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Balancing DSP outs

How to make a differential circuit that balances the DSP-C or DSP IS outputs

1   Preliminary consideration

This article is related to the following products:

▶ DigiMod 1000/1500/2000HV

▶ D-Cell504 with DSP

Both the DigiMod DSP-C and the DSP integrated on the D-Cell504 are able to manage four output channels. In the IS series you can get channel 3 and channel 4 directly from the interface as a balanced output, on the other hand, if the amp module is without any additional interface, these outputs are going to be unbalanced. You can balance these by adding a simple circuit as it's explained in this application note.

2   Tools needed

▶ Two NE5532D operational amplifiers, FIGURE 1

▶ Two 100 nF capacitors, FIGURE 2

▶ Four 10 kΩ resistors, FIGURE 3

▶ Two 100 Ω resistors, FIGURE 4

FIGURE 1: NE5532D op-amp

FIGURE 2: 100 nF capacitor

FIGURE 3: 10 kΩ resistor

FIGURE 4: 100 Ω resistor

3   Procedure

1.1   D-Cell504 with DSP

You will find the unbalanced outputs on the CN 1 connector, as showed in FIGURE 5:

▶ pin 3 = DSPOUTCH4

▶ pin 24 = DSPOUTCH3

CN1	
1	GND
2	−12VDC
3	DSPOUTCH4
4	IN2-
5	IN2+
6	GND
7	BY OUT2
8	BY IN2
9	PRTOUT2**
10	MUTE
11	TEMPOUT
12	PRSTLED1
13	PRSTLED2
14	PRSTLED3
15	PRSTLED3
16	READYOUT
17	PRSTSELECT
18	PRTOUT1**
19	BY IN1
20	BY OUT1
21	GND
22	IN1+
23	IN1-
24	DSPOUTCH3
25	+12VDC
26	GND

FIGURE 5: CN1 connector on D-Cell504

1.2   DigiMod DSP-C

You will find the unbalanced outputs on the CN 4 connector, on the DSP-C, as showed in FIGURE 6:
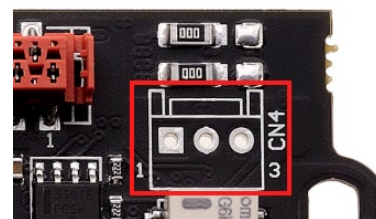
▶ pin 1 = DSPOUTCH3

▶ pin 3 = DSPOUTCH4

FIGURE 6: CN4 connector on DSP-C

1.3 The circuit

Following the schematic in FIGURE 7, you have to make the differential circuit, using the components showed in paragraph "2 Tools needed".
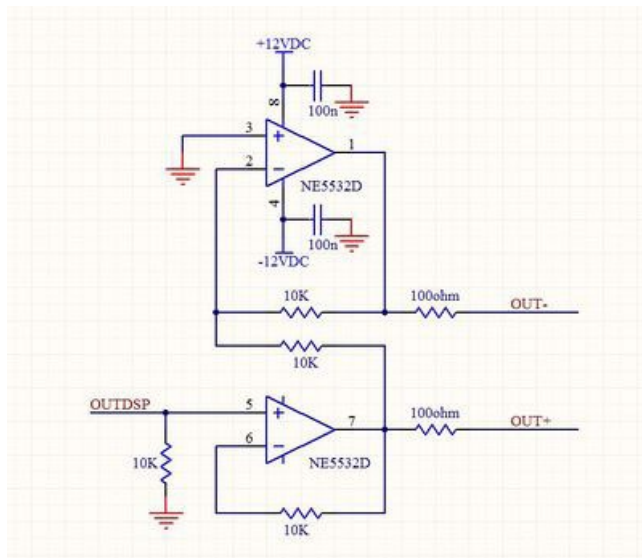

FIGURE 7: The circuit

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