

TAS5805M Transition Guide – from TAS5707, TAS5733L, TAS5751M

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Summary

Are you considering using TAS5707, TAS5733L or TAS5751M? Are you interested in improving performance for your, up to 23W, digital audio system?

If you answered YES to any of these questions, this technical note will help you design a better, more cost-effective system. The purpose of this technical note is to help transition customers from TAS5707, TAS5733L, or TAS5751M to TI's next-generation inductor-less TAS5805M.

What is TAS5805M?

TAS5805M is TI's new closed-loop, Inductorless, 23-W stereo digital-input Class-D Amplifier with 96-kHz Enhanced Processing and SDOOUT. Below a few of the features' benefits will be explained:

Closed Loop. TAS5805M closed-loop topology reduces component count and solution size; typical open loop solutions need 31 passive components (resistors, capacitors) while TAS5805M needs only 8 passives. TAS5805M closed-loop topology provides better THD+N for better sound quality.

Inductor-less (at $\leq 10\text{W/Ch}$). TAS5805M can use low-cost ferrite beads, instead of bulky and expensive inductors, while still passing EMC standards.

96-kHz Enhanced Processing. TAS5805M leverages 96-kHz sampling rate for better sound quality. Its integrated processing capabilities allow system designers to leverage up to 35 Biquads for superior sound enhancement.

SDOUT. Serial Data Out allows TAS5805M to output a stereo digital data stream pre- or post-DSP. SDOOUT can be leveraged to add a subwoofer channel or to enhance external echo cancellation algorithms.

Hybrid Modulation. Hybrid Modulation is designed for minimized power loss without compromising the THD+N performance, and is optimized for battery-powered applications with Hybrid modulation.

3-band Dynamic Range Compression (DRC). TI's advanced DRC allows for complete control over the sound pressure level (SPL) spectrum. It significantly reduces noise while making low signals louder and high signals softer for a more enjoyable experience.

How can I transition to TAS5805M?

Systems currently using any of the aforementioned legacy devices can transition to TAS5805M as long as the power needs are met per the tables above with minimum design changes. Systems with output power requirements $\leq 10\text{W/ch}$ will particularly benefit from transitioning to TAS5805M as they can fully leverage its inductor-less capabilities to accommodate smaller ferrite beads. As detailed above, systems that transition to TAS5805M will leverage a smaller solution size (fewer passives and smaller ferrite beads) and better sound quality/enhancements (higher sampling rate, up to 96kHz, and better processing capabilities, up to 35 biquads).

How does TAS5805M compare to TI's legacy digital-input open-loop Class-D amplifiers?

[Table 1](#) summarized how TAS5805M compares to TAS5751M, TAS5733L and TAS5707.

Table 1. Comparison Table for TAS5805M vs. TAS5707, TAS5733L, TAS5751M

	TAS5733L	TAS5751M	TAS5707	TAS5805M
Voltage range	8V – 16V	8V – 26V	8V – 26V	4.5V – 26V
Current	4A	4A	4.5A	5A
Rdson	120mΩ	80mΩ	180mΩ	180mΩ
Power 2.0: 12V, 4Ω, 10% THD+N	2x15W	2x17W		2x16W
Power 2.0: 12V, 8Ω, 10% THD+N	2x9W	2x10W	2x9W	2x10W
Power 2.0: 18V, 8Ω, 10% THD+N		2x20W		2x21W
Architecture	Open Loop	Open Loop	Open Loop	Closed Loop
SNR	104dB	106dB	106dB	107dB
Input Data Format	I2S	I2S	I2S	I2S, TDM
Biquads	20BQs	20BQs	14BQs	35BQs
SDOUT	No	No	No	Yes
Maximum Sampling Rate	48kHz	48kHz	48kHz	96kHz
Inductorless	No	No	No	Yes (up to 10W)
Crosstalk	69dB	62dB	62dB	110dB

Additional Resources

- Download the TAS5805M datasheet. ([SLASEH5B](#)).
- Get started quickly with the TAS5805M evaluation module ([SLOU510](#)).
- LC Filter Design application note ([SLAA701](#))
- Visit TI's [Smart Speaker](#) portal to learn how [TAS5805M](#) fits in this application.
- App note: Minimize Idle Current in Portable Audio with TAS5805M Hybrid Mode ([SLAA836](#))
- Simplify evaluation, configuration and debug process with [PurePath™](#) Console, highly integrated and easy-to-use audio development suite.

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