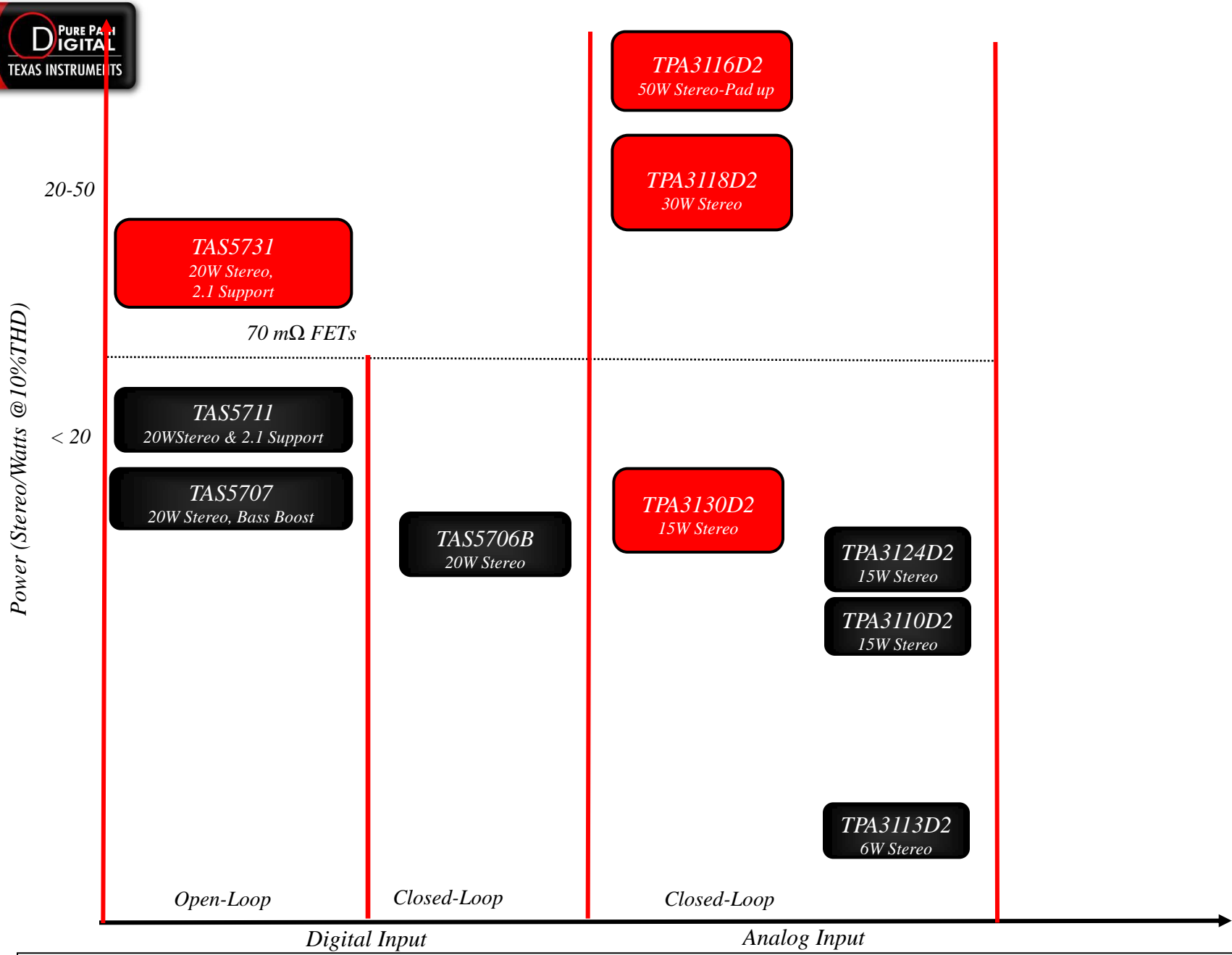


TI Audio Power Amplifiers Design for TV

Agenda

- TPA31XX Family
- TAS57XX Family



EXISTING

NEW

ROADMAP

TPA31XX Family

Analog Input

TPA3110D2

15W Filter-Free Stereo (BTL) Class-D Audio Amp with SpeakerGuard™

Features

- Up to 90% Efficient Class-D operation (8 ohm)
- 15W/8Ω/16V, 10W/8Ω/13V or 13W/4Ω/12V (10% THD+N)
- Wide 8V to 26V supply voltage operation
- Thermal (hysteresis) & short circuit protection with fault pin / auto-recovery option
- Differential inputs
- 3rd Generation Amplifier
- Filter-Free Advanced EMI Suppression Technology
- SpeakerGuard™ speaker protection includes adjustable power limiter and DC detect circuitry.
- Flow through pin-out

Benefits

- Eliminates need for external heat sink
- High output power at 8Ω; supports down to 4Ω loads
- Supports wide range of supplies
- Excellent reliability and robust operation
- Noise immunity without layout headaches
- Pop-Free performance + excellent THD+N
- Reduces BOM by up to 50% vs. competition
- Protects speakers from being overdriven and from damaging DC currents.
- Ease of layout / P2P short robustness

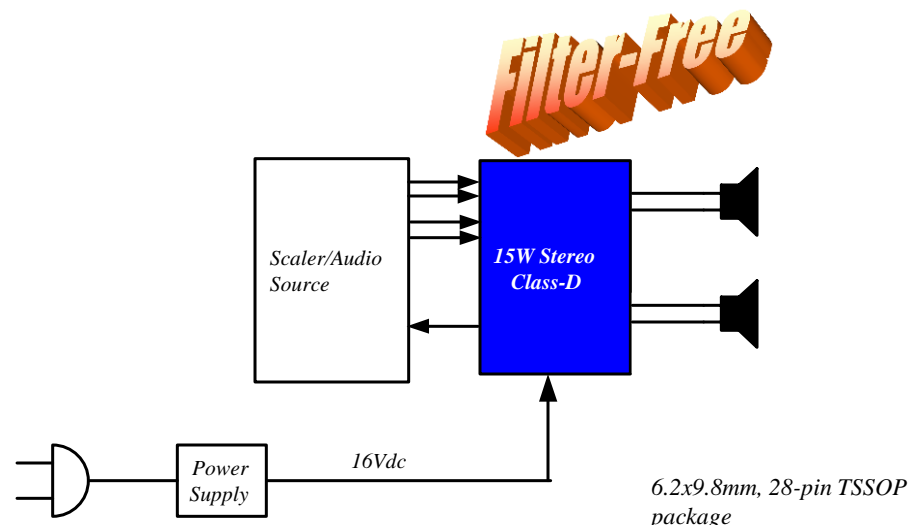
Applications

- CRT, DLP-TV, LCD-TV and PDP
- Consumer Audio Electronics

Calendar



In Production



TPA3116D2

50W Stereo (BTL) Class-D Audio Amp with SpeakerGuard™

Features

- Up to 92% Efficient Class-D operation (8 ohm, stereo)
- 50W/4Ω/21V (10% THD+N) with heatsink
- High current limit – 7.5A
- Wide-range **4.5V** to 26V supply voltage operation
- Differential inputs
- Synchronize to external clock
- Multiple frequency options based on pin settings.
- Adjustable power limiter and DC detect circuitry.

Benefits

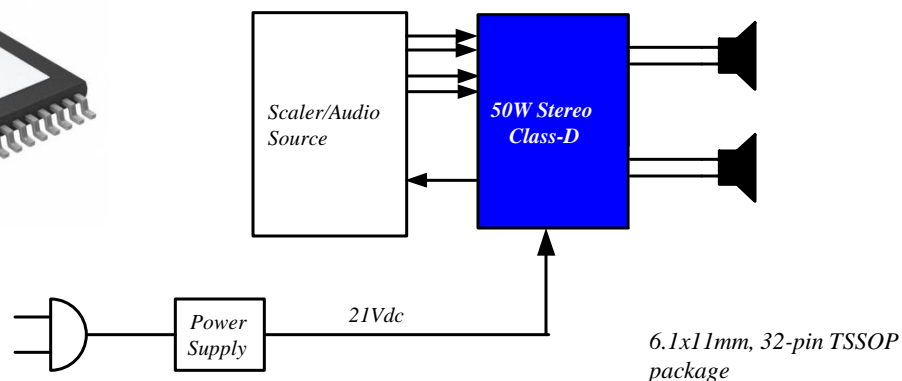
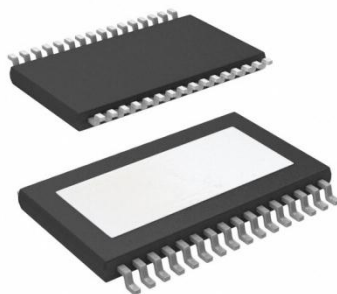
- Up to 50W with small heat-sink
- Allows bursts of peak audio without shutdown.
- Supports lithium-ion battery operated systems
- Noise immunity without layout headaches.
- Avoids beat frequency problems
- Good AM performance
- Protects speakers from being overdriven and from damaging DC currents.

Package

32pin HTSSOP Pad Up (DAD)

Applications

After-market automotive, mini-micro component, speaker bar, iPod dock.



TPA3118D2

30W Stereo (BTL) Class-D Audio Amp with SpeakerGuard™

Features

- Up to 92% Efficient Class-D operation (8 ohm, stereo)
- 30W/4Ω/18V (10% THD+N) with NO-heat-sink
- High current limit - **7.5A**
- Wide **4.5V** to 26V supply voltage operation
- Pin selectable BD or new efficient modulation scheme
- Tunable PWM frequency up to 1.2 MHz
- Synchronize to external clock
- Multiple frequency options based on pin settings.
- Adjustable power limiter and DC detect circuitry.
- Flow through pin-out with no power AVCC pin on input side

Benefits

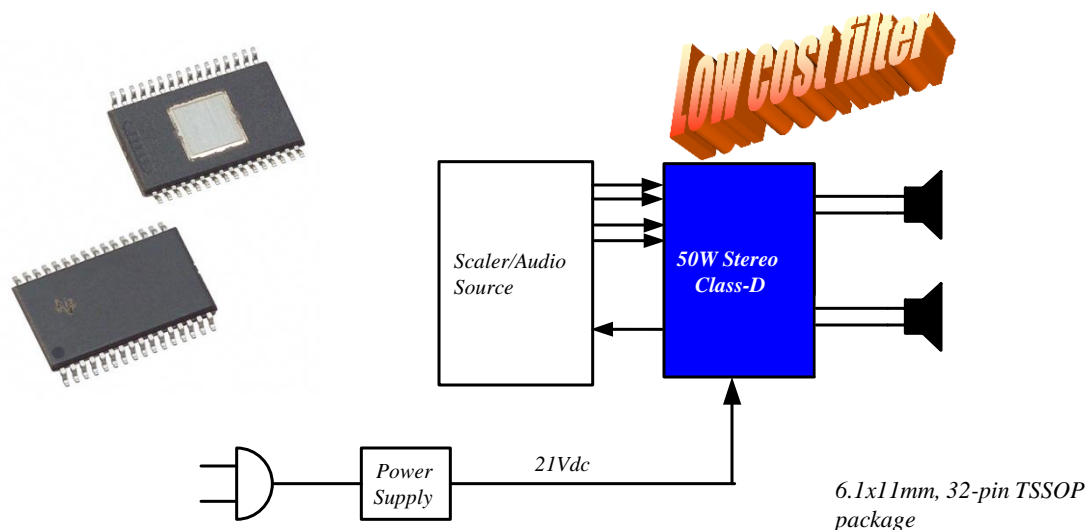
- Up to 30W using a dual layer PCB for heat-sink
- Allows bursts of peak audio without shutdown.
- Supports lithium-ion battery operated systems
- Low switching losses and high efficiency.
- Smaller inductor values and sizes.
- Avoids beat frequency problems
- Good AM performance
- Protects speakers from being overdriven and from damaging DC currents.
- Ease of layout / GND plane layout, EMI

Package

32pin HTSSOP Pad down (DAP)

Applications

mini-micro component, speaker bar, iPod dock.



TPA3130D2

15W Stereo (BTL) Class-D Audio Amp with SpeakerGuard™

Features

- Up to 92% Efficient Class-D operation (8 ohm, stereo)
- 15W/8Ω/15V 10W/8Ω/12V (10% THD+N)
- Wide **4.5V** to 26V supply voltage operation
- Differential inputs
- Synchronizable to external clock
- Tunable PWM frequency up to 1.2 MHz
- Multiple frequency options based on pin settings.
- Adjustable power limiter and DC detect circuitry.
- Flow through pin-out with no power pin on input side

Benefits

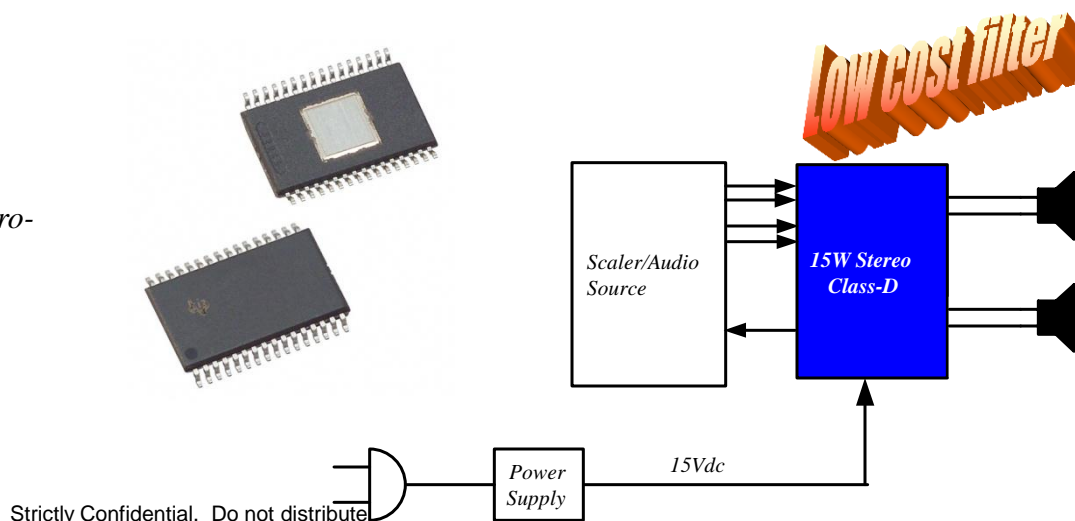
- Eliminates need for external heat sink, cool operation
- Single layer board – 15W output.
- Supports lithium-ion battery operated systems
- Noise immunity without layout headaches
- Avoids beat frequency problems
- Smaller, lower cost inductor values and sizes.
- Good AM performance.
- Protects speakers from being overdriven and from damaging DC currents, multiple power output models
- Ease of layout / GND plane layout, EMI

Package

32pin HTSSOP Pad down (DAP)

Applications

Portable/Battery operated docks and Micro-component Systems



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TAS57XX Family

I2S Input



TAS5707

20W Stereo (BTL) I2S Audio Amplifier w/ DRC & EQ

Features

- 2-ch I²S input; 8kHz-48kHz F_s
- 20W stereo, 8Ω, 18V (THD+N=10%)
- Up to 90% efficient operation
- Wide 8-24V supply range; 3.3V Dig. Supply
- Volume Control: -100dB to +48dB
- 7-biquads per L/R channel
- Bank Switching
- DRC with programmable threshold, attack and decay
- P2P compatible with the TAS5709

Benefits

- Direct connect to digital processor
- High output power from standard supply
- Eliminates need for heat sink
- Only 2 supplies required for operation
- 0.5dB steps allow fine tuning of gain
- Improves speaker performance
- Minimized EQ error when changing sample rates
- Enables night-time listening modes and speaker protection
- Flexibility to chose different levels of audio processing without board level changes.

Applications

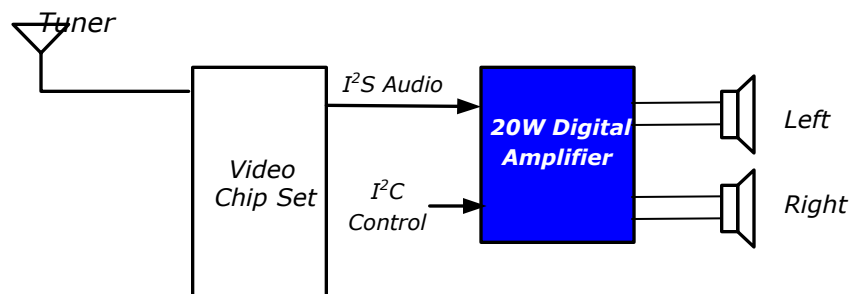
- DLP-TV, LCD-TV and Plasma Displays
- Consumer Audio Applications

Calendar



In Production

1K Pricing: \$2.30



7x7mm, 48-pin
HTQFP package (PP)

TAS5711

20W Stereo (BTL) I2S Audio Amplifier with 2.1 support

Target Features

- 2-ch I²S input; 8kHz-48kHz F_s
- 20W stereo, 8Ω/18V (THD+N=10%)
- Up to 90% efficient operation
- Wide 8 - 26V Supply Range; 3.3V Dig. Supply
- Single device supports mono, stereo, and 2.1
- Single ended 2.1 support (2x SE + 1x BTL)
 - 10W L/R 4 Ω + 20W Sub 8Ω (18V)
- Single filter PBTL support
- Speaker EQ, 2x DRCs, 3D support + bank switching
- P2P compatible with the TAS5707, 5709 & 5713
- I2C address select via terminal pin
- Fault pin on shorts, over temp, and under voltage

Applications

- DLP-TV, LCD-TV and Plasma Displays
- Docking stations & Consumer Audio Applications

Calendar

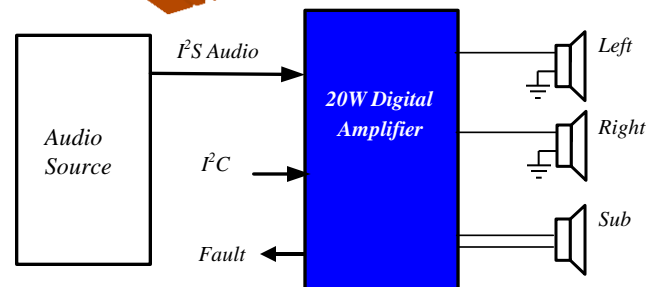


In Production

Benefits

- Direct connect to digital processor
- High output power from standard supply
- Eliminates need for heat sink
- Supports +24V back light operation
- Easy to manage IC inventory / logistics
- Low cost 2.1 solution + single board design for stereo and 2.1 applications.
- Reduced cost / board space
- Advanced processing improves audio experience
- Single board design supports multiple processing levels
- Support for multiple devices per board
- System controller can easily supervisor operation

2.1 Support



TAS5731

20W Stereo I2S Audio Amplifier with Audio Processing and 2.1 Support

Target Features

- 2-ch I²S input; 8kHz-48kHz F_s
- 20W stereo, 8Ω/18V (THD+N=10%)
- 70 mΩ R_{dson} efficient FETs
- Up to 90% efficient operation
- Wide 8–21V Supply Range; 3.3V Dig. Supply
- *Single Ended 2.1 Support (2x SE + 1x BTL)*
- *Single Filter PBTL Support*
- *Speaker EQ, Improved 2-Band DRC, Bass Boost & 3D*
- *P2P compatible with the TAS5707, 5709 & 5713*
- *I2C address select via terminal pin*

Benefits

- *Direct connect to digital processor*
- *High output power from standard supply*
- *Eliminates need for heat sink*
- *Only 2 supplies required for operation*
- *Single board design supports both stereo and 2.1*
- *Reduced cost / Board space*
- *Improved audio performance*
- *Advanced processing improves audio experience*
- *Single board design supports multiple processing levels*
- *Support for multiple devices per board*

Applications

- DLP-TV, LCD-TV and Plasma Displays
- Docking stations & Consumer Audio Applications

LOW R_{DS(on)} FETs 2.1 Support

