

# STA, TDA, A, TS, IMP, MP

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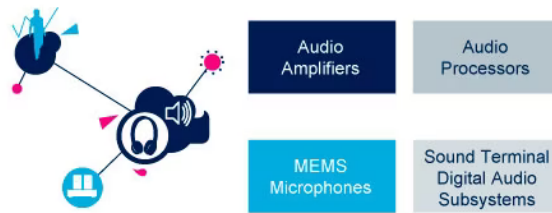
# Audio ICs

## Overview

ST is world leader in audio solutions, offering:

- The largest portfolio of audio amplifiers
- A wide range of packages to satisfy all space constraints, from the larger and powerful MW down to the smallest QFN, TQFP and CSP packages.
- Highly-reliable and automotive-grade products.

Our range of IPs, also including the innovative , allows you to get the best sound possible from your end application. A large package and silicon technology portfolio enables the space and power-savings you need to reduce your costs.



## Audio Amplifiers

### Overview

From the leading supplier of audio amplifiers, ST's portfolio offers:

- Wide product range, with output power ranging from a few mW up to 250 W per channel, from any analog or digital audio-signal source
- Class AB, class D and class G amplifiers
- Broad set of configuration possibilities to support your application needs
- A variety of packages, including tiny packages for space-constrained applications
- High efficiency amplifiers, reducing power dissipation and the need for larger heatsinks
- Automotive grade solutions

We offer a product range covering applications ranging from headphones to the most powerful subwoofers, with a broad set of configuration possibilities, suitable for any performance and cost requirements.

### **TDA7498E brings superior sound and sleek style to advanced audio systems**

The TDA7498E amplifier offers flexible audio-system configuration, in both stereo and mono modes, and also includes the mono parallel feature for driving the subwoofer/woofer channel in 2.1 sound set-ups. To maximize the speaker output power, sound-system manufacturers require high-efficiency amplifiers capable of driving speakers at low impedances of 2 or 3 ohms, which creates a challenge by increasing device sizes. The device's high-current capability not only delivers high output power, but also enables the design of platform solutions where the speaker impedance can be simply changed - from 8 down to 2 ohms - without any power or current limitation.

**Audio ICs / Audio Amplifiers /Class-AB Audio Power Amplifiers**

Part Number	General Description	Package	Supply Voltage (V) min	Supply Voltage (V) max	Supply Mode	Output Channels typ	Output Power (W) (Each Channel @10% THD, typ. load) max	Load (Ω) typ	Standby Function	Mute	THD (%) typ
STA540	4 x 13 W dual/quad power amplifier	MW 15L	8	22	single	4	13	2	yes	false	0.02
TDA7264	25 W + 25 W stereo amplifier with mute and standby	MW 8L	5	22.5	split	2	25	8	yes	true	0.5
TDA7265	25 W + 25 W stereo amplifier with mute and standby	MW 11L	5	25	both	2	25	8	yes	true	0.7
TDA7265B	30 W + 30 W stereo amplifier with mute and standby	MW 11L	8	33	both	2	30	8	yes	true	0.02
TDA7266	7 W + 7 W dual bridge amplifier	MW 15L	3	18	single	2	7	8	yes	true	0.2
TDA7266D	5 W + 5 W dual bridge amplifier	PowerSO-20	3.5	12	single	2	5	8	yes	true	0.2
TDA7266M	7 W mono bridge amplifier	MW 15L	3	18	single	1	7	8	yes	true	0.05
TDA7269A	2 x 14W stereo amplifier with mute and standby	MW 11L	5	20	split	2	14	8	Yes	true	0.02
TDA7292	40 W + 40 W stereo amplifier with mute and standby	MW 11L	8	33	both	2	40	8	Yes	true	0.02
TDA7293	120 V / 100 W DMOS audio amplifier with mute and standby	MW 15L	12	50	split	1	100	8	Yes	true	0.05
TDA7294	100 V, 100 W DMOS audio amplifier with mute and standby	MW 15L	10	40	split	1	100	8	Yes	true	0.05
TDA7295	80 V, 80 W DMOS audio amplifier with mute and standby	MW 15L	10	40	split	1	80	8	Yes	true	0.05
TDA7296	70 V, 60 W DMOS audio amplifier with mute and standby	MW 15L	10	35	split	1	60	8	Yes	true	0.05
TDA7297	15 W + 15 W dual bridge amplifier	MW 15L	6	18	single	2	15	8	Yes	true	1

**Audio ICs / Audio Amplifiers /Class-D Audio Power Amplifiers**

Part Number	General Description	Package	Supply Voltage (V) min	Supply Voltage (V) max	Output Power (W) (@ 10% THD, Typ Load) max	Load ( $\Omega$ ) typ	Input Channels typ	Filterless	Mute	Standby Function	Standby Current ( $\mu$ A) typ	Output Stage Mode
TDA7491HV	20W+20W dual BTL class-D audio amplifier	PowerSSO 36	5	18	20	8	2	false	true	yes	2.5	PWM
TDA7491LP	5W+5W dual BTL class-D audio amplifier	PowerSSO 36	5	14	5	8	2	true	true	yes	-	PWM
TDA7491MV	25W mono BTL class-D audio amplifier	PowerSSO 36	5	18	25	6	1	true	true	yes	2.5	PWM
TDA7491P	10W+10W dual BTL class-D audio amplifier	PowerSSO 36	5	18	10	6	2	true	true	yes	-	PWM
TDA7492	50 W + 50 W dual BTL class-D audio amplifier	PowerSSO 36	8	26	50	6	2	false	true	yes	2.5	PWM
TDA7492E	79W+79W dual BTL class D audio amplifier	PowerSSO 36	7	26	79	4	2	false	true	yes	1	PWM
TDA7492MV	50W Mono BTL class-D audio amplifier	PowerSSO 36	10	26	50	6	1	false	true	yes	2.5	PWM
TDA7492P	25 W + 25 W dual BTL class-D audio amplifier	PowerSSO 36	8	26	25	8	2	false	true	yes	2.5	PWM
TDA7492PE	45W+45W dual BTL class D audio amplifier	PowerSSO 36	14	26	45	6	2	false	true	yes	1	PWM
TDA7498	100W+100W dual BTL Class-D audio amplifier	PowerSSO 36	14	39	100	6	2	false	true	yes	1	PWM
TDA7498E	160W+160W dual BTL class D audio amplifier	PowerSSO 36	14	39	160	4	2	false	true	yes	1	PWM
TDA7498L	80 W + 80 W dual BTL class-D audio amplifier	PowerSSO 36	14	36	80	6	2	false	true	yes	1	PWM
TDA7498MV	100-watt mono BTL class-D audio amplifier	PowerSSO 36	14	39	100	6	1	false	true	yes	1	PWM

**Audio ICs / Audio Amplifiers /Digital Audio Power Amplifiers**

Part Number	General Description	Output Stage Mode	Supply Voltage (V) min	Supply Voltage (V) max	Output Power Bridge (W) (Each Channel @10%	Load Bridge ( $\Omega$ ) typ	Load Single Ended ( $\Omega$ ) typ	Standby Current ( $\mu$ A) typ	Package
STA508	40 V, 4.5 A quad power half-bridge digital audio amplifier	DDX	10	36	80	8	-	-	PowerSO 36
STA510A	44 V, 5.5 A quad power half-bridge digital audio amplifier	DDX	10	39	100	8	4	-	PowerSO 36
STA510F	44-V, 5.5-A, quad power half bridge	FFX	10	40	100	6	3	-	PowerSSO 36
STA515W	40 V, 3 A quad power half-bridge digital audio amplifier	DDX	10	36	20	8	4	-	PowerSSO 36
STA516B	65-volt, 7.5-amp, quad power half bridge	FFX	10	58	200	6	4	-	PowerSO 36
STA516BE	500W FFX Digital Amplifier Power Stage	FFX	10	60	250	6	3	2400	PowerSO 36
STA518	40 V, 3.5 A quad power half-bridge digital audio amplifier	DDX	10	36	50	8	4	-	PowerSSO 36
STA533WF	18 V, 3 A quad power half-bridge	FFX	5	18	20	8	4	-	PowerSSO 36

**Audio ICs / Audio Amplifiers /Headphone and Low Power Amplifiers**

Part Number	General Description	Package	Supply Voltage (V) max	Supply Voltage (V) min	Supply Voltage (V) typ	Input Channels nom	Output Channels typ	Supply Mode	Output Power (W) (@ 10% THD, Typ Load) max	Load ( $\Omega$ ) typ	THD (%) typ	Standby Current (mA) typ	Gain (dB) nom
A21SP16	3 W filter-free class-D audio power amplifier	CSP P 0.5 mm	5.5	2.4	3.6	2	2	single	1.75	8	0.19	1.0E-5	-
TDA2822D	Dual low-voltage power amplifier	SO-8	15	1.7	3	-	2	single	-	8	0.2	-	39
TS2007FC	3 W filter-free class D audio power amplifier with 6-12dB gain	CSP P 0.5 mm	5.5	2.4	-	2	2	single	1.75	8	0.03	0.001	-
TS419	360mW mono audio amplifier with active high standby mode	MiniSO-8	5.5	2	2	1	1	single	0.36	32	0.1	1.0E-5	-
TS421	360mW mono audio amplifier with active low standby mode	QFN-8L P 0.5 mm	5.5	2	-	1	1	single	0.36	32	0.1	1.0E-5	-
TS472	Very low noise microphone preamplifier with 2.0V bias output with active low stdby mode	CSP P 0.5 mm,VFQFPN2 24	5.5	2.2	3.6	2	2	single	-	-	0.1	-	20
TS482	100mW stereo headphone amplifier	MiniSO-8,SO-8	5.5	2	-	2	2	single	0.1	32	0.1	1.0E-5	-
TS4871	1 W mono audio amplifier with standby active high	MiniSO-8,SO-8	5.5	2.5	-	1	1	single	-	8	0.1	1.0E-5	-
TS488	Pop-free 120mW stereo headphone amplifier	QFN-8L P 0.5 mm	5.5	2.2	-	2	-	-	0.75	32	0.1	1.0E-5	-
TS4890	1W mono audio amplifier with standby active low	MiniSO-8	5.5	2.2	-	1	1	single	1	8	0.1	1.0E-5	-
TS4909	Ultra low power stereo headphone amplifier with capacitor-	VDFPN 10 3x3x1.0	5.5	2.2	-	-	-	-	0.88	32	0.1	1.0E-5	-
TS4962	3W filter-free Class D audio power amplifier with active low	UFQFPN 8 3x3x0.65	6	2.4	3.6	2	2	single	1.7	8	0.05	1.0E-5	-
TS4962M	3 W filter-free class D audio power amplifier	CSP P 0.5 mm	5.5	2.4	3.6	2	2	single	1.75	8	0.19	1.0E-5	-
TS4984	2 x 1W stereo audio power amplifier with active low standby	VFQFPN 16 4x4x1.0	5.5	2.2	-	2	2	single	-	8	0.1	1.0E-5	-
TS4990	1.2 W audio power amplifier with active low standby mode	CSP P 0.5 mm,MiniSO-	5.5	2.2	-	1	1	single	-	8	0.2	1.0E-5	-
TS4994	1 W differential input/output audio power amplifier with	MiniSO-8,VDFPN 10	5.5	2.2	-	1	1	single	-	8	0.15	1.0E-5	-
TS4995	1.2W fully differential audio power amplifier with selectable	CSP P 0.5 mm	5.5	2.5	-	1	1	single	-	8	0.15	1.0E-5	-
A22H165	High-performance class-G stereo headphone amplifier	CSP P 0.4 mm	4.8	2.3	3.6	2	2	single	0.025	32	0.006	0.001	-
A22H165M	High-performance class-G stereo headphone amplifier with I2C	CSP P 0.4 mm	4.8	2.3	3.6	2	2	single	0.025	32	0.006	0.001	-
TS2012EI	Filter-free stereo 2 x 2.8 W class D audio power amplifier	CSP P 0.5 mm	5.5	2.5	-	4	4	single	2.5	4	0.2	0.001	-
TS4621E	High-performance class G stereo headphone amplifier with I2C	CSP P 0.4 mm	4.8	2.3	3.6	2	2	single	0.025	32	0.006	0.001	-
TS4621ML	High-performance class-G stereo headphone amplifier	CSP P 0.4 mm	4.8	2.3	3.6	2	2	single	0.025	32	0.006	0.001	-
TS4994FC	1.2 W differential input/output audio power amplifier with	CSP P 0.5 mm	5.5	2.5	-	1	1	single	-	8	0.15	1.0E-5	-

# Audio MEMS Sensors

## Overview

An audio MEMS sensor is an electro-acoustic transducer housing a sensor (MEMS) and an application-specific integrated circuit (ASIC) in a single package.

Audio capture is now an important element of ambient awareness. Contextual awareness and voice processing abilities contribute to a **more unique and personalized user experience**.



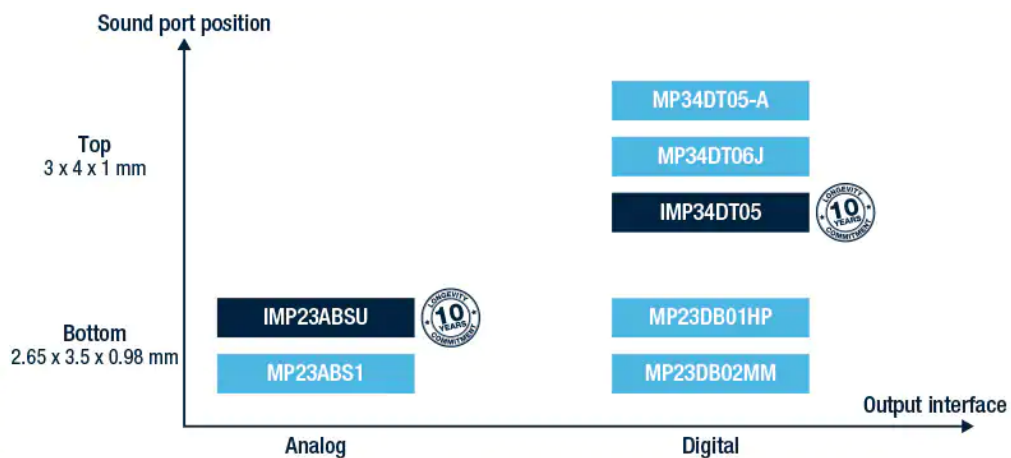
### ST's audio MEMS sensor applications

ST audio MEMS sensors are designed to support new market opportunities in speech recognition and acoustic noise cancellation. The following markets and applications actively use these technologies:

- wearable/hearable
- laptops and notebook computers
- smart speakers
- smart IoT
- gaming and AR/VR input devices
- predictive maintenance
- hands free calls and e-Calls

### Discover the MEMS microphones portfolio

The ST portfolio for audio MEMS sensors includes analog and digital pulse-density modulation (PDM) interfaces and **top and bottom port solutions**. ST's MEMS microphones are available in metal and plastic packages.



### Key benefits of ST audio MEMS sensors:

- omnidirectional
- high performance
- several performance modes
- low power consumption
- sensitivity matching
- high shock and temperature resistance
- small form factor

**Improve audio experience in every environment with the MP23DB01HP**

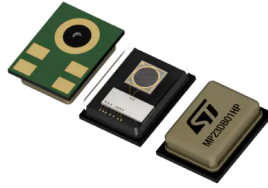


Our **best-in-class acoustic overload point (AOP)** and **signal-to-noise ratio (SNR)** makes ST audio MEMS sensors suitable for applications that require a very high dynamic range.

**Very tight sensitivity** matching allows optimization of beamforming and noise canceling algorithms for multimicrophone arrays.

Low power consumption products extend battery life.

**Offered in metal package**



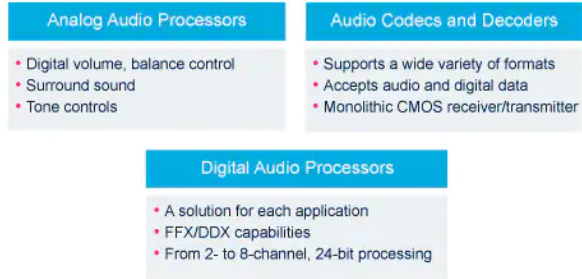
Audio ICs/Audio MEMS Sensors

Part Number	General Description	Package	Output Type	Port location	Signal to noise ratio (dB) (A-weighted @ 1KHz)	Sensitivity (dB) (Normal Mode) typ	Sensitivity (dB) (Low power Mode) typ	Audio Frequency (Hz) min	Audio Frequency (kHz) max	Acoustic Overload Point (AOP) (dB SPL) (Normal Mode) typ	Acoustic Overload Point (AOP) (dB SPL) (Low power Mode) typ	Power Supply Rejection (PSR) (dBFS) (Normal Mode) typ	Power Supply Rejection (PSR) (dBFS) (Low power Mode) typ	Power Supply Rejection Ratio (PSRR) (dB) (Normal Mode) typ	Power Supply Rejection Ratio (PSRR) (dB) (Low power Mode) typ	Supply Voltage (V) min	Supply Voltage (V) typ	Supply Voltage (V) max	Supply Current (µA) (Normal Mode) typ	Supply Current (µA) (Low power Mode) typ	Operating Temperature (°C) min	Operating Temperature (°C) max
IMP23ABSU	Analog bottom port microphone with frequency response up to 80kHz for Ultrasound analysis and Predictive Maintenance applications	RHLGA 2.65X3.5X1.08(MM)MM 4L	Analog	Bottom	64	-38	-	20	80000	130	-	-86	-	60	-	1.52	2.75	3.6	120	-	-40	85
IMP34DT05	MEMS audio sensor omnidirectional digital microphone for industrial applications	HCLGA 4MM X 3 MM X 1.00 MM MICRO	Digital	Top	64	-26	-	20	20000	122.5	-	-90	-	64	-	1.6	1.8	3.6	650	-	-40	85
MP23AB51	High performance MEMS audio sensor single ended analog bottom-port microphone	RHLGA 2.65X3.5X1.08(MM)MM 4L	Analog	Bottom	64	-38	-	20	20000	130	-	-86	-	60	-	1.52	2.75	3.6	120	-	-40	85
MP23D801HP	MEMS audio sensor multi performance mode digital microphone	RHLGA 3.5X2.65X0.98 MM 4L	Digital	Bottom	65	-41	-24	20	20000	135	120	-85	-90	59	64	1.6	1.8	3.6	800	285	-40	85
MP23D802MM	MEMS audio sensor multi performance mode digital microphone	RHLGA 3.5X2.65X0.98 MM 4L	Digital	Bottom	65	-26	-26	20	20000	122	122	-90	-90	64	64	1.6	1.8	3.6	800	285	-40	85
MP34DT05-A	MEMS audio sensor omnidirectional stereo digital microphone	HCLGA 4MM X 3 MM X 1.00 MM MICRO	Digital	Top	64	-26	-	20	20000	122.5	-	-90	-	64	-	1.6	1.8	3.6	650	-	-40	85
MP34DT06J	MEMS audio sensor omnidirectional stereo digital microphone	HCLGA 4MM X 3 MM X 1.00 MM MICRO	Digital	Top	64	-26	-	20	20000	122.5	-	-90	-	64	-	1.6	1.8	3.6	650	-	-40	85

# Audio Processors

## Overview

ST's analog and digital audio processors are suitable for a wide range of applications and offer best-in-class performances in terms of audio quality and features.



Audio ICs / Audio Processors /Analog Audio Processor ICs

Part Number	General Description	Package	Supply Voltage (V) min	Supply Voltage (V) max	Stereo Inputs	Outputs	Subwoofer Outputs	Volume Range (dB) min	Volume Range (dB) max	Volume Step	Bass	Middle	Treble	Surround Type
TDA7439DS	3 band tone controlAudio processor	SO-28	7	10.2	4	2	0	-47	0	1	true	true	true	None
TDA7440	3 band tone controlAudio processor	SO-28	6	10.2	4	2	0	-47	0	1	true	false	true	None

**Audio ICs / Audio Processors /Audio Codecs and Decoders**

<b>Part Number</b>	<b>General Description</b>	<b>Supply Voltage (V) min</b>	<b>Architecture</b>	<b>Operating Temperature (°C) min</b>	<b>Operating Temperature (°C) max</b>	<b>Package</b>
STA020	96 kHz digital audio interface transmitter	4	24-bit	-20	85	SO-24

**Audio ICs / Audio Processors /Digital Audio Processors and Drivers**

Part Number	General Description	Package	Output Stage Mode	Signal to noise ratio (dB) typ	Sampling Frequency (kHz) min	Sampling Frequency (kHz) max	Equalizer (Bands)	Bass	Middle	Treble	Core Supply Voltage (VDD) (V) min	Core Supply Voltage (VDD) (V) max
STA309A	Multi-channel digital audio processor with DDX®	LQFP 64 10x10x1.4 mm	DDX	100	32	192	5	true	false	true	3	3.6
STA311B	Multichannel digital audio processor with FFX	VFQFPN 59 8x8x0.9	FFX	100	32	192	5	true	false	true	3	3.6

# Sound Terminal Digital Audio Subsystems

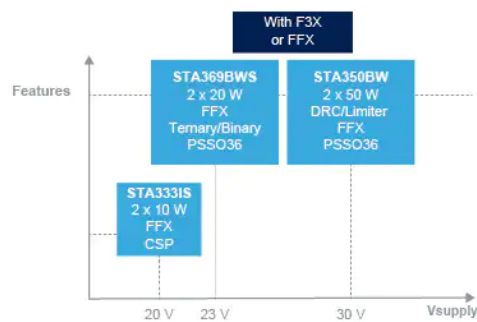
## Overview

A breakthrough in digital audio systems, Sound Terminal™ digital audio ICs enable space-constrained audio applications, such as flat-screen TVs and MP3 docking stations, to deliver high-quality, room-filling sound. Using techniques such as Full Flexible Amplification (FFX), and integrating advanced DSP processing features such as multi-band DRC, this family enables a fully digital stream from sound source to loudspeaker.

In application, this produces improved audio performance, reduced cost, and smaller size, making it possible for leading home-entertainment equipment manufacturers to deliver best-in-class audio experiences for consumers.

Key benefits are:

- Analog and digital interfaces, eliminating the need for an external mux or analog-to-digital converter
- Dynamic range compressor for sound enhancement and speaker protection
- Space-saving packages such as QFN and BGA
- Fully-integrated graphical development environment (Audio Processor Workbench) for easy device configuration







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