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Technical Note

DA7219 Updated Ball-out

Abstract

This document describes the changes made to the ball-out of the DA7219 device to add a GND_HP ball.

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1 Reason for change

DA7219 uses internal switches to support both OMTP and CTIA headsets. In order to support both headset types the ground return for the headphones must pass through the device. To minimise the die area of the DA7219 device a single ground ball was used for both this headset ground and the sensitive analogue ground. The impedance of the ball, trace and via, although small, is not zero therefore some noise from the headphone ground return is coupled onto the sensitive analogue circuitry. Following bench evaluation of DA7219 it has become clear that we need to separate these into two separate ground balls, one for the headset return and another for the internal analogue circuitry. This proposed solution has been verified in hardware and proved to resolve the issue.

2 Ball-out Change

The new ground ball replaces the VDD_DIG ball and moves 7 balls to allow for optimal placement of the new ball. The VDD_DIG ball was previously used to attach a bulk capacitor to the output of the internal digital supply LDO. This LDO is not required so this ball has been repurposed as a ground. The updated ball-out can be seen in Figure 1.

3 Schematic Change

The reference schematic has been updated for the updated ball-out. A comparison between the original schematic and the updated schematic is shown in Figure 2. The ball-out change saves one capacitor compared to the original.

4 PCB Routing Change

The reference layout has been updated for the updated ball-out. A comparison between the original layout and the updated layout is shown in Figure 3.

5 Conclusion

The new DA7219 ball-out offers improved performance thanks to its dedicated GND_HP ball. The ball-out change is minimal and has a minor effect on the schematic or PCB layout.

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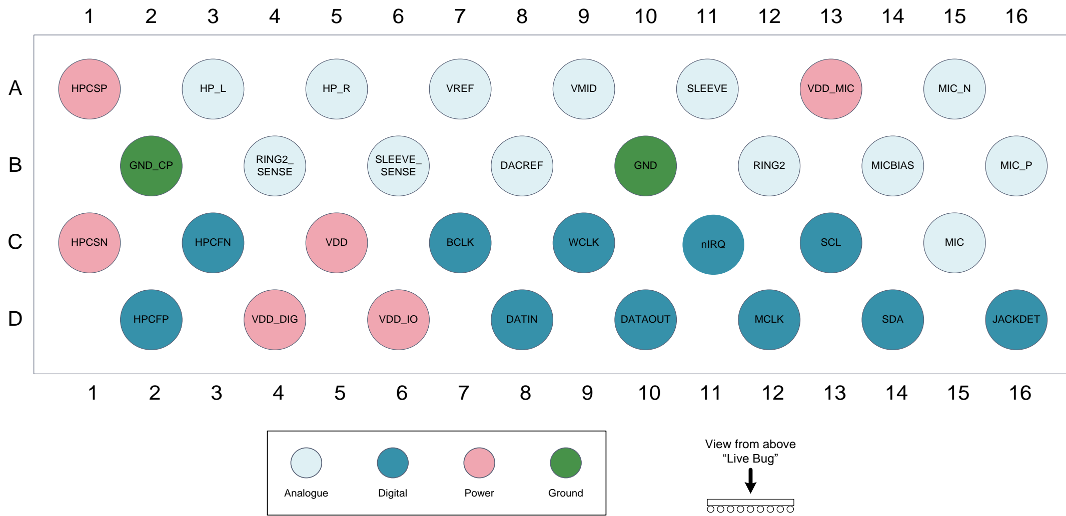

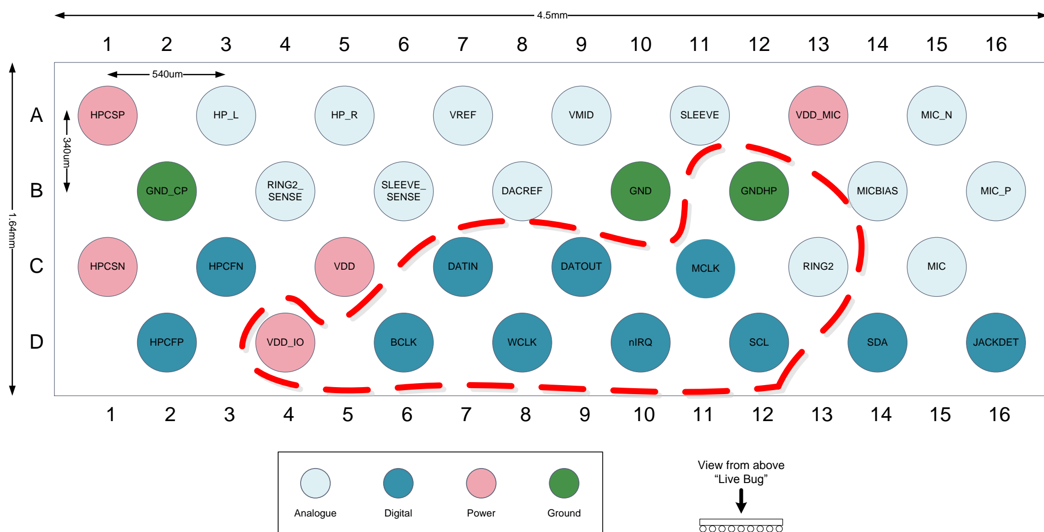

Figure 1 Comparison of original ball-out to new ball-out (changes highlighted in red)

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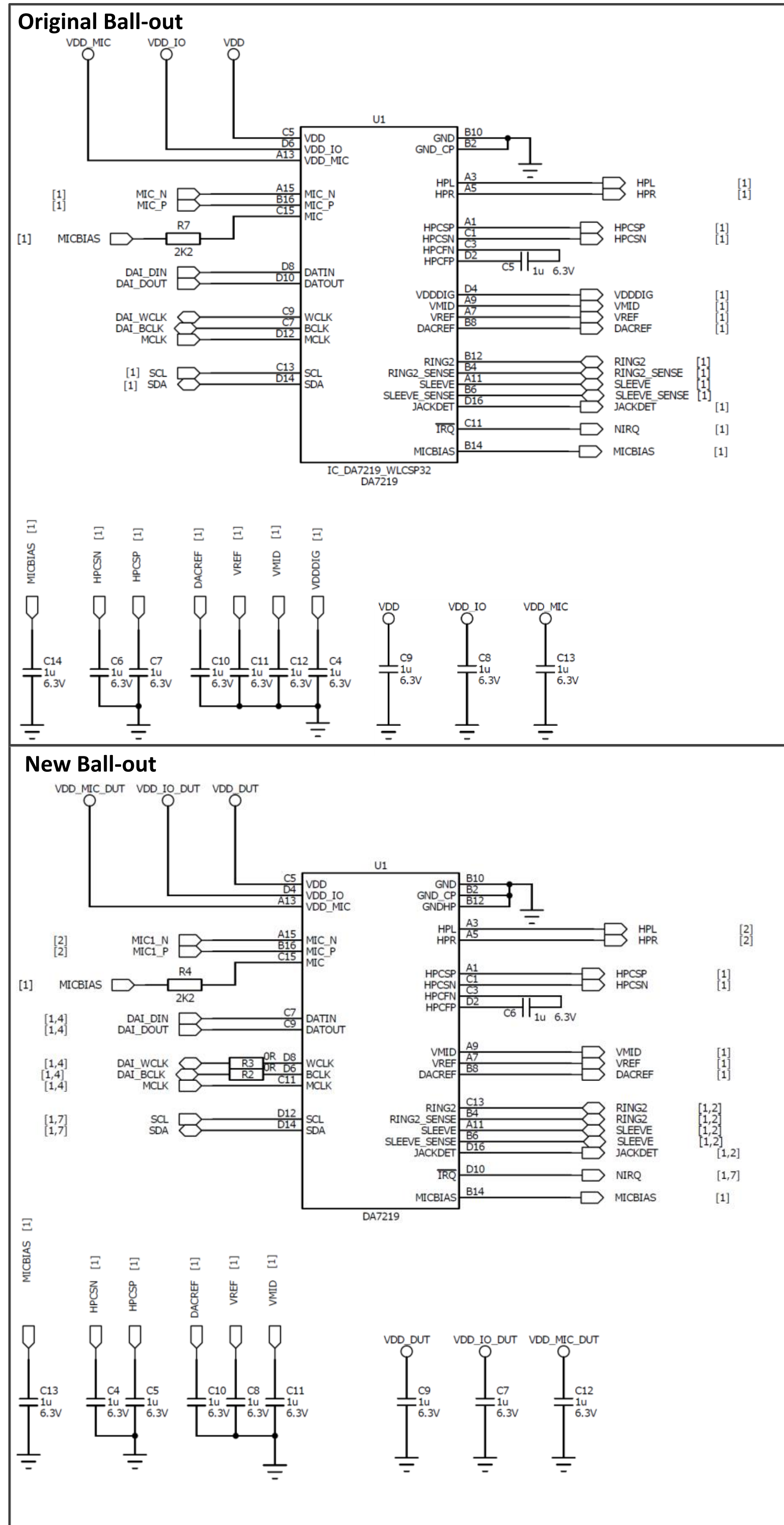

Figure 2 Original Schematic vs Updated schematic

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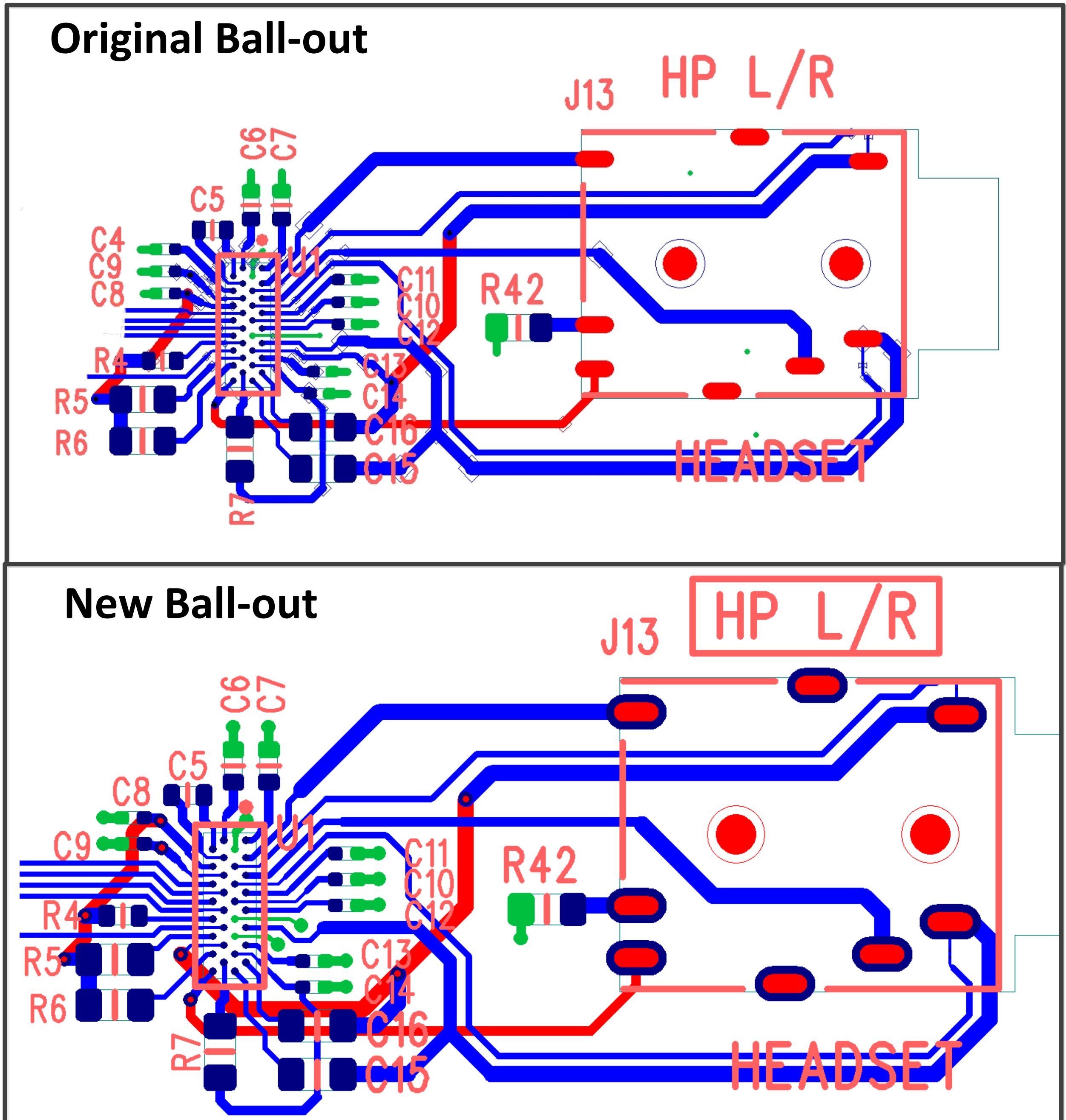

Figure 3 Original Layout vs Updated Layout

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6 Revision history

Revision	Date	Description
1.0	03-11-2015	Initial version.

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Status definitions

Status	Definition
DRAFT	The content of this document is under review and subject to formal approval, which may result in modifications or additions.
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