

TPA3251EVM

Quick-Start Guide

→ Start Here



ti.com/tool/tpa3251evm

 TEXAS INSTRUMENTS

Evaluation Kit Contents

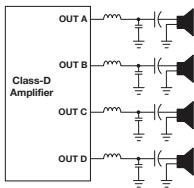
- TPA3251 device
- PCB, heat sink, and external components to evaluate at full power
- Banana output connectors
- RCA input jacks

Not included:

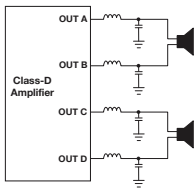
- Power supply: up to 38V, 17A for max power
- Speakers
- High-Resolution Audio Source

Supported Output Configurations

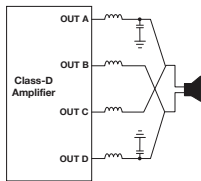
See full User's Guide online for more information.



4-Channels—single-ended (SE)



2-Channels—bridge-tied load (BTL)



1-Channel—parallel bridge-tied load (PBTL)

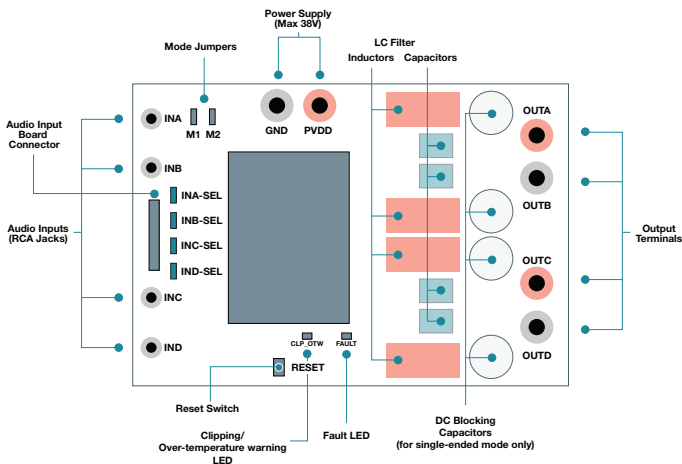
TI Audio Plug-in Modules

The TPA3251EVM supports the TI Audio Plug-in Module ecosystem. Use the Audio Input Board (AIB) header to connect various pre-amplifier modules to create different applications like a guitar amplifier, studio monitor or karaoke machine.



Getting Started

1. Ensure the RESET switch (S1) is in the RESET position.
2. Connect the power supply to the EVM using the PVDD and GND terminals.
3. Connect the first speaker to the output terminals OUTA and OUTB.
4. Connect the second speaker to the output terminals OUTC and OUTD.
5. Connect a high-resolution audio source to INA (J3) and INC (J18) for single-ended operation, which are default RCA input terminals.
6. Apply power (18V-36V) and move the RESET switch (S1) to the NORMAL position.



Indicator Descriptions

3.3V – indicates the 3.3V rail used for GPIO control is active

12V – indicates the 12V rail used for amplifier gate drive is active

CLIP_OTW – indicates when clipping or over-temperature warning occur

FAULT – indicates when a fault condition occurs

(requires toggling reset to clear fault)

FAULT	CLIP_OTW	Possible Faults
ON	ON	OTW, OTE, UVP, OLP
ON	OFF	UVP, OLP
OFF	ON	OTW (solid), Early Clipping (flickering)
OFF	OFF	No Fault

OTW - Over-temperature warning (> 125°C)

OTE - Over-temperature error / shutdown (> 150°C)

UVP - Under-voltage protection

OLP - Over-load or over-current protection

Default Jumper Configuration

Jumper	Default	Comment	Jumper	Default	Comment
J29	IN	PVDD to 15V BUCK	J24	IN	OUTC CAP SHUNT
J31	IN	15V BUCK to 12V TERM	J25	IN	OUTD CAP SHUNT
J32	IN	12V LDO to 12V TERM	J7	OUT	PBTL SELECT INC
J33	IN	3.3V LDO to 3.3V TERM	J8	OUT	PBTL SELECT IND
J36	IN	12V LDO to GVDD	J4	1 to 2	INA/B SE INPUT
J21	OUT	C_START	J19	1 to 2	INC/D SE INPUT
J16	3 to 4	MASTER MODE	J34	1 to 2	INA-SEL RCA
J5	2 to 3	M1-BTL	J35	1 to 2	INB-SEL RCA
J6	2 to 3	M2-BTL	J26	1 to 2	INC-SEL RCA
J22	IN	OUTA CAP SHUNT	J27	1 to 2	IND-SEL RCA
J23	IN	OUTB CAP SHUNT			

Features & Benefits



High-Resolution

Deliver audio as it was recorded all the way to the speaker. The TPA32xx family supports hi-res audio.



Low-Distortion

A new closed-loop design enables ultra-low THD across all frequencies.



High-Bandwidth

The TPA32xx family of devices support up to 100 kHz audio bandwidth.



Efficient Design

Best power efficiency and idle losses enable low power consumption and smaller heat sink.



High-Power

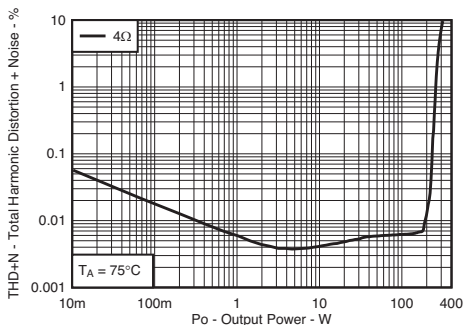
Devices with 50 W to 650 W of output power that deliver large sound in a compact size.



Easy to use

Simplify PCB design with fewer external components, integrated protection, and scalable power options.

THD+N vs Output Power – 4Ω, BTL, 1kHz



TPA324x/5x Product Family

Device	TPA3244	TPA3245	TPA3250	TPA3251	TPA3255
Max Power to BTL/ Ch (W)	110	145	130	220	315
Max Power to PBTL (W)	160	230	190	355	605
Min Supported BTL Load (Ω)	4	3	4	3	4
Power Stage Supply Max (V)	31.5	31.5	38	38	53.5
Thermal Pad Location	Bottom	Top	Bottom	Top	Top
Package	44HTSSOP ²	44HTSSOP ¹	44HTSSOP ²	44HTSSOP ¹	44HTSSOP ¹
Dimensions	6.1 x 14mm				

¹Pad-Up, pin-compatible package

²Pad-Down, pin-compatible package

More Information

TPA3251 Product Webpage

- TPA3251 Datasheet
- Complete TPA3251EVM User's Guide
- Schematics and layout

High-Power Audio Portal

- New Products
- Technical Documents
- Support and Training
- Product Selection Tool

Available on: ti.com/tpa3251

Available on: ti.com/highpoweraudio



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