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ISD-DEMO8102 User's Manual

Introduction:

The ISD-DEMO8102 is a SOP8 demo board for ISD8102 series. It is available to demonstrate basic functionality and to make it easy to try different configurations of components and component values.

ISD-DEMO8102 includes two channels on the PCB, consisting of two ISD8102 ICs. They are
typically used as the LEFT and RIGHT channels to perform stereo audio output. Users can utilize either LEFT or RIGHT side only for the mono audio operation. In the standard configuration,
jumper pins are used to set the ISD-DEMO8102 to the normal operation.

The picture below illustrates all the input controls and BTL speaker as well as SE Headphone output.
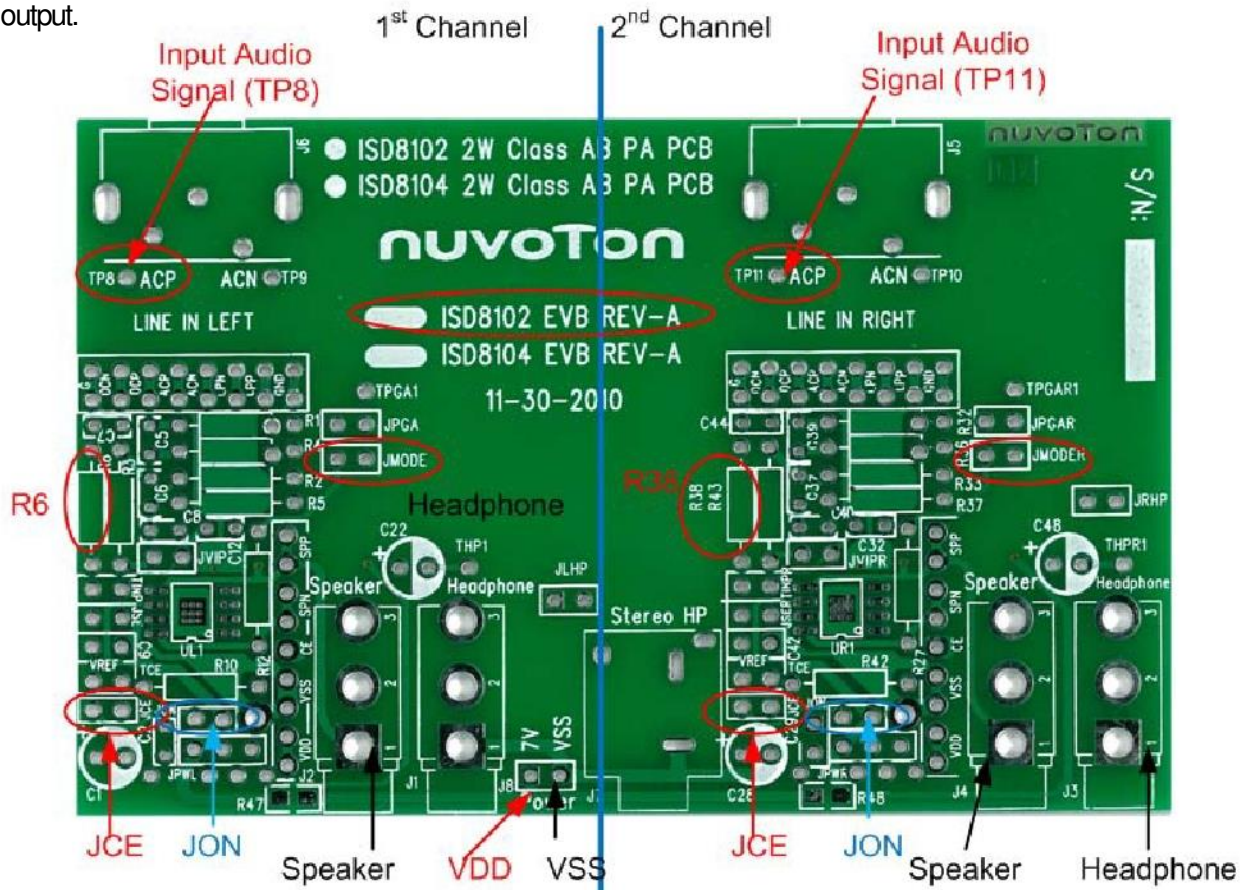

Figure 1: ISD-DEMO8102 EVB Pins and Jumpers Definition

Figure 2: ISD-DEMO8102 EVB Jumpers Setting

Hardware Connections:

- Connect a 4Ω or larger loading speaker to **SPP** and **SPN**; otherwise, connect a 4Ω or larger loading speaker to **Speaker** plug.
- Connect a power supply to the related terminals (7V and VSS). Please ensure the polarity of the power is correct to avoid any damages to the ISD8102 device.
- **Jumper CEb** (LEFT and RIGHT): Connect the CEb (chip enable bar) input to GND, and ensure that CEb (pin1) is active LOW, as shown in the Figure 2.
- Jumper **MODE** (LEFT) and Jumper **MODER** (RIGHT): Ensure that the EVB is in the proper ISD8102 operation setting.
- Unity gain set of input: **LPN** is used for the single-ended low gain configuration.
- A 20dB gain set of input: **ACP(TP8 / TP11 - LEFT and RIGHT)** is used for the single-ended high gain configuration. The RCA (Lower Jack) can be used as the music signal source.
- Jumper **JON**: Power Down the ISD8102 IC since CEb is shorted to VDD. Note: Do **not** put Jumpers JON and JCE ON at the same time, as this will cause a SHORT CIRCUIT.
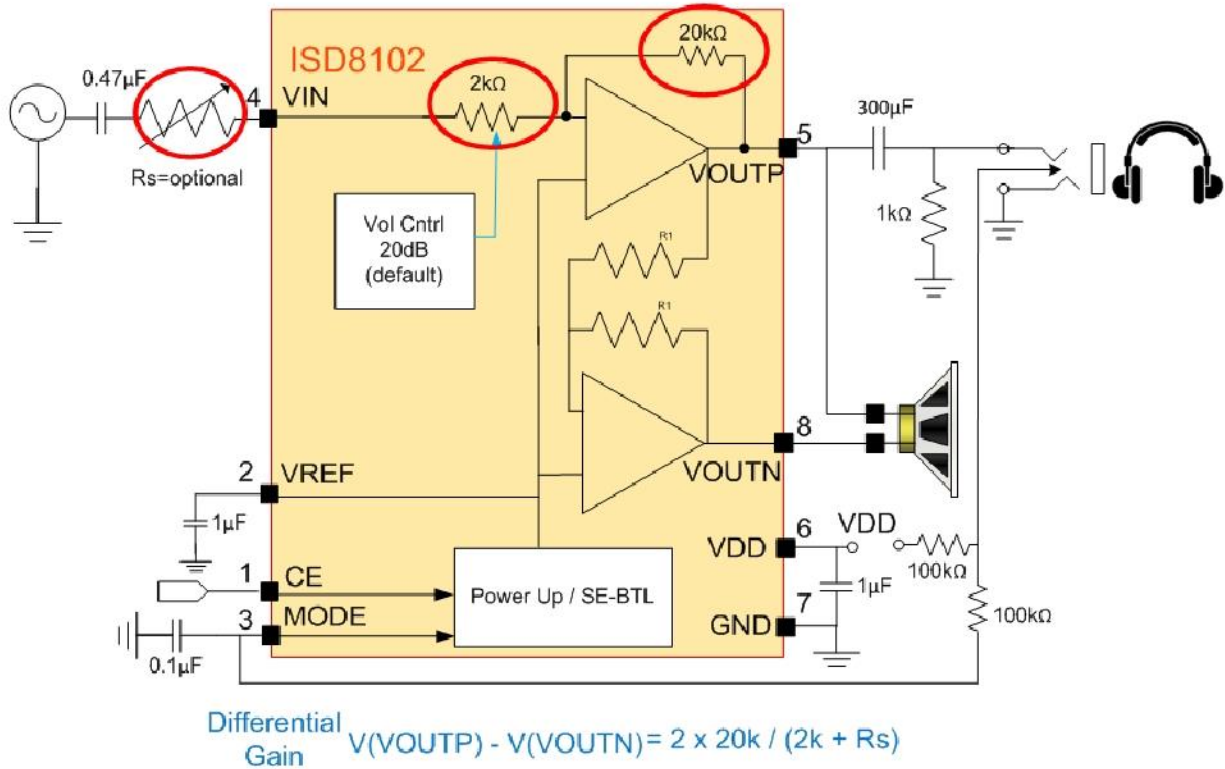
Gain Configuration of ISD-DEMO8102 EVB:

Figure 3: ISD8102 Application Diagram for the Headphone Sense Input

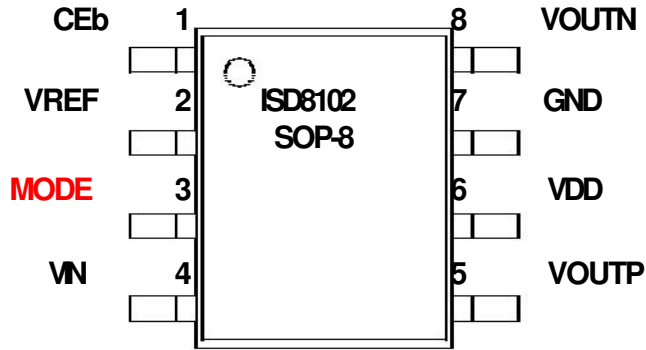Single -Ended Gain (SPP) = 20kΩ / (2kΩ + Rs)

Case: Single Ended Gain = 4x;   Rs = 3kΩ

Gain Setting Configuration:

- By default, ISD-DEMO8102 is set to 20dB gain of input ACP, and **R6** (LEFT Channel) and
  R38 (RIGHT Channel) are 0Ω on the EVB, as shown in the Figure 1. The ACP single ended 20dB gain can be attenuated by changing the R6 and R38 resistance value, as demonstrated in the above equations.

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Pinout Configuration: SOP- 8

```
CEb    1 ┌─────────┐ 8   VOUTN
         │   ◯     │
VREF   2 │ ISD8102 │ 7   GND
         │  SOP-8  │
MODE   3 │         │ 6   VDD
         │         │
VIN    4 └─────────┘ 5   VOUTP
```

PIN DESCRIPTION

__Pin Number__

1	CEb	I	Chip Enable Bar (Low = Chip Power Up / High = Chip Power Down)
2	VREF	O	Internal Reference Voltage (1/2 Vdd)
3	MODE	I	Single-Ended / Differential Output Logic Control
			(Low = BTL mode / High = SE mode)
4	VIN	I	Inverting Signal Input
5	VOUTP	O	Non-Inverting Speaker Output
6	VDD	I	Supply Voltage
7	GND	I	Ground
8	VOUTN	O	Inverting Speaker Output

EVB Schematic:

LEFT Channel

RIGHT Channel

Version History:

VERSION	DATE	PAGE	DESCRIPTION
Rev. 1.0	April 2016	all	Initial Release