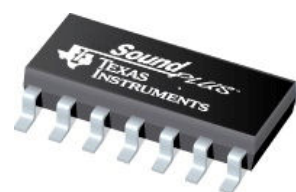


# iDAC2: Spilling the Secret Sauce (3/6)

## Analogue section: Secret to the 'Analogness'

The analogue stage uses a Burr-Brown (by TI) Soundplus® J-Fet integrated amplifier with an added discrete Class A output buffer. The Class A buffer is a unique design combining J-Fets and bipolar transistors in a single-stage and allows the iDAC2 to handle even 600 Ohm Loads without breaking a sweat.

The 'Soundplus®' integrated amplifier selected for the iDAC2 easily goes up against the 'ultimate' audio integrated amplifiers from Burr-Brown (OPA627 and OPA827). Rather than relying on 'fashion' and selecting a 'fashionable' Op-Amp, we selected a specific Burr-Brown part because of its performance when combined with our unique Class A TubeState® output stage and in our mixed passive/active filter Analogue stage, it goes up right against the most expensive options (both in objective measurements and in listening).



We start from the datasheet specifications in the comparison table below itself which speaks for itself. Using industry benchmarks such as Input Noise and GBWP the BB Soundplus® compares well with both the BB OPA627B and OPA827....

	iFi selected Burr-Brown SoundPlus®	OPA627B	OPA827	OPA2134/ OPA2132	OPA2604	MUSES 8920 JRC	MUSES 01JRC
Input type	<b>J-Fet</b>	J-Fet	J-Fet	J-Fet	J-Fet	J-Fet	J-Fet
Input Noise <sup>1</sup>	<b>4.5nV  /Hz</b>	5.2nV  /Hz	4nV  /Hz	8nV  /Hz	10nV  /Hz	8nV  /Hz	9.5nV  /Hz
GBWP <sup>2</sup>	<b>18MHz</b>	16MHz	22MHz	8MHz	20MHz	11MHz	3.3MHz
THD&N <sup>3</sup>	<b>0.00005%</b>	0.00003%	0.00004%	0.00008%	0.0003%	0.00004%	0.0002%
THD&N with discrete buffer	<b>0.000017%</b>	n/a	n/a	n/a	n/a	n/a	n/a

<sup>1</sup> Input Noise, a measure how much noise the Op-Amp produces, lower is better

<sup>2</sup> Stands for Gain Bandwidth Product, a measure how 'fast' the Op-Amp is, higher is generally better

<sup>3</sup> Stands for Total Harmonic Distortion & Noise, a measure how linear the Op-Amp is, lower is generally better

...BUT where we finish is by adding the extra discrete J-Fet + BJT Class A output stage to the iFi selected Burr-Brown, distortion performance is improved beyond that of the OPA627 and OPA827 from an already pretty good 0.00005% to a gobsmacking 0.000017%. This is another instance of where we go beyond the datasheet to wring a higher measured performance level.

The next question is, nice number but can one hear this in the real world?

Our answer would be a resounding ‘yes’ – we compared and we found audibly better dynamism with more difficult loads.

Next time, *DirectDrive*® (part 4)



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#### **About iFi**

iFi Audio, part of AGL, is headquartered in Southport, UK. And also owns the HiFi brand Abbingdon Music Research (AMR). AMR designs and manufacture high-end audio ‘home-based’ components. iFi Audio designs and manufactures portable and desktop ‘ultra-fidelity’ audio products. The combined in-house hardware and software development team enables AMR and iFi audio to bring to market advanced audio products.

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