



LA2902V

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

Overview

The LA2902V 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 LA2902V 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 Vrms)
- Low output noise voltage (17 μ V)
- Low total harmonic distortion (0.004%)
- High ripple rejection ratio (65 dB)
- Fewer external parts required
- Excellent audio fidelity

Specifications

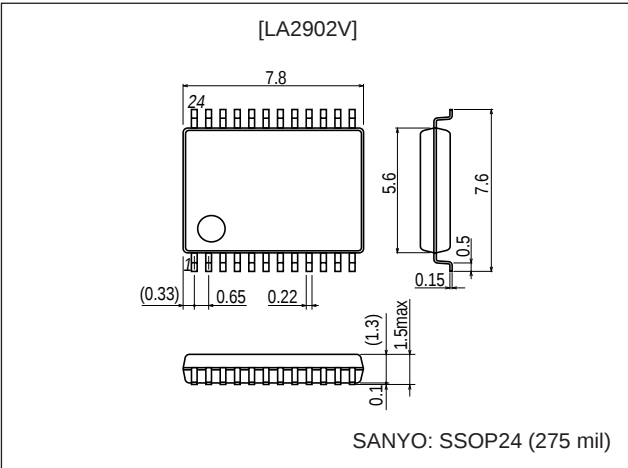
Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	VCC max	With no input signal	13	V
Allowable power dissipation	Pd max	Ta $\leq$ 85°C, Mounted on a printed circuit board (114.3 $\times$ 76.1 $\times$ 1.6 mm ³ , glass epoxy)	400	mW
Operating temperature	Topr		-40 to +85	°C
Storage temperature	Tstg		-40 to +150	°C

Package Dimensions

unit: mm

3175B-SSOP24 (275 mil)



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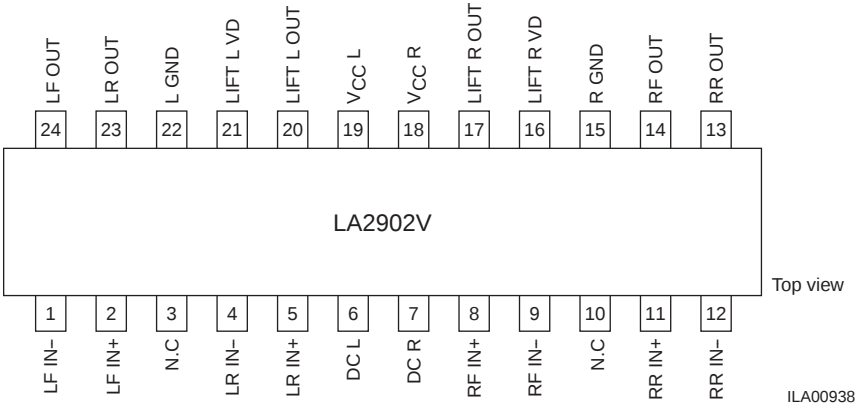
Recommended Operating Conditions at Ta = 25°C

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	kΩ

Electrical Characteristics at Ta = 25°C, V_{CC} = 9 V, R_L = 10 kΩ, f = 1 kHz, R_g = 600Ω

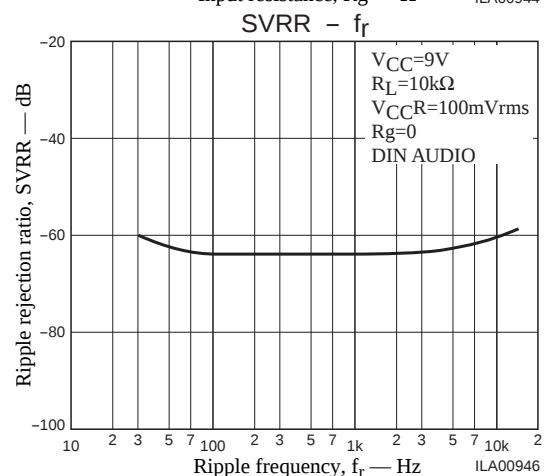
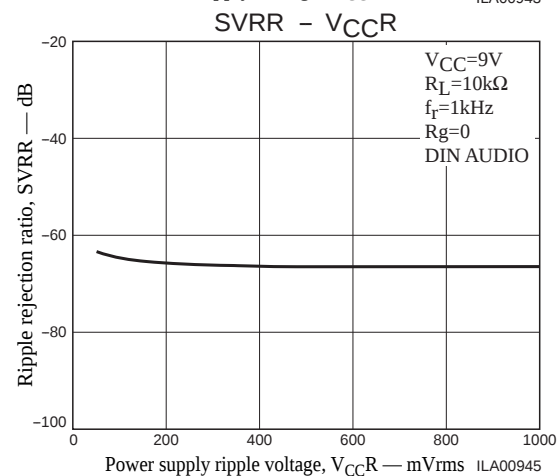
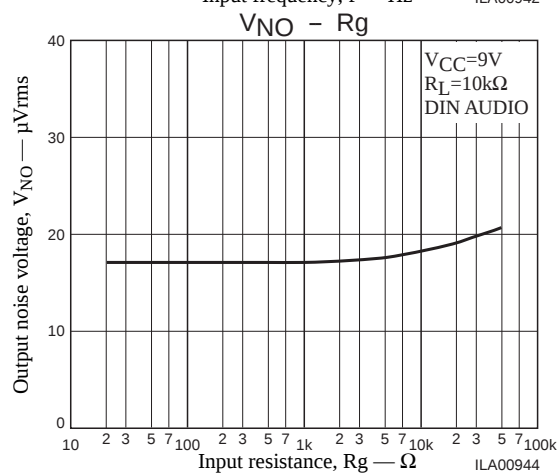
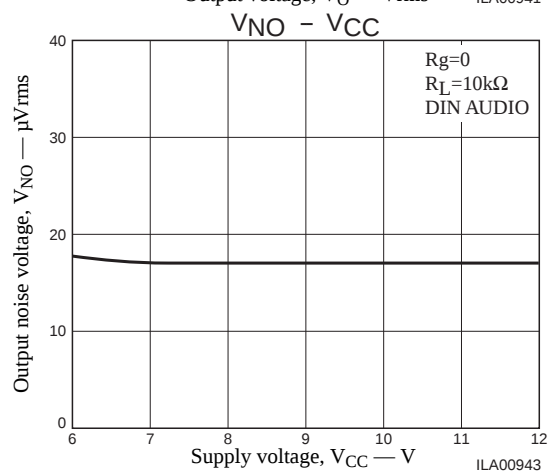
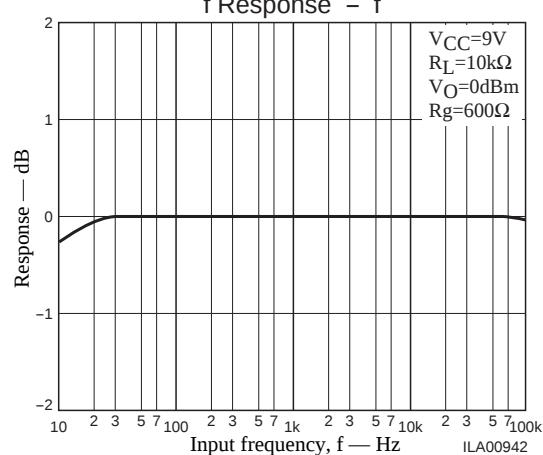
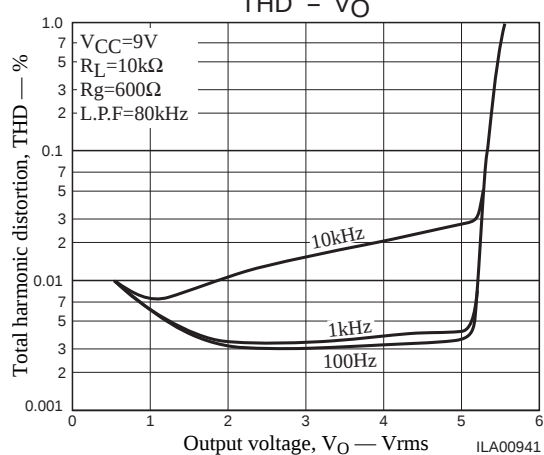
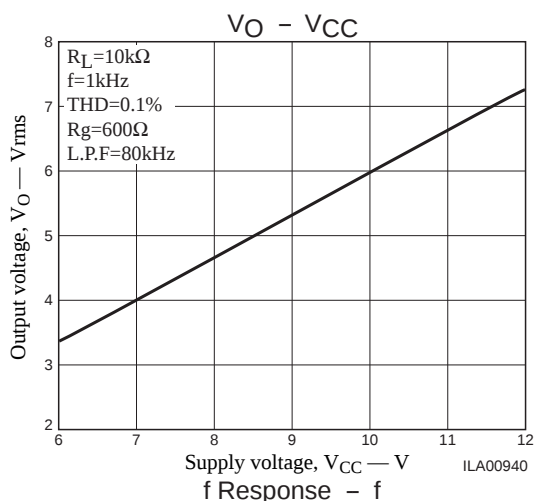
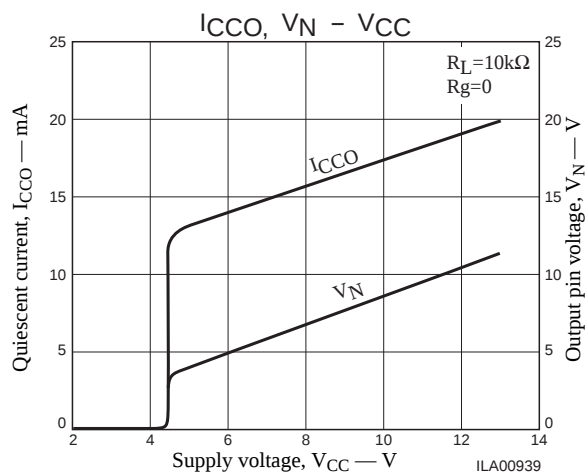
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	I _{CCO}	R _g = 0	10	16	22	mA
Voltage gain	V _G	V _O = 0 dBm	11.5	12	12.5	dB
Output voltage	V _O	THD = 0.1%	5.0	5.3		Vrms
Total harmonic distortion	THD	V _O = 3 Vrms, LPF = 80 kHz		0.004	0.01	%
Output noise voltage	V _{NO}	R _g = 0, BPF = 20 Hz to 20 kHz		17	24	μVrms
Ripple rejection ratio	SVRR	R _g = 0, fr = 100 Hz, Vr = 100 mVrms, BPF = 20 Hz to 20 kHz	55	65		dB
Channel separation	CH _{sep}	R _g = 10 kΩ, V _O = 1 Vrms	60	70		dB
Input resistance	R _i		21	30	39	kΩ

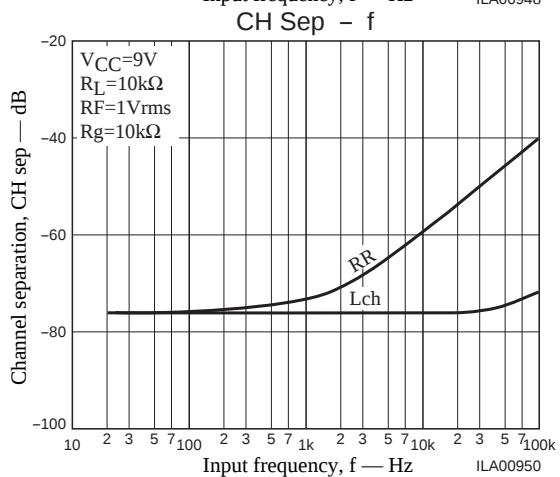
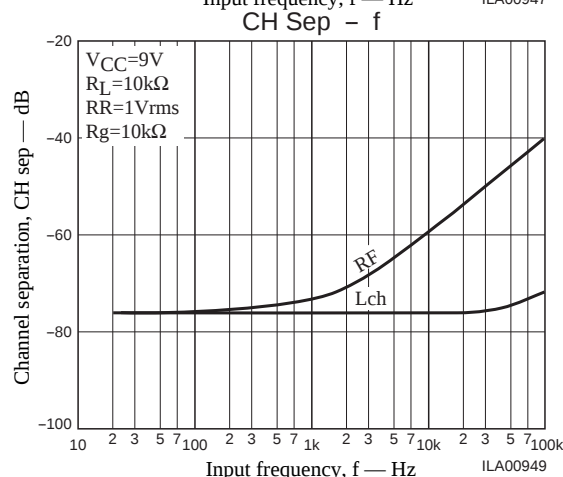
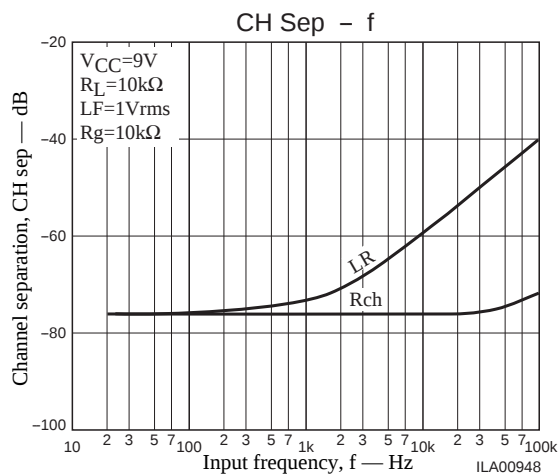
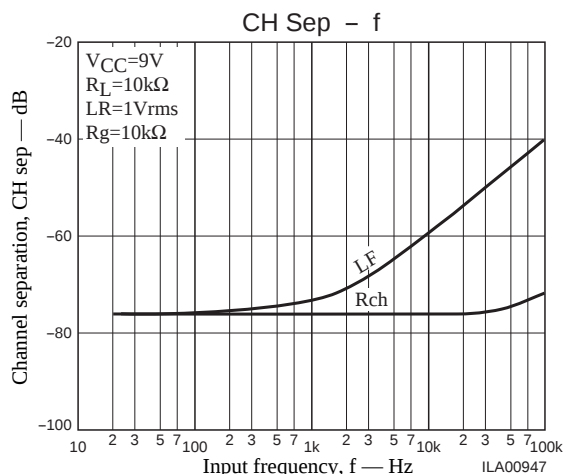
Pin Assignment



The schematic diagram illustrates the internal architecture of the ILA00937 integrated circuit. It features four main signal paths: LF (Low Frequency), LR (Low Rate), RF (Radio Frequency), and RR (Radio Rate). Each path includes a differential input stage (e.g., LF-IN, LR-IN, RF-IN, RR-IN) with 22μF capacitors, followed by a differential amplifier (SIGNAL AMP) and a lift amplifier (LIFT AMP). The circuit also includes a VREF block, a ripple filter, and a DC-L/DC-R input. The output stages (LF-OUT, LR-OUT, RF-OUT, RR-OUT) are differential pairs with 22μF capacitors. The circuit is powered by VCC (9.0V) and includes various resistors (12kΩ, 36kΩ, 30kΩ, 7.5kΩ, 10kΩ) and capacitors (47μF, 100μF, 1.5nF, 10μF) for timing and filtering. The diagram is labeled with pin numbers 1 through 24 and 27 through 30.

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