of-Message (EOM) marker is encountered or the end of the memory space is reached. Upon completion of the playback cycle, the device automatically powers down into standby mode. Taking PLAYE LOW during a playback cycle will not terminate the current cycle. This pin has an internal pull-down device. Holding this pin HIGH will increase standby current consumption.

(2) **Playback, Level-activated:** When this input pin level transits from LOW to HIGH, a playback cycle is initiated. Playback continues until PLAYL is pulled LOW or an End-ofMessage (EOM) marker is detected, or the end of the memory space is reached. The

device automatically powers down to standby mode upon completion of the playback cycle. This pin has an internal pull-down device. Holding this pin HIGH will increase standby current consumption. FWD (forward).

On the board there are two switches for Feed Through function and REPEAT.

(1) Feed Through: This mode allows use of the speaker drivers for external signals. The signal between the MIC and MIC_REF pins will pass through the AGC, the filter and the speaker drivers to the speaker outputs SP+ and SP-. The input FT controls the feed through mode. To operate this mode, the control pins REC, PLAYE and PLAYL are held LOW at Vss. The pin FT is held HIGH to Vcc. For normal operation of record, play and power down, the FT pin is held at Vss. The FT pin has a weak pull-down to Vss.

(2) REPEAT. If this switch is on, the current voice clip will be played back repeatly.