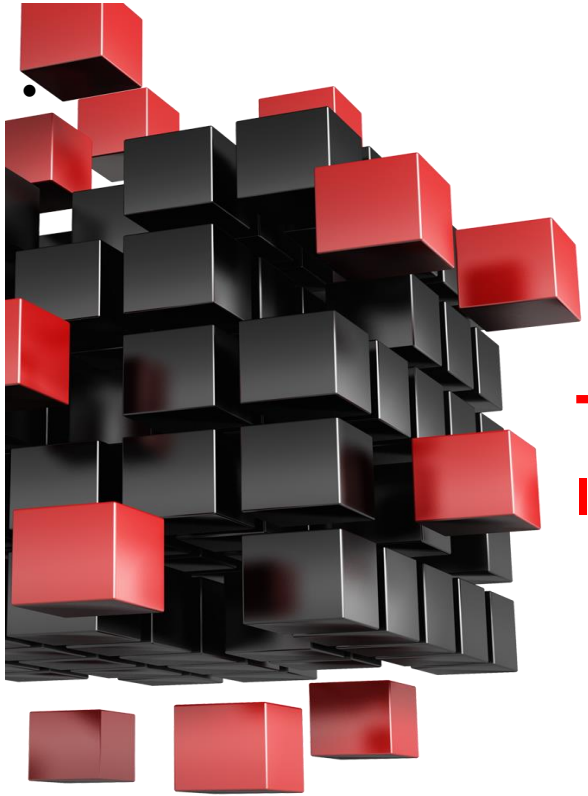


TPA3136 :

Inductor Free Amplifier With Ultra Low BOM Cost

Click here for more information about TI Audio

SLYW063

TPA3136D2

Inductor Free Class-D Audio Amplifier

TIDesigns

P2P with TPA3110

Features

- Inductor Free operation
- Power Limiter Speaker Guard
- Closed Loop Power Stage
- Speaker Guard DC Protection
- Very Low Idle Losses
- Low Voltage Support
- 28 pin TSSOP package Support

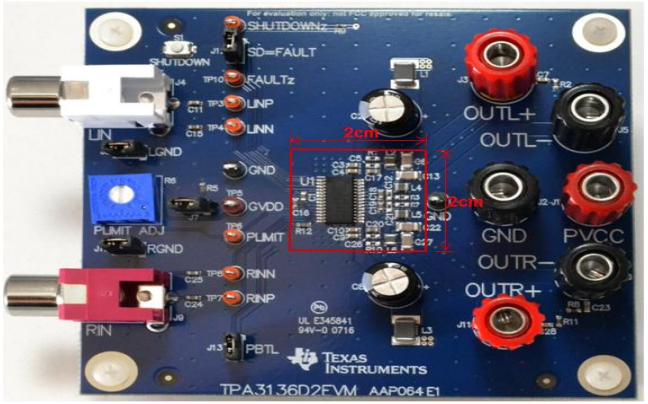
TPA3137 is 6Wx2

Applications

- TV
- BT Speakers
- Wireless Speakers
- Mini Speakers
- USB Speakers
- Musical instruments

Benefits

- Very Low BOM cost and small board space
- Speaker protection
- High Fidelity Audio, Low PSRR
- Protect speaker against DC failure
- Ideal for battery operation
- Works for 12V and 2S battery systems
- Flexibility



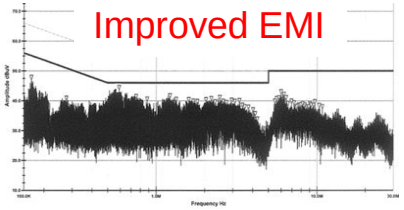
Feature	TPA3136D2
No Heat Sink Required (until 10Wx2/8Ω)	
InductorFree Operation	
Very Low output noise	
Wide Power Supply (4.5V -15V)	
Enhanced EMI Performance	
Speaker Guard™ Speaker Protection	
Excellent SNR, THD+N, Crosstalk	
OT,OC,DC protection	
Support BTL mode	

TPA3136 Features

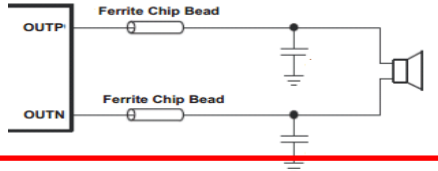
Inductor Free Operation

- ✓ Spread Spectrum
- ✓ Edge rate control
- ✓ Advanced Loop Filter

Improved EMI



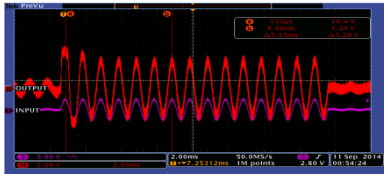
Inductor free Operation



Power Limiter

- ✓ Pin controlled power limiter

power limiter



Benefits

- ✓ Protects Speaker

Battery Friendly Operation

- ✓ Lower voltage (4.5V) Support
- ✓ Low Idle Losses
- ✓ Inductor free

Results in :

- ✓ Efficient class-D operation
- ✓ Less charging /discharging of inductors

Benefits

- ✓ Longer Battery Operation

TPA3136
inductor Free Class-D Audio Amplifier

Features

Discovery Questions

- **Inductor Free operation**
- **Closed Loop Power Stage**
- **Speaker-Guard DC Protection**
- **Ultra-Low Idle Loss**
- **Low Voltage Support (up to 4.5V) for 12V and 2S battery systems**
- **Up to 10WX2continuos power output**
- **28 pin TSSOP package Support**

Click here for more information about TI Audio

TPA3136
iFree Class-D Audio Amplifier

Features

Discovery Questions

- Is this a new technology?
  → Yes. inductor Free technology from TI
- What is iFree?
  → iFree technology supports inductor free operation for most of the popular applications. Major BOM cost savings
- Is this the next gen TPA3110?
  → The device is p2p compatible with TPA3110. Major improvement on BOM cost/ audio performance compared to TPA3110

TPA3136
inductor Free Class-D Audio Amplifier

- Why were these parts developed?
  - To provide inductor-free operation of Class-D for applications that require low BOM, low board space
  - Protect small speakers
  - Support battery operation
  - High Performance amplifier with high fidelity sound
  - Supports wall adapters without degrading performance

- What differentiates this part?
  - iFree operation gives low BOM cost and saves board space
  - Speaker guard Auto Gain Limiter protects small speaker and limits the power without THD degradation
  - Low idle losses, low voltage support (4.5V) will help with battery operation
  - High PSRR to support poor supply

TPA3128D2:

2x30-W Differential Analog Input, Inductor-Free Class-D Amplifier With Low Idle Power Dissipation

TPA3128D2: 2x30-W Differential Analog Input, Inductor-Free Class-D Amplifier with Low Idle Power Dissipation

Features

- 2-Ch Fully Differential Analog Inputs
- 2 x 30W into 8Ω at 21V with no heatsink
- Inductor Free Operation
- 4.5 to 26V supply range
- 1SPW/BD modulation on-the-fly switching
- Very Low Idle Current <23mA idle current
- P2P compatible with last generation TPA3118; 50% less idle current

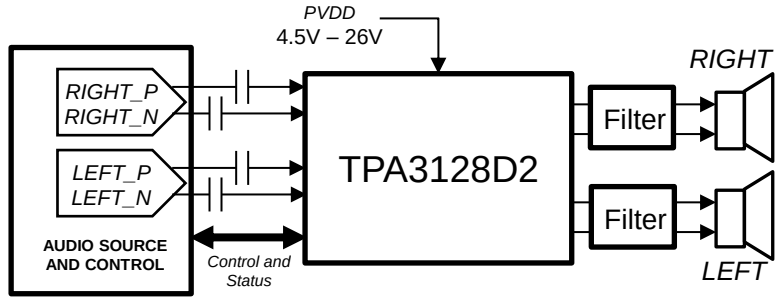
Benefits

- Maximum noise rejection
- Low Total System Cost by using low-cost ferrite beads
- Flexibility to support a wide range of systems
- Best balance between longer battery life and THD+N audio performance
- Low Idle Power Dissipation: Ideal for battery-powered systems
- Easily Scalable design

Applications

- TVs
- Bluetooth and Wireless Speakers
- Musical Instruments
- Soundbars
- Mini-Micro Components

HTSSOP-32
11-mm x 8-mm



TPA3128D2: 2x30-W Differential Analog Input, Inductor-Free Class-D Amplifier With Low Idle Power Dissipation

Features

Discovery questions

- ★ 1SPW/BD modulation on-the-fly switching
- ★ No heat sink required (until 30W x2/ 8Ω)
- ★ P2P compatible with last generation TPA3118
- Individual channel shutdown
- Separate AVCC/ PVCC supply
- Support 300 KHz F_{sw}
- < 70µV A-weighted output noise
- SpeakerGuard™ Speaker Protection
- Excellent SNR, THD+N, Crosstalk
- OT, OC, DC protection

TPA3128D2: 2x30-W Differential Analog Input, Inductor-Free Class-D Amplifier with Low Idle Power Dissipation

Features

Discovery questions

- **Does your application need an analog input audio amplifier?**
  - *TPA3128D2 is a Class-D stereo efficient, digital audio amplifier that can deliver 2 x 30 W into a 8-Ω BTL load at 21 V with no heatsink.*
- **Is your application battery-operated?**
  - *With extremely low idle current, <21 mA for recommended LC filter configurations, the TPA3128D2 is a great fit for applications that run off batteries and desire a long battery run time.*
- **Does your application currently use the TPA3118D2?**
  - *TPA3128D2 is a direct pin to pin replacement, which makes upgrading your application with this device quick and easy.*
- **Does thermal heat dissipation play a big concern in your application?**
  - *TPA3128D2 device can output power up to 2 x 30 W / 8Ω before needing an external heat sink on a dual layer PCB. If even higher power is required, the TPA3126D2 does 2 x 50 W/ 4-Ω with a small heat-sink attached to the top side PowerPAD™*

TPA3128D2: 2x30-W Differential Analog Input, Inductor-Free Class-D Amplifier with Low Idle Power Dissipation

- Why was the TPA3128D2 developed?
  - *TPA3128D2 was developed to improve last generation TPA3118's idle current.*
  - *As TPA3128 is p2p compatible with TPA3118, it can be used as:*
    - *A replacement for current projects using the TPA3118D2 to increase battery life and reduce total system cost.*
    - *or in a new project that values battery life.*

- What problem is this part solving?
  - *TPA3128D2 solves high total system cost and battery life.*

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TPA3128D2: Key Markets

	Speakers	T.Vs	Musical Instruments
Example End Equipments	• Wireless Speakers • USB Speakers • Bluetooth Speakers	• LCD TV's • OLED TV's • Plasma TV's • LED TV's	• Keyboards • Electronic Drums
Key Market Differentiators	• No heat sink required until 2 x 30W, which saves board space. • Ultra low idle current to extend battery life. • Output offset improvement to minimize "pop/click". • Individual channel shut down (PCVV and AVCC) to save power • Extremely easy to run in Novel Hybrid Mode to achieve low power loss.	• No heat sink required until 2 x 30W, which saves board space. . • Supports OV, UV, DC, Thermal and SC faults.	• Ultra low idle current to extend battery life. • Individual channel shut down (PCVV and AVCC) to save power • Output offset improvement to minimize "pop/click". • Extremely easy to run in Novel Hybrid Mode to achieve low power loss.

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