



## SRS Mega WOW Audio Processor

### 1 Overview

The **AP8102** is an extraordinary audio enhancement processor based on SRS Labs, Inc.'s patented WOW technology. WOW is a special combination of SRS award-winning audio technologies that creates a thrilling surround sound experience with deep rich bass from any stereo sound sources. Your audio now sounds fuller, richer and wider. Based on the elements of the flagship SRS 3D technology, WOW restores the spatial cues and ambient information that is lost during standard stereo playback. SRS Labs' patented FOCUS technology also included, helps to reposition a sound image from any non-optimally located speaker to a more optimal listening position or height and improves clarity of sounds. In addition, bass become deep, rich and controlled even through speakers with limitations in driver and cabinet design.

The **AP8102** is suitable for applications such as TV, Mini or Micro Stereo System, MP3 Player, MD and CD base radio-cassette. The low power and low voltage design of the chip is particularly suitable for portable devices such surround headphone, Discman etc.

### 2 Features

- Low operating voltage 2.5V to 5.5V
- WOW Function
- Bass control
- Width control for SRS 3D surround sound effect.
- Focus control
- Mega-width function to further control the width of the sound stage.
- Center volume control
- Bypass function.
- 24 pins SDIP package or 24 pins SOP package

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Revision 1.8

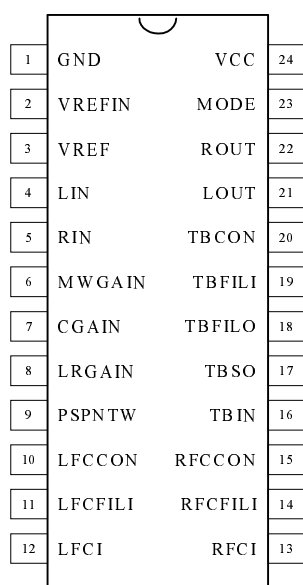
#### [CAUTION]

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### 3 Device Pin Out and Pin Descriptions

Pin #	Pin Name	Descriptions
1	GND	Ground
2	VREF	Reference voltage input
3	VREFB	Reference voltage output
4	LIN	Left channel audio input
5	RIN	Right channel audio input
6	MWGAIN	Mega wide gain control
7	CGAIN	Center gain control
8	LRGAIN	L-R gain control
9	PSPNTW	Perspective network input
10	LFCCON	Left Focus control
11	LFCFILI	Left Focus filter input
12	LFCI	Left Focus input
13	RFCI	Right Focus input
14	RFCFILI	Right Focus filter input
15	RFCCON	Right Focus control
16	TBIN	Bass input
17	TBSO	Bass summing stage output
18	TBFILO	Bass filter output
19	TBFILI	Bass filter input
20	TBCON	Bass control
21	LOUT	Left channel audio output
22	ROUT	Right channel audio output
23	MODE	WOW/BYPASS/POWERDOWN mode selection. When MODE pin is opened, the chip is under WOW mode. When MODE is tied ground, the chip is under power down mode. When MODE is tied to VCC, the chip is under bypass mode.
24	VCC	Positive power supply

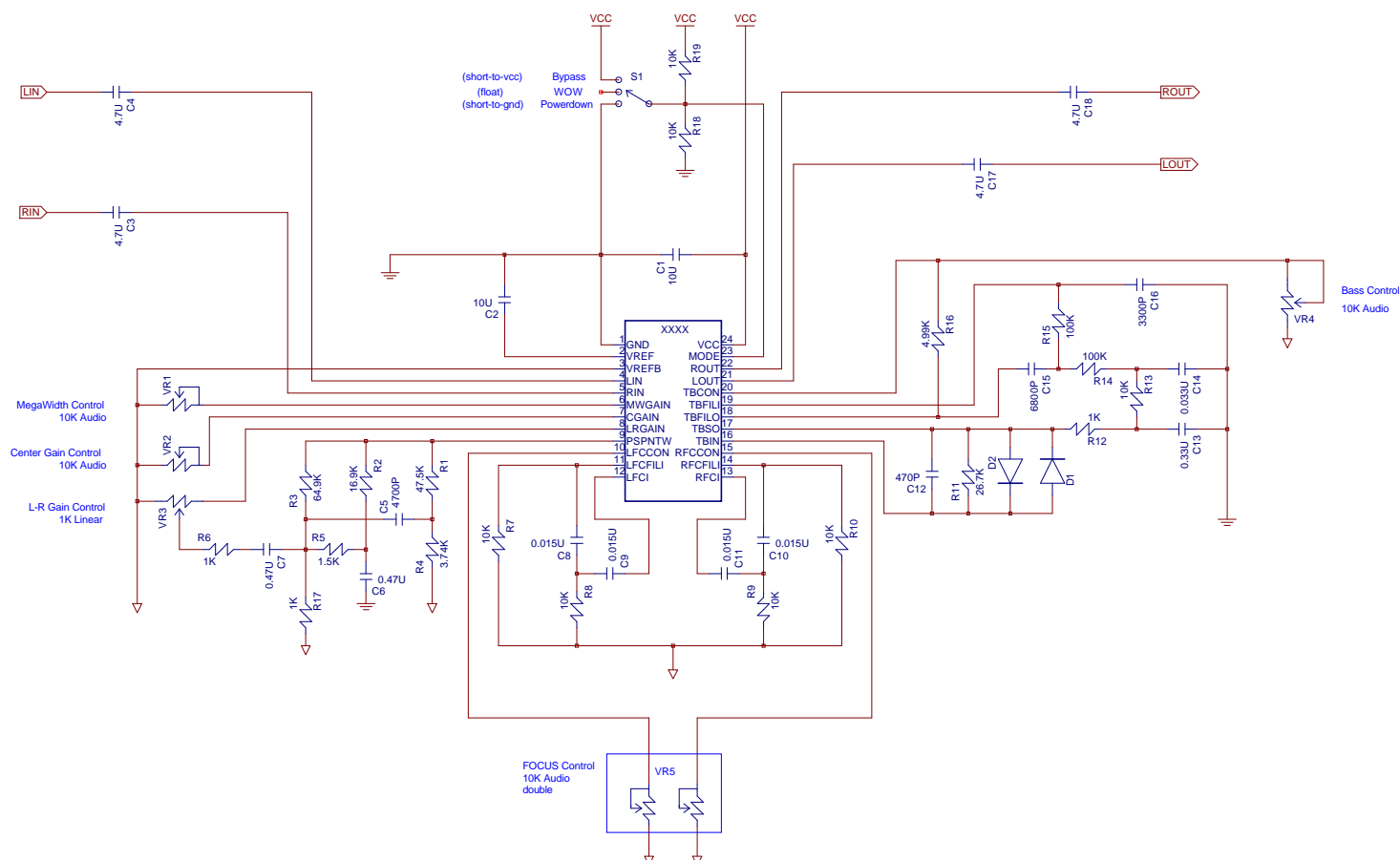
### 4 Pin Configuration



**24 pins SDIP or SOP**

## 5 Application Circuit for AP8102S / AP8102SD

## Application Circuit I



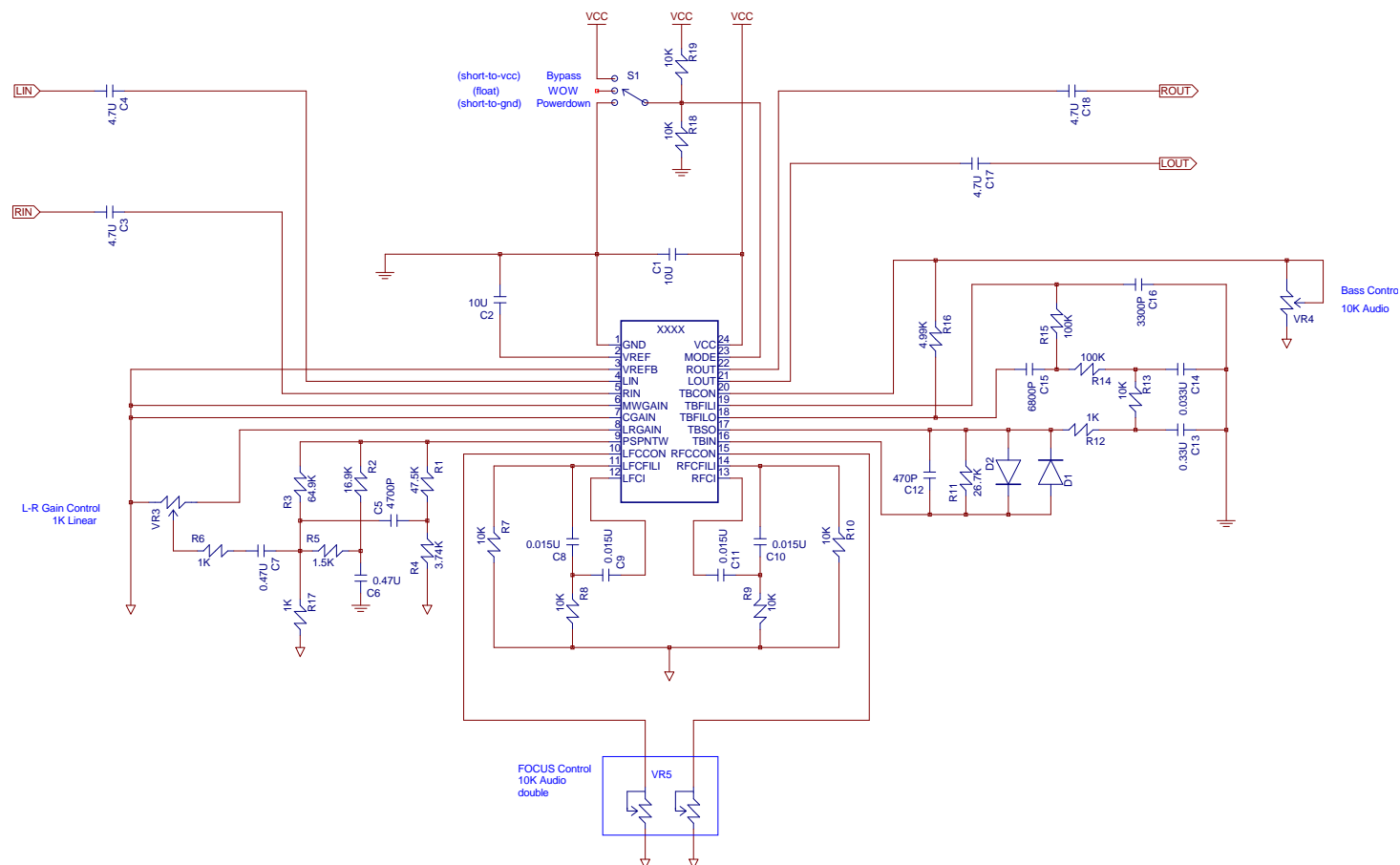
Tolerance of all resistors = 1%

Tolerance of capacitors (C7, C8, C9, C10, C11, C12, C20, C16, C17, C18 ) = 10%

## 6 Application Circuit II

The following is the AP8102 application with the mega-width and center gain function disabled.

application circuit with mega-width & center gain disabled



Tolerance of all resistors = 1%

Tolerance of capacitors (C7, C8, C9, C10, C11, C12, C20, C16, C17, C18 ) = 10%

## 7 Absolute Maximum Rating (Ta = 25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	V <sub>cc</sub>	6	V
Power Dissipation	P <sub>d</sub>	200	MW
Operating Temperature Range	T <sub>opr</sub>	0 to 70	°C
Storage Temperature Range	T <sub>stg</sub>	-20 to 100	°C

## 8 Electrical Characteristics

V<sub>cc</sub> = 3V, Ta = 25°C, Vin = -20dBV (= 0.1Vrms), all VR at maximum

Parameter	Symbol	Test Condition	min	Typ	max	Unit
Operating Voltage	V <sub>cc</sub>		2.5	3.0	5.5	V
Operating Current	I <sub>cc</sub>	No signal, mode = WOW/BYPASS			10	mA
		No signal, mode = POWERDOWN			100	uA
Reference Voltage	V <sub>REF</sub>	V <sub>cc</sub> = 3V	1.38	1.43	1.48	V
Maximum input voltage	V <sub>IM</sub>	F=1KHz, mode = BYPASS, LIN=RIN=V <sub>IM</sub>		-3		dBV
		F=100Hz, mode = WOW, LIN=RIN=V <sub>IM</sub>		-14.5		
		F=125Hz, mode = WOW, LIN=V <sub>IM</sub> RIN= -V <sub>IM</sub>		-13.5		
		F=10KHz, mode = WOW, LIN=RIN=V <sub>IM</sub>		-12		
		F=10KHz, mode = WOW, LIN=V <sub>IM</sub> RIN= -V <sub>IM</sub>		-21.5		
Output Noise (A-weighted)	V <sub>noise</sub>	No signal, mode = BYPASS			-90	dBV
		No signal, mode = WOW			-80	
Total harmonic distortion	THD+N	F=1KHz, LIN→LOUT, RIN→ROUT, mode=BYPASS			0.05	%
		F=1KHz, LIN→LOUT, RIN→ROUT, mode=WOW			4	
Channel Separation	Chsep	Mode=BYPASS, LIN→ROUT, RIN→LOUT			-90	dB
Bypass gain	G <sub>byp</sub>	Mode=bypass, LIN→LOUT, RIN→ROUT,		0		dB
WOW gain	G <sub>wow</sub>	F=100Hz, LIN→LOUT, RIN→ROUT, Mode=WOW		14.0		dB
		F=10KHz, LIN→LOUT, RIN→ROUT, Mode=WOW		14.0		
Mode select input high voltage	V <sub>IH</sub>	V <sub>cc</sub> = 3V	2			V
Mode select input low voltage	V <sub>IL</sub>	V <sub>cc</sub> = 3V			1	V

## 9 Ordering Information

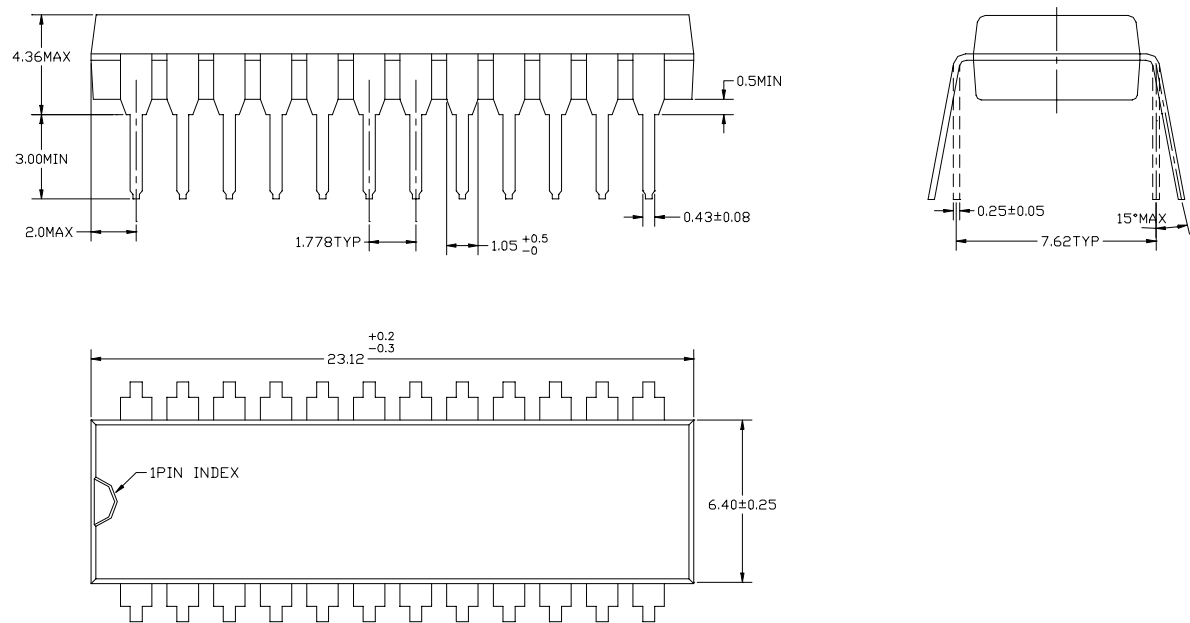
Part Number	Pins	Package	Operating Temperature
AP8102SD	24	SDIP	0 °C– 70 °C
AP8102S	24	SOP	0 °C– 70 °C

SHRINK DUAL IN-LINE PACKAGE  
24 PIN PLASTIC

NT-DIP-24P-M03

	Lead Pitch	70mil(1.778mm)
	Row Spacing	300mil(7.62mm)
	Sealing Method	Plastic Mold

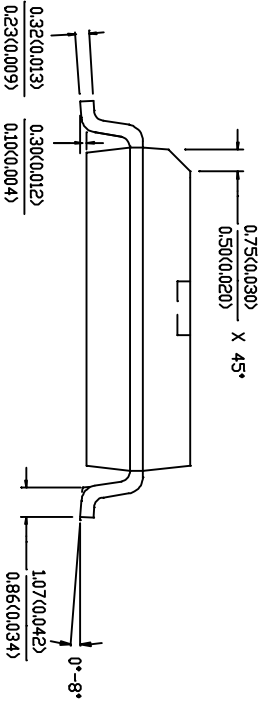
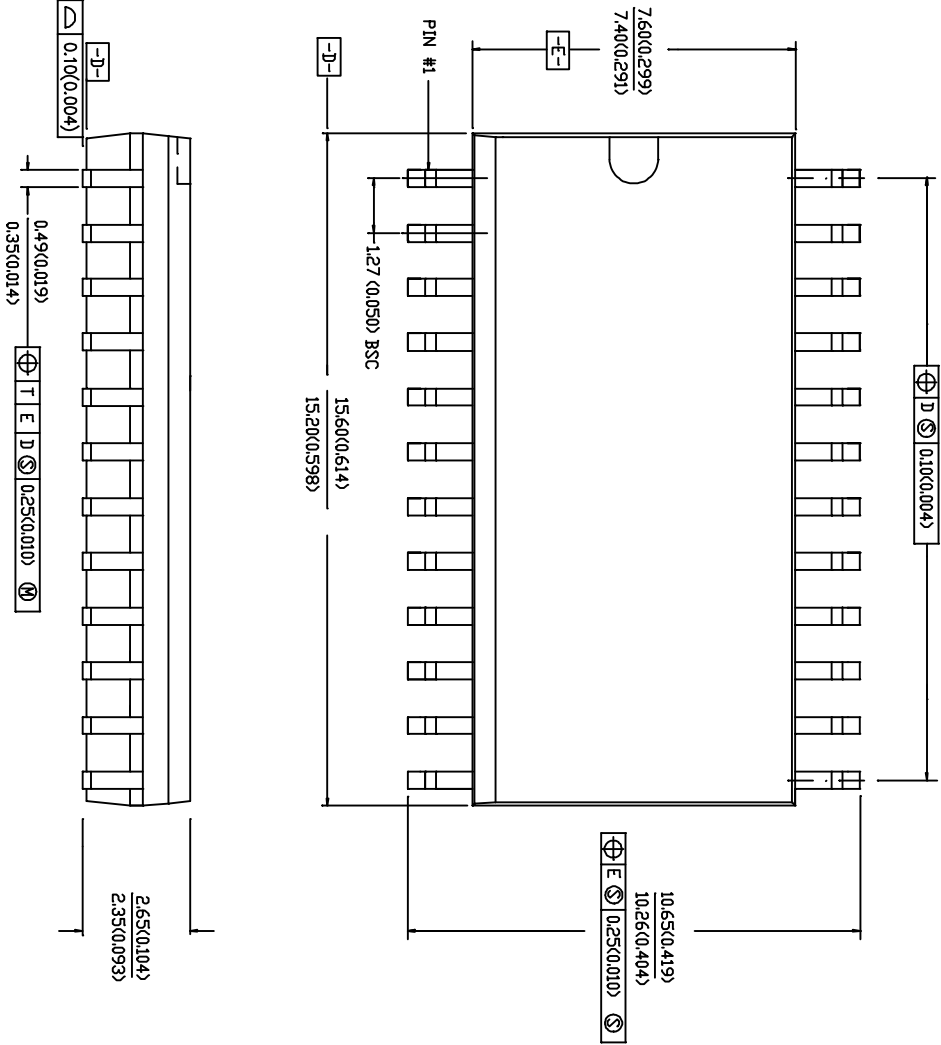
Plastic SH-DIP-24pin



REV.	DESCRIPTION	DATE	ENG	APPROVAL
—	GENERATE. PLACE IN SPEC CENTER AS PER ECN—			

NOTES

- Package dimensions conform to JEDEC Specification MS-013-AD for standard Small Outline (SO) package, 24 leads, 7.50mm (0.300") body width (Issue A, June 1985).
- Controlling dimensions are mm. Inch dimensions in parentheses.
- Dimensioning and tolerancing per ANSI Y 14.5M — 1982.
- "D" and "E" are reference datums on the molded body and do not include mold flash/protrusions. Mold flash/protrusions at "D" shall not exceed 0.15mm (0.006") per side. Inter-lead flash/protrusions at "E" shall not exceed 0.25mm (0.010") per side.
- The lead width above the seating plane shall not exceed a maximum value of 0.61mm (0.024").
- Pin numbers start with Pin #1 and continue counterclockwise to pin #24 when viewed from top.



LIST OF MATERIAL AND APPLICABLE DOCUMENTS

SCALE:	NONE	DATE:	DRAWN:	TITLE:
DIMENSIONAL UNIT:	MM (INCH)	UNTOLERANCED DIMENSIONS	ENGINEER:	24 LEAD SMALL OUTLINE PLASTIC .300" BODY WIDTH
PROJECTION	1 <sup>st</sup> ANGLE	RAC: XX	CHECKED:	
UNLESS SPECIFIED	XX	APPROVED:		
	ANGLE			
CAD NAME:	OSO-30024	DRAWING NUMBER:	OSO-30024	REV. SHEET: 1 OF 1