



# LA2901V

## Four-Channel High-Output Line Amplifier for Car Audio Systems

### Overview

The LA2901V is a high output level 4-channel line amplifier designed for car audio systems. This line amplifier provides an output signal with a significantly higher amplitude than the output signal provided by earlier preamplifiers. This higher amplitude significantly improves the signal-to-noise ratio in the connection from the main unit to the external power amplifier, and results in improved power amplifier performance.

The LA2901V also significantly reduces the required mounting area by cutting in half the number of external capacitors required for boosting the signal-system supply voltage and is available in SSOP miniature package.

### Functions and Features

- High output level (5.3 V<sub>rms</sub>)
- Low output noise voltage (12 μV)
- Low total harmonic distortion (0.004%)
- High ripple rejection ratio (70 dB)
- Fewer external parts required
- Excellent audio fidelity

### Specifications

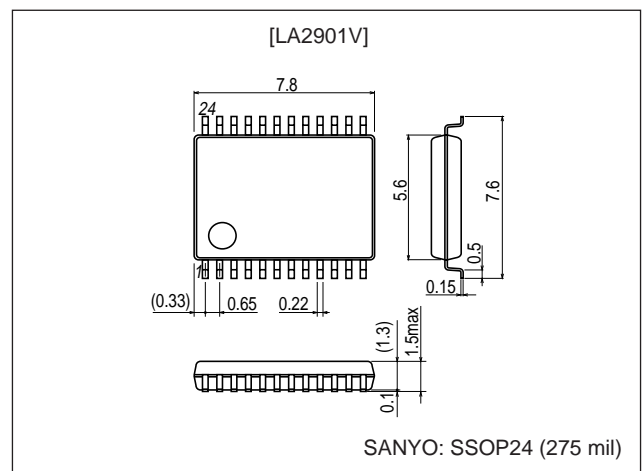
#### Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>CC max</sub>	With no input signal	13	V
Allowable power dissipation	P <sub>d max</sub>	T <sub>a</sub> ≤ 85°C, Mounted on a printed circuit board (114.3 × 76.1 × 1.6 mm <sup>3</sup> , glass epoxy)	400	mW
Operating temperature	T <sub>opr</sub>		-40 to +85	°C
Storage temperature	T <sub>stg</sub>		-40 to +150	°C

### Package Dimensions

unit: mm

#### 3175B-SSOP24 (275 mil)



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## LA2901V

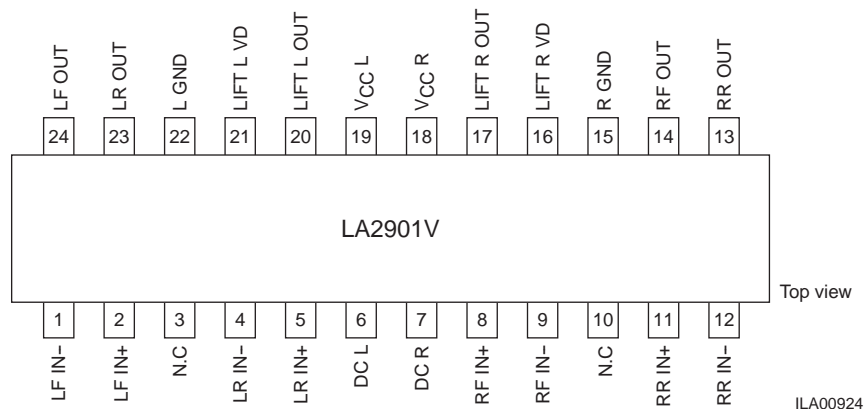
### Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended operating voltage	$V_{CC}$		9	V
Allowable operating supply voltage range	$V_{CCOP}$		6 to 12	V
Recommended load resistance	$R_{LOP}$		10	$k\Omega$

### Electrical Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC} = 9\text{ V}$ , $R_L = 10\text{ k}\Omega$ , $f = 1\text{ kHz}$ , $R_g = 600\Omega$

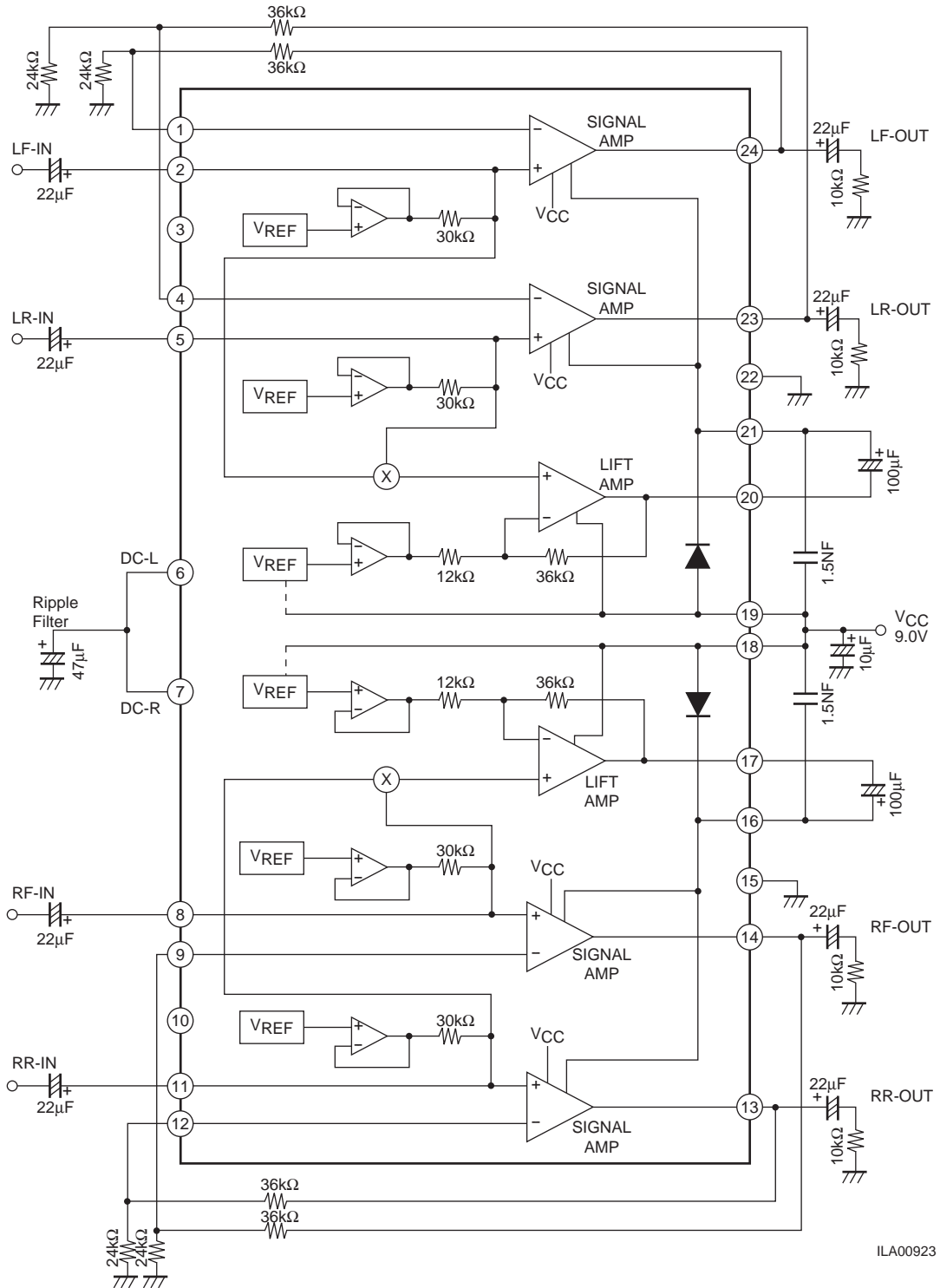
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	$I_{CCO}$	$R_g = 0$	10	16	22	mA
Voltage gain	$V_G$	$V_O = 0\text{ dBm}$	7.5	8	8.5	dB
Output voltage	$V_O$	THD = 0.1%	5.0	5.3		V <sub>rms</sub>
Total harmonic distortion	THD	$V_O = 3\text{ Vrms}$ , LPF = 80 kHz		0.004	0.01	%
Output noise voltage	$V_{NO}$	$R_g = 0$ , BPF = 20 Hz to 20 kHz		12	17	$\mu\text{Vrms}$
Ripple rejection ratio	SVRR	$R_g = 0$ , $f_r = 100\text{ Hz}$ , $V_r = 100\text{ mVrms}$ , BPF = 20 Hz to 20 kHz	60	70		dB
Channel separation	$CH_{sep}$	$R_g = 10\text{ k}\Omega$ , $V_O = 1\text{ Vrms}$	60	70		dB
Input resistance	$R_i$		21	30	39	$k\Omega$

### Pin Assignment



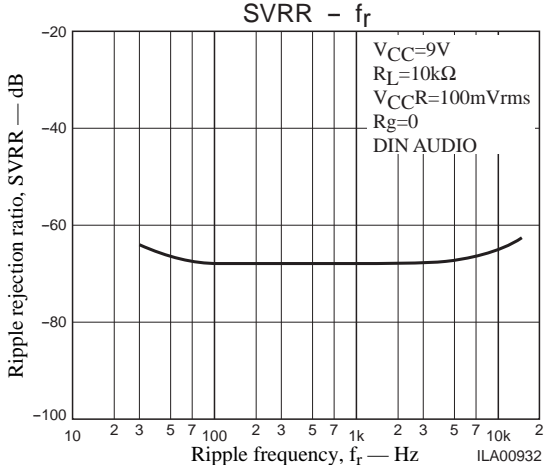
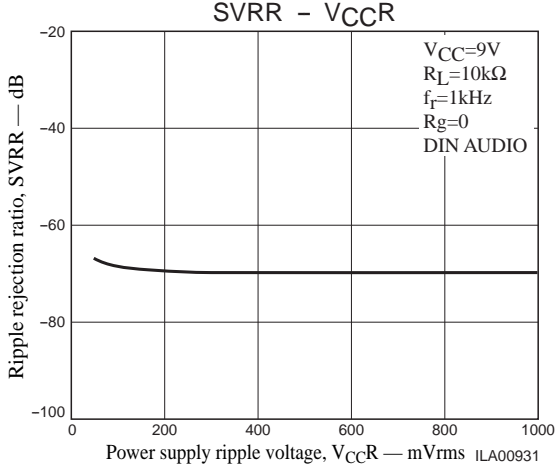
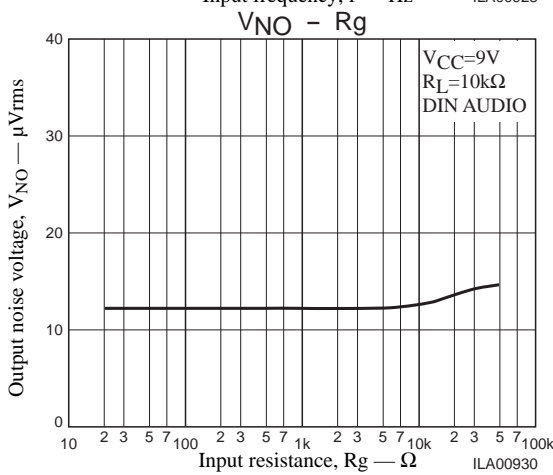
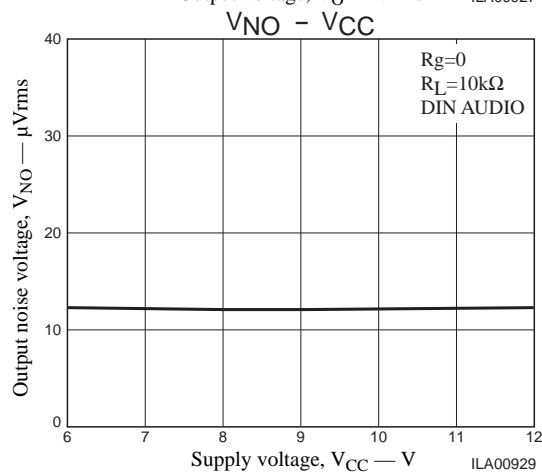
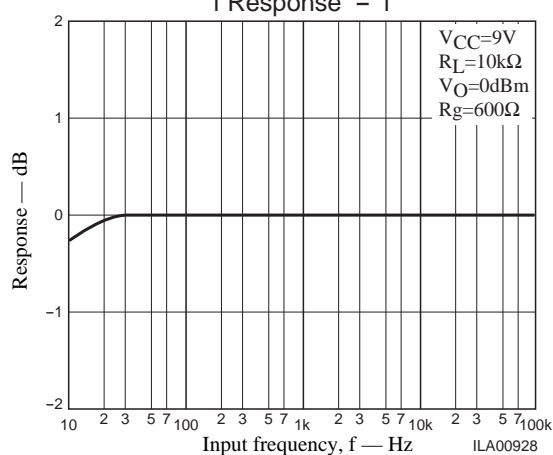
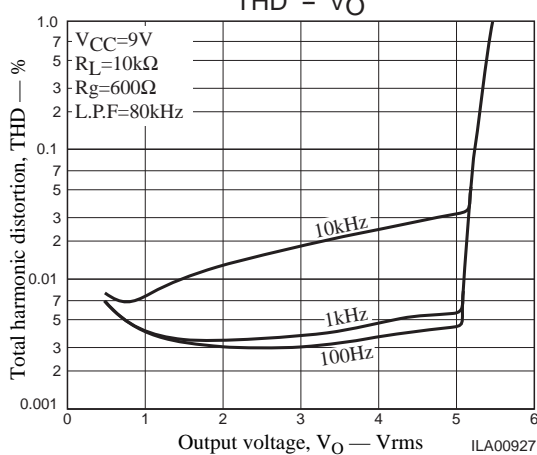
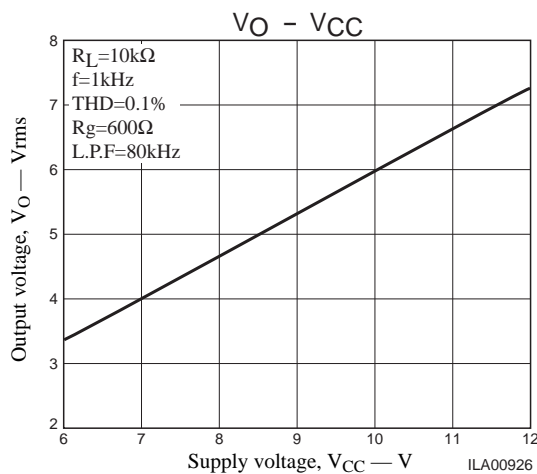
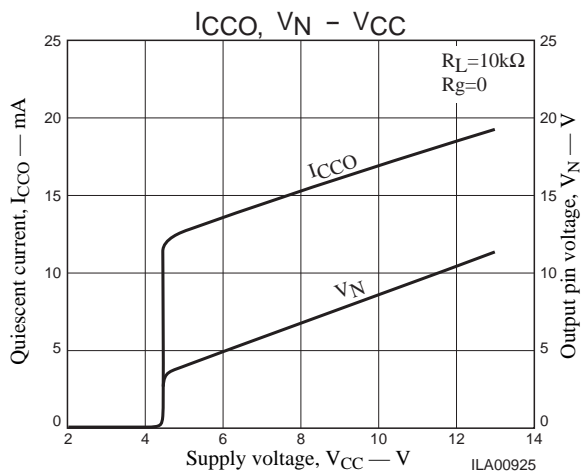
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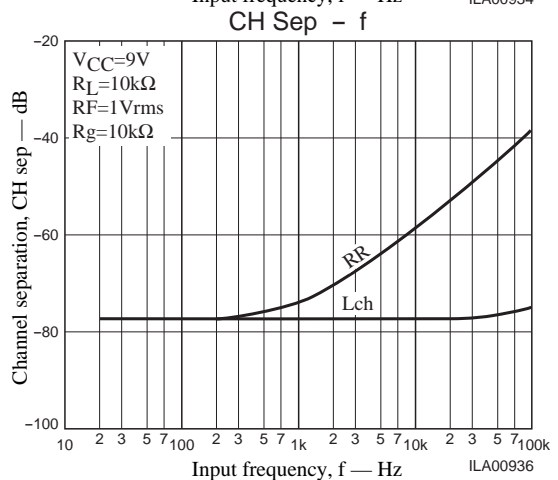
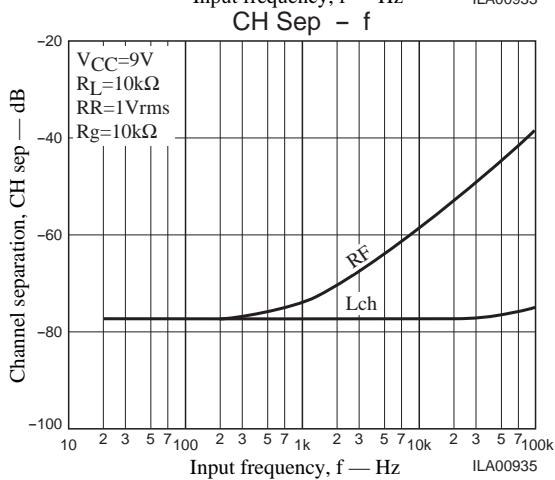
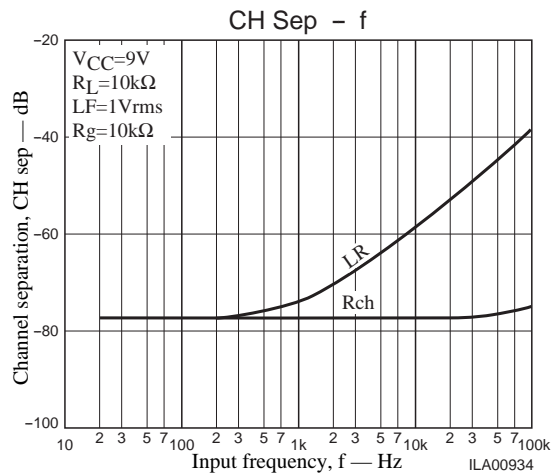
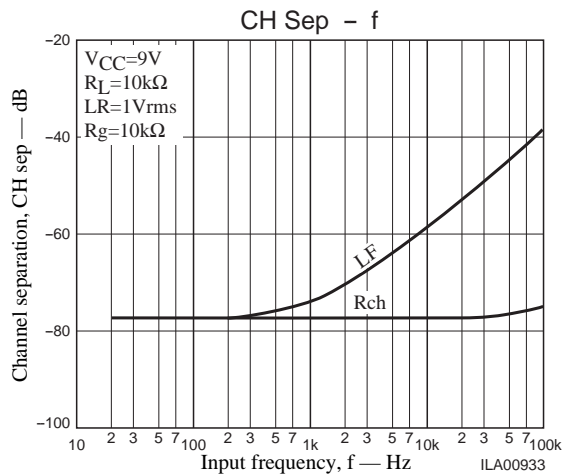
## Sample Application Circuit and Block Diagram



ILA00923

Note: We recommend using resistors with tolerances of 1% or better for the 24 kΩ and 36 kΩ feedback resistors.





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