



# Automotive Audio Power Amplifiers





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# Introduction



ST is the recognized leader in automotive power amplifiers.

Our car audio amplifiers provide the traditional clean and powerful sound that users have come to expect, as well as all the protection and safety features needed to make our devices robust in an automotive environment.

ST has a complete family of high efficiency products specifically designed to be compliant with latest eco-friendly and green standards.

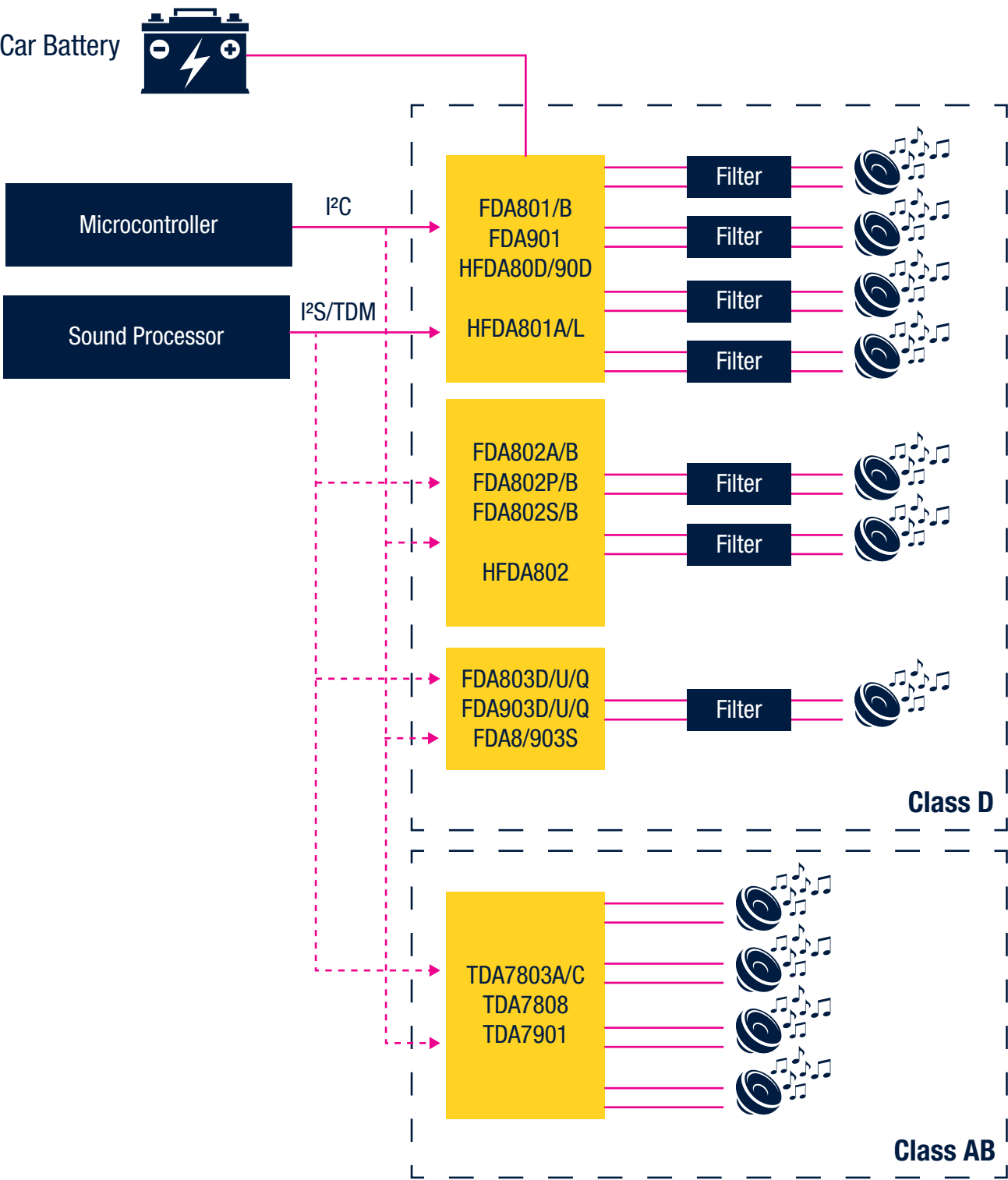
ST's product portfolio includes class AB, SB (high efficiency), SB-I (improved high efficiency) , Class G (with buck controller embedded) and class D devices with medium and high PWM switching frequency, with or without an I<sup>2</sup>C interface, and with analog or digital inputs.

ST audio amplifiers implements a wide range of diagnostic feature set specifically designed for the automotive needs, ranging from the simplest pin and I<sup>2</sup>C diagnostic to the most sophisticated load value measurements and load current monitor, available also in play.

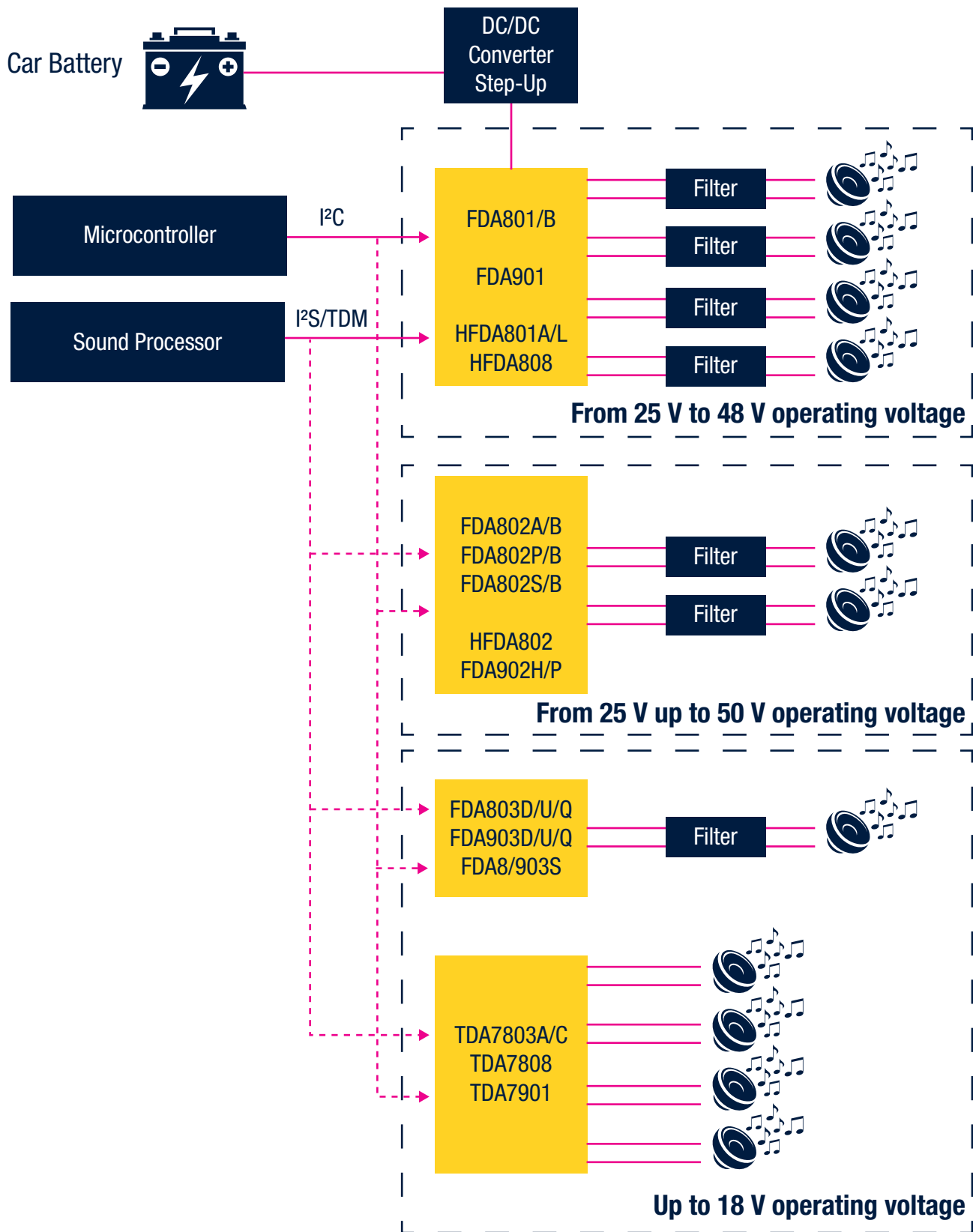
We offer a range of packages and pin-to-pin compatible ICs, covering different power requirements and supporting one to four channels.

The wider portfolio allows to design audio for several automotive applications including Head Units and e-cockpit, external sound systems, AVAS, clusters and emergency call. Some example of applications are displayed below.

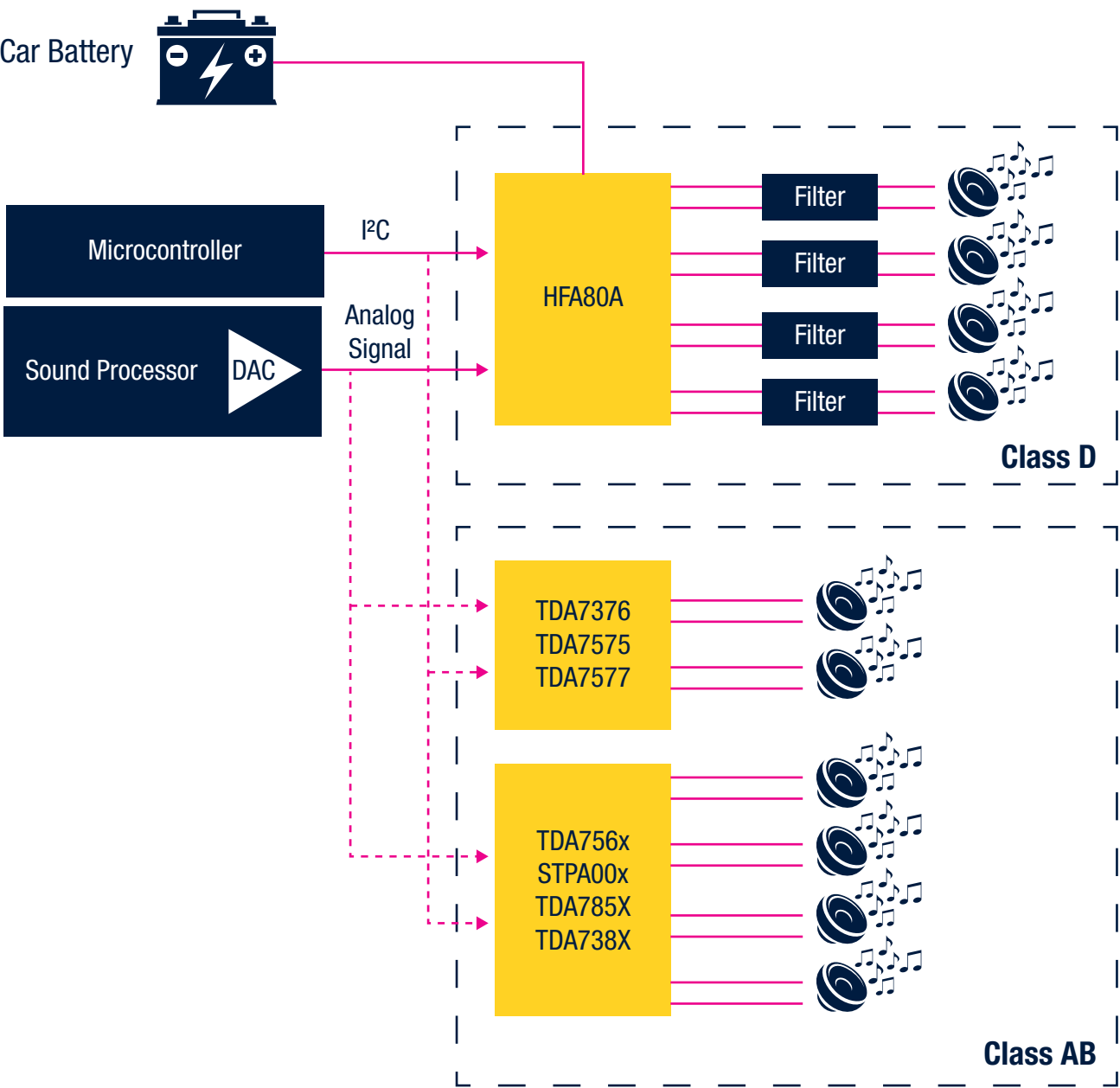
BATTERY OPERATED DIGITAL PLATFORMS



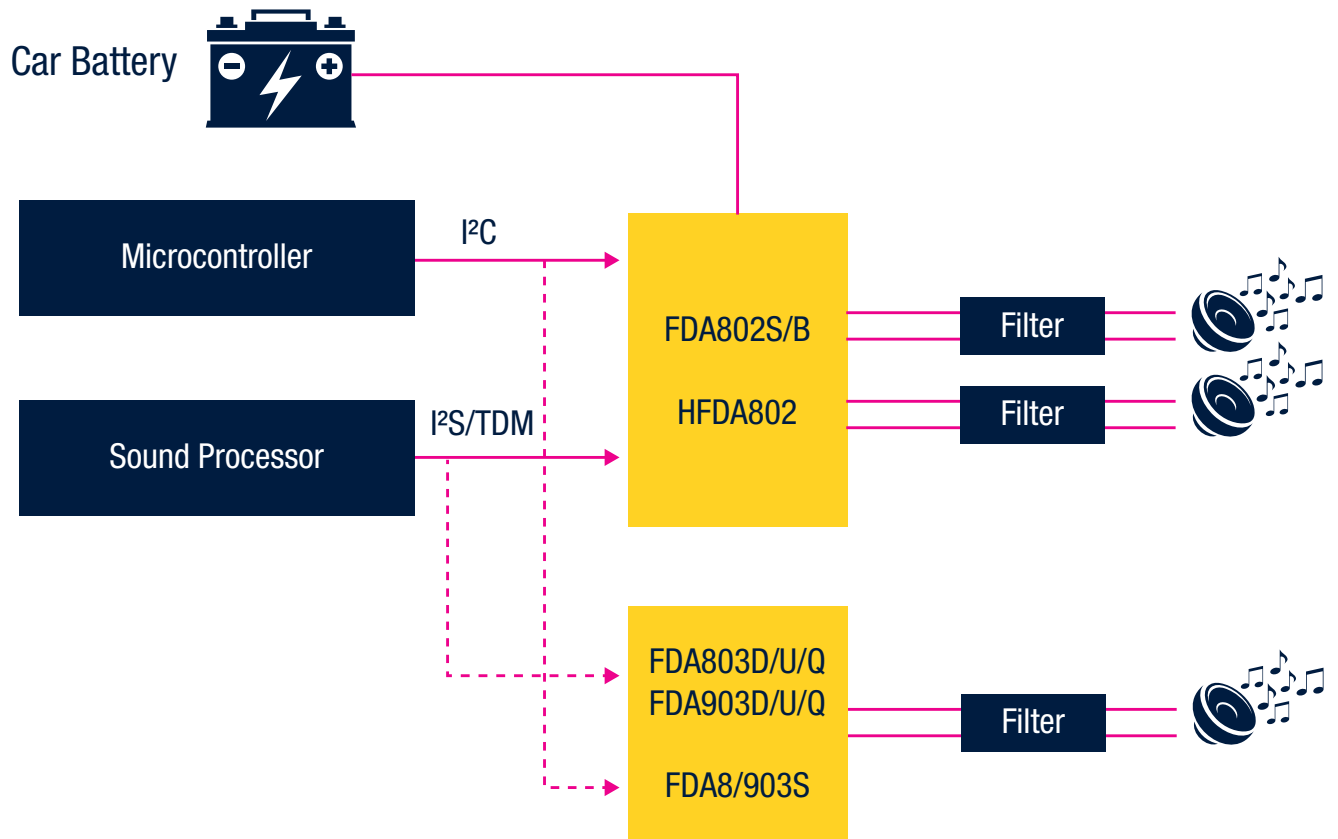
## STEP-UP PLATFORMS



BATTERY OPERATED ANALOG PLATFORMS

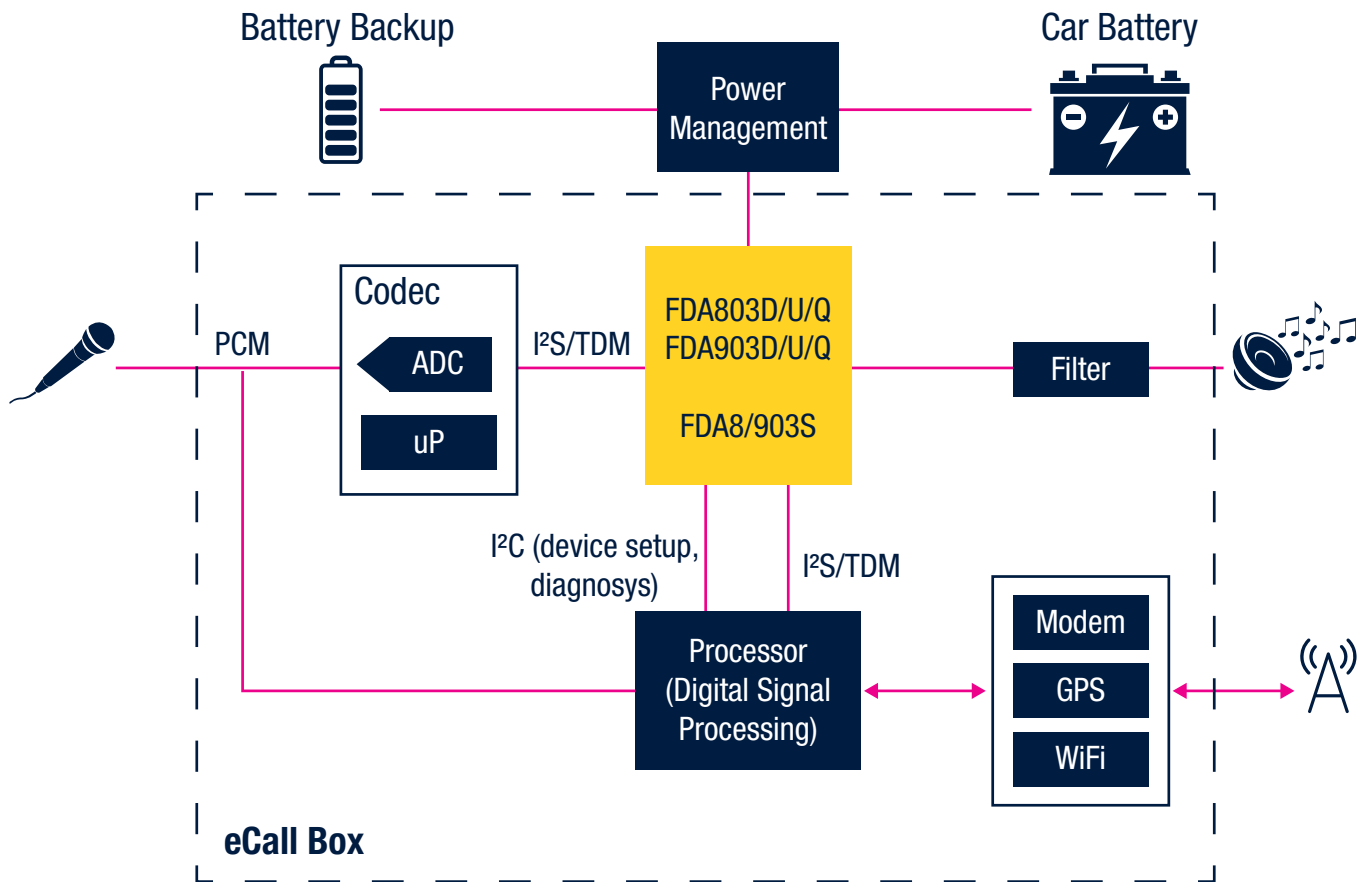


## AVAS PLATFORMS





## TELEMATIC & ECALL PLATFORMS



# Automotive audio power amplifiers

## CLASS D - 400KHZ

Pin comp.	Part number	Package	General description	Max power capability (15.2 V, 4 Ω)	Power at 10% THD (14.4 V, 4 Ω)	Amplifier class	Gain (dB)	Diagnostics	Load (min ohm)	Supply voltage	
										min V	max V
A	FDA801	LQFP64	4 x 50 W class-D digital input power amplifier with I2C diagnostics and low voltage operation	-	4x30 W	D	-	I <sup>2</sup> C bus	1	5.5	25
A	FDA801B	LQFP64	4 x 50 W class-D digital input automotive power amplifier with load value recognition	-	4x30 W	D	-	I <sup>2</sup> C bus	1	5.5	25
A	FDA901	LQFP64	4 x 50 W class-D digital input automotive power amplifier with load value recognition and load current monitoring	-	4x30 W	D	-	I <sup>2</sup> C bus	1	5.5	25
A	FDA802A	LQFP64	2x150 W class-D digital input automotive power amplifier with diagnostics features and low voltage	-	2x28 W	D	-	I <sup>2</sup> C bus	1	5.5	50
A	FDA802AB	LQFP64	2x150 W class-D digital input automotive power amplifier with diagnostics features, load value recognition and low voltage	-	2x28 W	D	-	I <sup>2</sup> C bus	1	5.5	50
A	FDA902H	LQFP64	2x400VA class-D digital input automotive power amplifier with diagnostics features, load value recognition and low voltage with load current monitor	-	2x23 W	D	-	I <sup>2</sup> C bus	1	5.5	48
A	FDA902HP	LQFP64	2 channels 40 V class-D digital input automotive power amplifier with diagnostics features, load value recognition and low voltage with load current monitor	-	2x23 W	D	-	I <sup>2</sup> C bus	1	5.5	40
A	FDA802S	LQFP64	2 channels class-D digital input automotive power amplifier with I2C diagnostics and low voltage operation for car radio applications	-	2x28 W	D	-	I <sup>2</sup> C bus	1	5.5	25
A	FDA802SB	LQFP64	2 channels class-D digital input automotive power amplifier with I2C diagnostics, load value recognition and low voltage operation for car radio applications	-	2x28 W	D	-	I <sup>2</sup> C bus	1	5.5	25
A	FDA802P	LQFP64	2 channels class-D digital input automotive power amplifier with I2C diagnostics and low voltage operation for car radio applications	-	2x28 W	D	-	I <sup>2</sup> C bus	1	5.5	37
A	FDA802PB	LQFP64	2 channels class-D digital input automotive power amplifier with I2C diagnostics, load value recognition and low voltage operation for car radio applications	-	2x28 W	D	-	I <sup>2</sup> C bus	1	5.5	37
B	FDA803D	PowerSS0-36 (slug down)	1 x 45 W class-D digital input automotive power amplifier with diagnostics, wide voltage operation range for car audio and telematic	-	1x30 W	D	-	I <sup>2</sup> C bus	2	3.3	18
B	FDA903D	PowerSS0-36 (slug down)	1 x 45 W class-D digital input automotive power amplifier with ILoad current monitoring, wide voltage operation range for car audio and telematic	-	1x30 W	D	-	I <sup>2</sup> C bus	2	3.3	18
C	FDA803U	PowerSS0-36 (slug up)	1 x 45 W class-D digital input automotive power amplifier with diagnostics, wide voltage operation range for car audio and telematic	-	1x30 W	D	-	I <sup>2</sup> C bus	2	3.3	18
C	FDA903U	PowerSS0-36 (slug up)	1 x 45 W class-D digital input automotive power amplifier with ILoad current monitoring, wide voltage operation range for car audio and telematic	-	1x30 W	D	-	I <sup>2</sup> C bus	2	3.3	18
D	FDA803Q	VFQFPN48	1 channel class-D digital input automotive power amplifier with diagnostics, wide voltage operation range for car audio and telematic	-	1x31 W	D	-	I <sup>2</sup> C bus	2	3.3	18

## CLASS D - 400KHZ

Pin comp.	Part number	Package	General description	Max power capability (15.2 V, 4 Ω)	Power at 10% THD (14.4 V, 4 Ω)	Amplifier class	Gain (dB)	Diagnostics	Load (min ohm)	Supply voltage	
										min V	max V
D	FDA903Q	VFQFPN48	1 channel class-D digital input automotive power amplifier with diagnostics, load current monitoring wide voltage operation range for car audio and telematic	-	1x31 W	D	-	I <sup>2</sup> C bus	2	3.3	18
G	FDA803S	QFN32	1 channel class-D digital input automotive power amplifier with diagnostics, wide voltage operation range for car audio and telematic	-	10 W	D	-	I <sup>2</sup> C bus	4	3.3	18
G	FDA903S	QFN32	1 channel class-D digital input automotive power amplifier with diagnostics, load current monitoring wide voltage operation range for car audio and telematic	-	10 W	D	-	I <sup>2</sup> C bus	4	3.3	18

## CLASS D - 2MHZ

Pin comp.	Part number	Package	General description	Max power capability (15.2 V, 4 Ω)	Power at 10% THD (14.4 V, 4 Ω)	Amplifier class	Gain (dB)	Diagnostics	Load (min ohm)	Supply voltage	
										min V	max V
E	HFDA801A	LQFP64	4 x 80 W digital input class-D automotive audio amplifier with Hi-Fi audio quality, advanced diagnostics, 2MHz switching frequency and High Resolution Bandwidth	-	4x30 W	D	-	I <sup>2</sup> C bus	1	4.5	25
E	HFDA801L	LQFP64	4 channels digital input class-D automotive audio amplifier with Hi-Fi audio quality, advanced diagnostics, 2 MHz switching frequency and High Resolution Bandwidth	-	4x30 W	D	-	I <sup>2</sup> C bus	1	4.5	18
E	HFDA802	LQFP64	2x80W digital input class-D automotive audio amplifier with Hi-Fi audio quality, advanced diagnostics, 2MHz switching frequency and High Resolution Bandwidth	-	2x30 W	D	-	I <sup>2</sup> C bus	1	4.5	25
F	HFA80A	LQFP48	4 channles analog input class-D automotive audio amplifier with Hi-Fi audio quality, advanced diagnostics, 2MHz switching frequency and High Resolution Bandwidth	-	4x27 W	D	-	I <sup>2</sup> C bus	1	4.5	18
F	HFDA80D	LQFP48	4 channels digital input class-D automotive audio amplifier with Hi-Fi audio quality, advanced diagnostics, 2MHz switching frequency and High-Resolution Bandwidth	-	4x27 W	D	-	I <sup>2</sup> C bus	1	4.5	18
F	HFDA90D	LQFP48	4 channels digital input class-D automotive audio amplifier with Hi-Fi audio quality, advanced diagnostics, Digital Admittance Meter (DAM), 2MHz switching frequency and High-Resolution Bandwidth and Load Current Current Monitor	-	4x27 W	D	-	I <sup>2</sup> C bus	1	4.5	18
H	HFDA808(*)	LQFP100	4 channels high voltage digital input class-D automotive audio amplifier with Hi-Fi audio quality, advanced diagnostics with load current monitor, 2MHz switching frequency and High Resolution Bandwidth	-	2x29 W	D	-	I <sup>2</sup> C bus	1	5.5	48

Note \* Coming soon



## CLASS AB - BIPOLAR SINGLE/DUAL

Pin comp.	Part number	Package	General description	Max power capability (15.2 V, 4 Ω)	Power at 10% THD (14.4 V, 4 Ω)	Amplifier class	Gain (dB)	Diagnostics	Load (min ohm)	Supply voltage	
										min V	max V
Z	<b>TDA7375AV</b>	Multiwatt15	Quad SE or dual BTL output with hardware standby and clip detection	4 x 11 W 2 x 47 W	4 x 7 W 2 x 26 W	AB	26/20	by pin	2	8	18
Z	<b>TDA7375V</b>	Multiwatt15	Quad SE or dual BTL output with hardware standby and clip detection	4 x 10 W 2 x 44 W	4 x 7 W 2 x 25 W	AB	26/20	by pin	2	8	18
	<b>TDA7391LV</b>	Multiwatt11 PowerSO20	Low voltage operation, differential input, single BTL output with hardware standby and clip detection	1 x 45 W	1 x 26 W	AB	30	by pin	3.2	6	18
	<b>E-TDA7396</b>	Multiwatt11	Differential input, single BTL output with hardware standby and clip detection	1 x 46 W	1 x 27 W	AB	26	by pin	2	8	18

## CLASS AB - BIPOLAR QUAD

Pin comp.	Part number	Package	General description	Max power capability (15.2 V, 4 Ω)	Power at 10% THD (14.4 V, 4 Ω)	Amplifier class	Gain (dB)	Diagnostics	Load (min ohm)	Supply voltage	
										min V	max V
Y	<b>TDA7385</b>	Flexiwatt25	Quad BTL output with hardware standby and mute, clip detection	4 x 42 W	4 x 23 W	AB	26	by pin	4	8	18
Y	<b>TDA7387EP</b>	Flexiwatt25 EP	Quad BTL output with hardware standby and mute	4 x 41 W	4 x 21 W	AB	26	-	4	8	18
W	<b>TDA7388</b>	Flexiwatt25	Quad BTL output with hardware standby and mute	4 x 45 W	4 x 26 W	AB	26	-	4	8	18
W	<b>TDA7388EP</b>	Flexiwatt25 EP	Quad BTL output with hardware standby and mute	4 x 45 W	4 x 26 W	AB	26	-	4	8	18
W	<b>TDA7388A</b>	Flexiwatt27	Quad BTL output with hardware standby and mute, clip and offset detection	4 x 46 W	4 x 27 W	AB	26	by pin	4	8	18

## CLASS AB - 24V COMPLIANT

Pin comp.	Part number	Package	General description	Max power capability (15.2 V, 4 Ω)	Power at 10% THD (14.4 V, 4 Ω)	Amplifier class	Gain (dB)	Diagnostics	Load (min ohm)	Supply voltage	
										min V	max V
	<b>TDA7576B</b>	Multiwatt15	Dual BTL output for 24 V systems with hardware standby and mute, clip and offset detection	2 x 45 W @ 28 V	2 x 28 W @ 28 V	AB	26	by pin	4	8	32

## CLASS AB - INTELLIGENT POWER

Pin comp.	Part number	Package	General description	Max power capability (15.2 V, 4 Ω)	Power at 10% THD (14.4 V, 4 Ω)	Amplifier class	Gain (dB)	Diagnostics	Load (min ohm)	Supply voltage	
										min V	max V
U / T	<b>TDA7563A</b>	Flexiwatt27, PowerSO36	Intelligent quad BTL output with full I <sup>2</sup> C diagnostics including tweeter detection and hardware standby/mute	4 x 50 W	4 x 28 W	SB	26/12	I <sup>2</sup> C bus	2	8	18
U / T	<b>TDA7563ARH</b>	Flexiwatt27 Hrztl	Intelligent quad BTL output with full I <sup>2</sup> C diagnostics in a reflow compatible package	4 x 50 W	4 x 28 W	SB	26/12	I <sup>2</sup> C bus	2	8	18
U / T	<b>TDA7563B</b>	Flexiwatt27, PowerSO36	Intelligent quad BTL output with full I <sup>2</sup> C diagnostics including tweeter detection and hardware standby/mute	4 x 50 W	4 x 28 W	SB	30/16	I <sup>2</sup> C bus	2	8	18
U	<b>TDA7569BLV</b>	Flexiwatt27, PowerSO36	Low voltage operation intelligent quad BTL output with full I <sup>2</sup> C diagnostics including tweeter detection and hardware standby/mute	4 x 50 W	4 x 28 W	SB	26/16	I <sup>2</sup> C bus	2	6	18
X	<b>TDA7569BDLV</b>	PowerSO36	Low voltage operation differential intelligent quad BTL output with full I <sup>2</sup> C diagnostics including tweeter detection and hardware standby/mute	4 x 50 W	4 x 28 W	SB	26/16	I <sup>2</sup> C bus	2	6	18
X	<b>TDA75610DLV</b>	PowerSO36	Low voltage operation differential intelligent quad BTL output with full I <sup>2</sup> C diagnostics including tweeter detection and hardware standby/mute	4 x 45 W	4 x 25 W	SB	26/16	I <sup>2</sup> C bus	2	6	18
U/T	<b>TDA75610SEP</b>	Flexiwatt27 EP	Low voltage operation differential intelligent quad BTL output with full I <sup>2</sup> C diagnostics including tweeter detection and hardware standby/mute	4 x 45 W	4 x 25 W	SB	26/16	I <sup>2</sup> C bus	2	6	18
U/T	<b>TDA75610SLV</b>	Flexiwatt27, PowerSO36	Low voltage operation differential intelligent quad BTL output with full I <sup>2</sup> C diagnostics including tweeter detection and hardware standby/mute	4 x 45 W	4 x 25 W	SB	26/16	I <sup>2</sup> C bus	2	6	18
R	<b>TDA7577BLV</b>	Flexiwatt27, PowerSO36	Low voltage operation differential intelligent quad BTL output with full I <sup>2</sup> C diagnostics including tweeter detection and hardware standby/mute	2 x 50 W	2 x 28 W	SB	26/16	I <sup>2</sup> C bus	1	6	18
J	<b>TDA7803A</b>	Flexiwatt27 PowerSO36	Low voltage operation, digital input (I <sup>2</sup> S), intelligent quad BTL output with full I <sup>2</sup> C diagnostics	4x47 W	4x27 W	SB-I	-	I <sup>2</sup> C bus	1	6	18
J	<b>TDA7808</b>	Flexiwatt27 PowerSO37	Low voltage operation, digital input (I <sup>2</sup> S), intelligent quad BTL	4x47 W	4x27 W	SB-I	-	I <sup>2</sup> C bus	1	6	18
	<b>TDA7901</b>	PowerSO36	High efficiency, digital input (I <sup>2</sup> S), intelligent quad BTL output with full I <sup>2</sup> C diagnostics, Class-G integrated	4x47 W	4x27 W	G	-	I <sup>2</sup> C bus	1	6	18

## CLASS AB - MOSFET QUAD

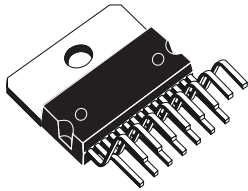


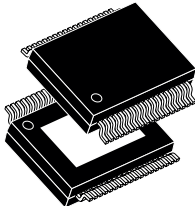


Pin comp. 1	Part number	Package	General description	Max power capability (15.2 V, 4 $\Omega$ )	Power at 10% THD (14.4 V, 4 $\Omega$ )	Amplifier class	Gain (dB)	Diagnostics	Load (min ohm)	Supply voltage	
										min V	max V
IY	STPA002	Flexiwatt25, Flexiwatt27	High sound quality quad BTL output power amplifier with standby and mute inputs, clip and offset detection, start/stop compatibility	4 x 52 W	4 x 30 W	AB	26	by pin	2	6	18
IY	STPA003	Flexiwatt25, Flexiwatt27	High sound quality quad BTL output with excellent GSM noise immunity, clip and offset detection, start-stop compatibility	4 x 52 W	4 x 30W	AB	26	by pin	2	6	18
IY	STPA008	Flexiwatt25, Flexiwatt27, PowerSO-36	High sound quality quad BTL output with excellent GSM noise immunity, clip and offset detection, start-stop compatibility	4 X 50 W	4 x 28 W	AB	26	by pin	2	6	18
Y	TDA7850	Flexiwatt25	Quad BTL output with HSD/offset detection, hardware standby and mute	4 x 52 W	4 x 30 W	AB	26	by pin	2	8	18
I	TDA7850A	Flexiwatt27	Quad BTL output with HSD, offset detection, hardware standby and mute	4 x 52 W	4 x 30 W	AB	26	by pin	2	8	18
Y	TDA7851F	Flexiwatt25	Quad BTL ouput with hardware standby and mute, offset detection	4 x 48 W	4 x 28 W	AB	26	by pin	2	8	18
I	TDA7851L	Flexiwatt25	Quad BTL ouput with hardware standby and mute, clip detection	4 x 48 W	4 x 28 W	AB	26	by pin	2	8	18
I	TDA7828-J7X	Flexiwatt25 EP	Quad BTL ouput with hardware standby and mute, clip detection	4 x 48 W	4 x 28 W	AB	26	by pin	2	8	18

Note:

1. Pin compatibility: products with same letters are pin-to-pin compatible
2. With step-up enabled

BTL = bridge-tied load  
SE = single ended  
SB = high-efficiency class  
SB-I = improved high-efficiency class

# Packages

Package	Available package option	Package	Available package option
 <p>Multiwatt</p>	Multiwatt 11	 <p>QFP</p>	LQFP48 – slug up LQFP64 – slug up TQFP100 – slug up
 <p>Flexiwatt</p>	Flexiwatt25 horizontal Flexiwatt25 smd Flexiwatt25 (exp.pad) Flexiwatt27 horizontal Flexiwatt27 smd Flexiwatt27 vertical Flexiwatt27 (exp.pad)	 <p>PowerSSO36</p>	PowerSSO36- slug down PowerSSO36- slug up
 <p>PowerSO</p>	PowerSO20 slug-up PowerSO36 slug-up	 <p>QFN</p>	QFN48 QFN32

# life.augmented



Order code: BR2503AUDPOWAMP

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