

CASSETTE PREAMPLIFIER**TDA1522****GENERAL DESCRIPTION**

The TDA1522 is a playback amplifier for car radio/cassette players.

Features

- Two independent amplifiers with open loop gain of typ. 90 dB
- Internal d.c. feedback via a 140 k Ω resistor from output to feedback point
- A.C. characteristics that can be determined externally by an RC network
- Electronic on/off switching with transient suppression for switch on
- Head input at d.c. ground that eliminates the input coupling capacitor
- Minimal external component requirement
- Stability down to a gain of 30 dB
- Low input noise
- Low distortion
- D.C. input current < 2 μ A
- Wide supply voltage range

QUICK REFERENCE DATA

Supply voltage range (pin 8)	V _p	7.5 to 23 V
Supply current (pin 8)	I _p	typ. 5 mA
Operating ambient temperature range	T _{amb}	−30 to +85 °C
Total harmonic distortion	THD	typ. 0.05 %
Channel separation at R _S = 10 k Ω ; L _S = 0	α	min. 45 dB

PACKAGE OUTLINE

9-lead SIL; plastic (SOT-142).

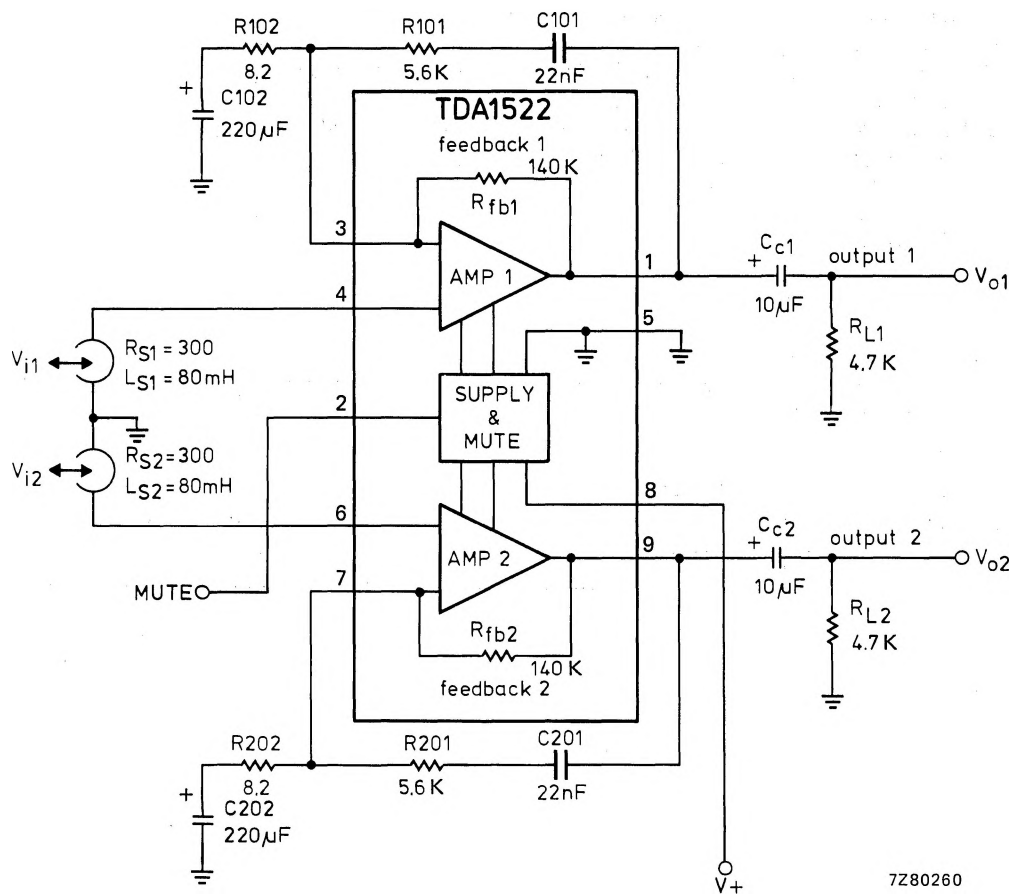
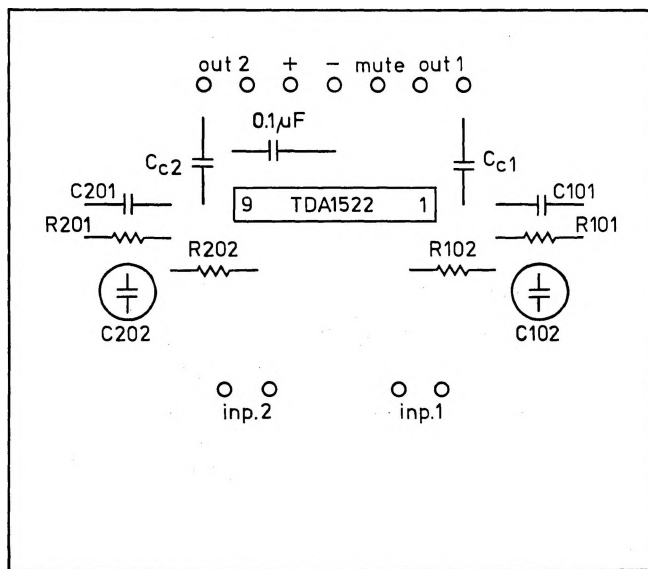
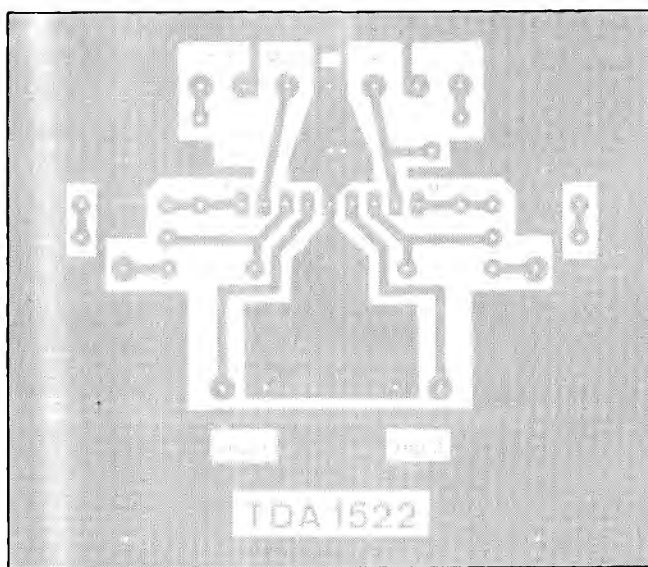


Fig. 1 Block diagram with external components; also used as test circuit.



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Fig. 2 Printed-circuit board component side, showing component layout for circuit of Figure 1.



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Fig. 3 Printed-circuit board, showing track side. Dimensions 75 mm x 65 mm.

CASSETTE PREAMPLIFIER**TDA1522****RATINGS**

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Supply voltage range (pin 8)	V_P	7.5 to 23 V
Power dissipation	P_{tot}	max. 800 mW
Feedback current (pins 3 and 7)	I_{fb}	max. 10 mA
Storage temperature range	T_{stg}	-55 to +150 °C
Operating ambient temperature range	T_{amb}	-30 to +85 °C

NoteAll pins except 3 and 7 (feedback) can be connected to V_P (pin 8) or ground, (pin 5).**CHARACTERISTICS** $V_P = 8.5 \text{ V}$; $T_{amb} = 25 \text{ °C}$; test circuit Fig. 1 unless otherwise specified

parameter	symbol	min.	typ.	max.	unit
Supply (pin 8)					
Supply voltage range	V_P	7.5	—	23	V
Supply current	I_P	—	5	—	mA
Inputs (pin 4 or 6)					
Noise input voltage (unweighted; r.m.s. value) at $f = 20 \text{ Hz}$ to 20 kHz^*	$V_{n(rms)}$	—	1.6	—	μV
Noise input voltage at $R_S = 0$; $f = 1 \text{ kHz}^*$, **	V_n	—	5	—	$\text{nV}/\sqrt{\text{Hz}}$
Noise input current at $f = 1 \text{ kHz}^*$, $^\Delta$	I_n	—	1.2	—	$\text{pA}/\sqrt{\text{Hz}}$
D.C. input current at pins 4 and 6	$-I_4; -I_6$	—	—	2	μA
Outputs (pin 1 or 9)					
Output voltage at $V_i = 0.3 \text{ mV}$; $f = 315 \text{ Hz}$	V_o	—	0.72	—	V
at $\text{THD} = 1\%$; $f = 1 \text{ kHz}$	V_o	1.0	—	—	V
Output source current at $V_{2.5} \geq 7.5 \text{ V}$; mute OFF	$-I_o$	5	10	—	mA
D.C. output voltage	V_o	—	3.7	—	V
Noise output voltage (weighted) at $R_S = 300 \Omega$; $L_S = 80 \text{ mH}$					
as DIN A (r.m.s. value)	$V_{n(rms)}$	—	700	—	μV
as CCITT (peak value)	$V_{n(m)}$	—	1200	—	μV
as CCIR (peak value)	$V_{n(m)}$	—	1600	—	μV
Noise output voltage (unweighted) at $R_S = 300 \Omega$; $L_S = 80 \text{ mH}$					
as DIN 45405 (peak value)	$V_{n(m)}$	—	1800	—	μV

* Measured in Fig. 4. ** See also Fig. 6. $^\Delta$ See also Fig. 7.

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parameter	symbol	min.	typ.	max.	unit
Mute on/off characteristics (pin 2)*					
Mute ON voltage at mute switch closed	V_m	0	—	1	V
Mute ON current at mute switch closed or $V_{2.5} = 0$ V	I_m	—	2.7	—	μA
Mute OFF voltage at mute switch open	V_m	7.5	—	V_p	V
Impedance					
Input impedance** at $f = 1$ kHz	$ Z_i $	200	—	—	$k\Omega$
Output impedance** at $f = 1$ kHz	$ Z_o $	—	—	1	$k\Omega$
General					
Internal feedback resistor**	R_{fb}	100	140	180	$k\Omega$
Open-loop voltage gain** at $f = 315$ Hz	G_v	—	90	—	dB
Channel separation at $R_S = 10$ $k\Omega$; $L_S = 0$; (note 1)	α	45	—	—	dB
Power supply ripple rejection at $V_{p(rms)} = 0.1$ V; $f = 100$ Hz (note 2)	RR	90	95	—	dB
Total harmonic distortion at $f = 1$ kHz; $V_O = 0.72$ V (note 3)	THD	—	0.05	—	%

Notes

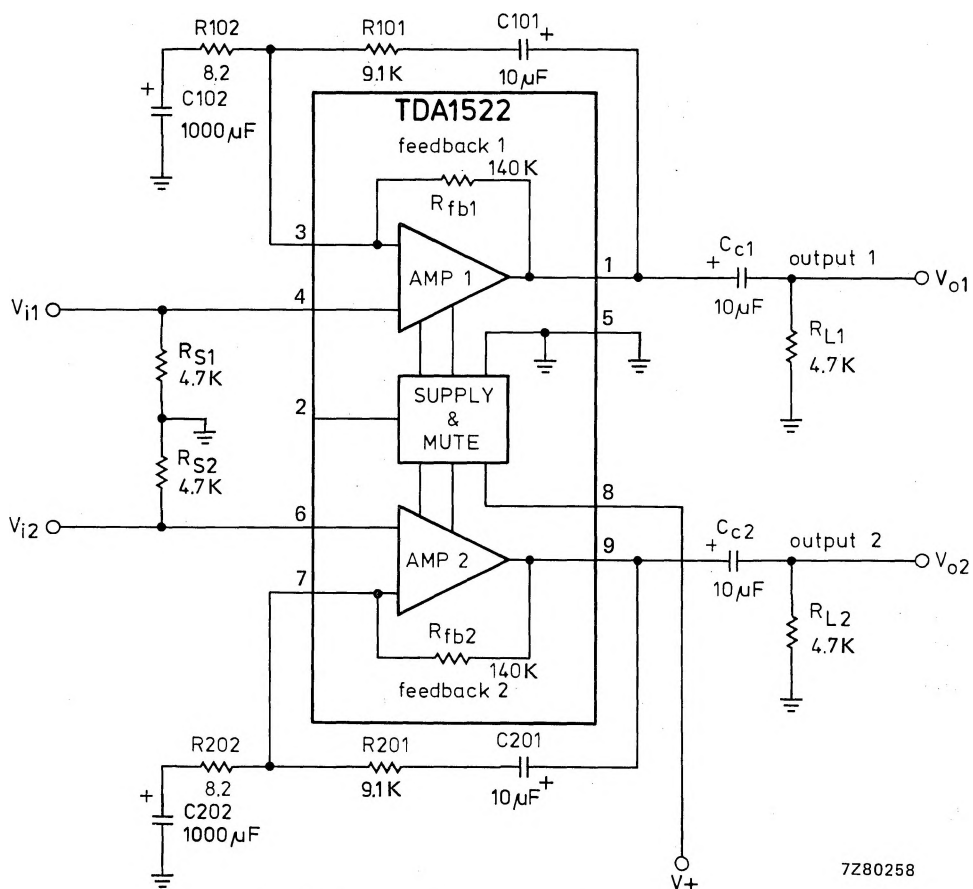
1. Frequency range 300 Hz to 20 kHz.
2. Referred to the input.
3. Measured selective.

* See also Fig. 5.

** Applies to each amplifier.

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Fig. 4 Test circuit for noise measurement.

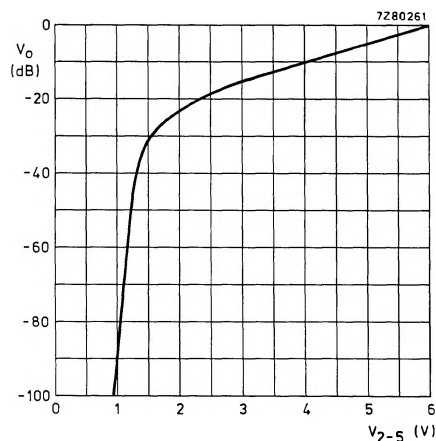


Fig. 5 Muting depth as a function of control voltage at pin 2.

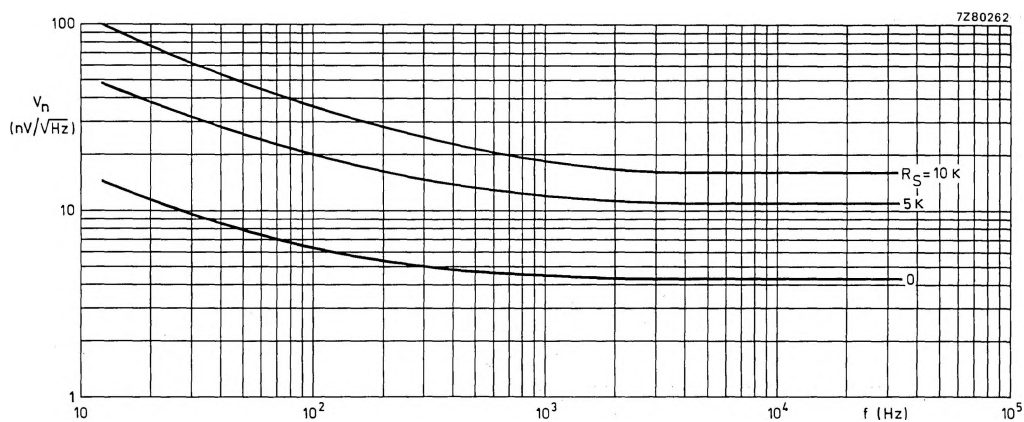


Fig. 6 Noise input voltage as a function of frequency.

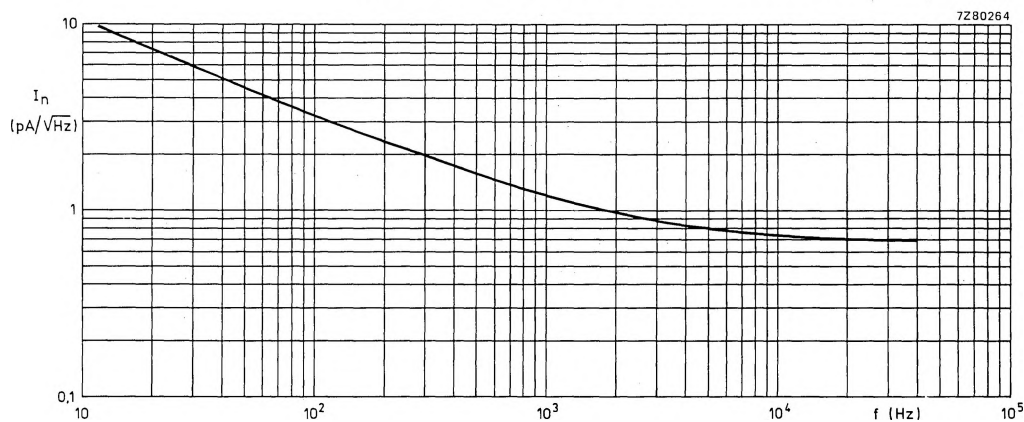


Fig. 7 Noise input current as a function of frequency.

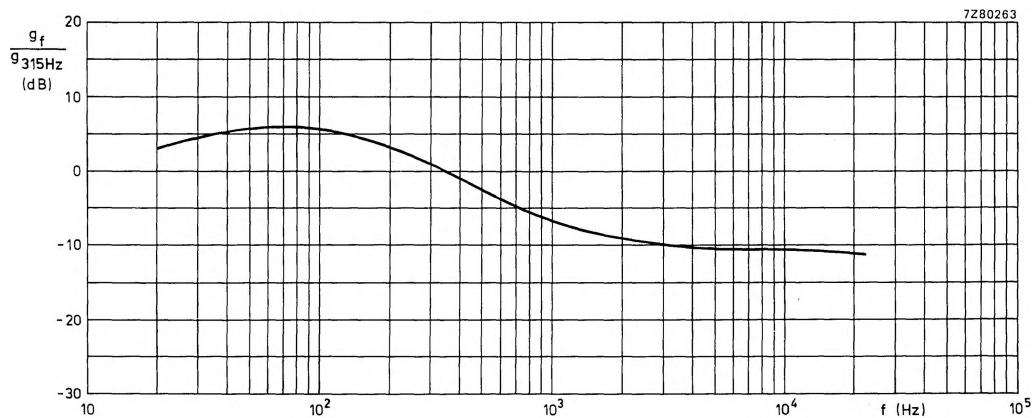
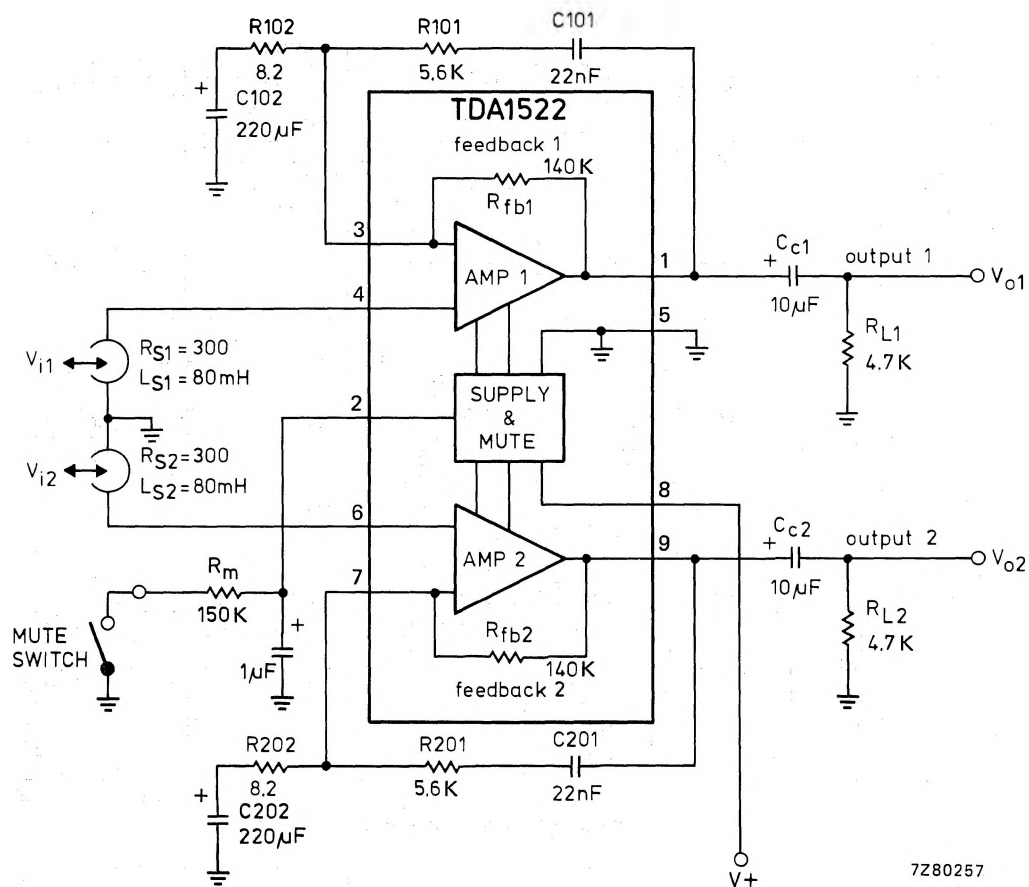


Fig. 8 Frequency response curve for the circuit in Figure 1.

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APPLICATION INFORMATION

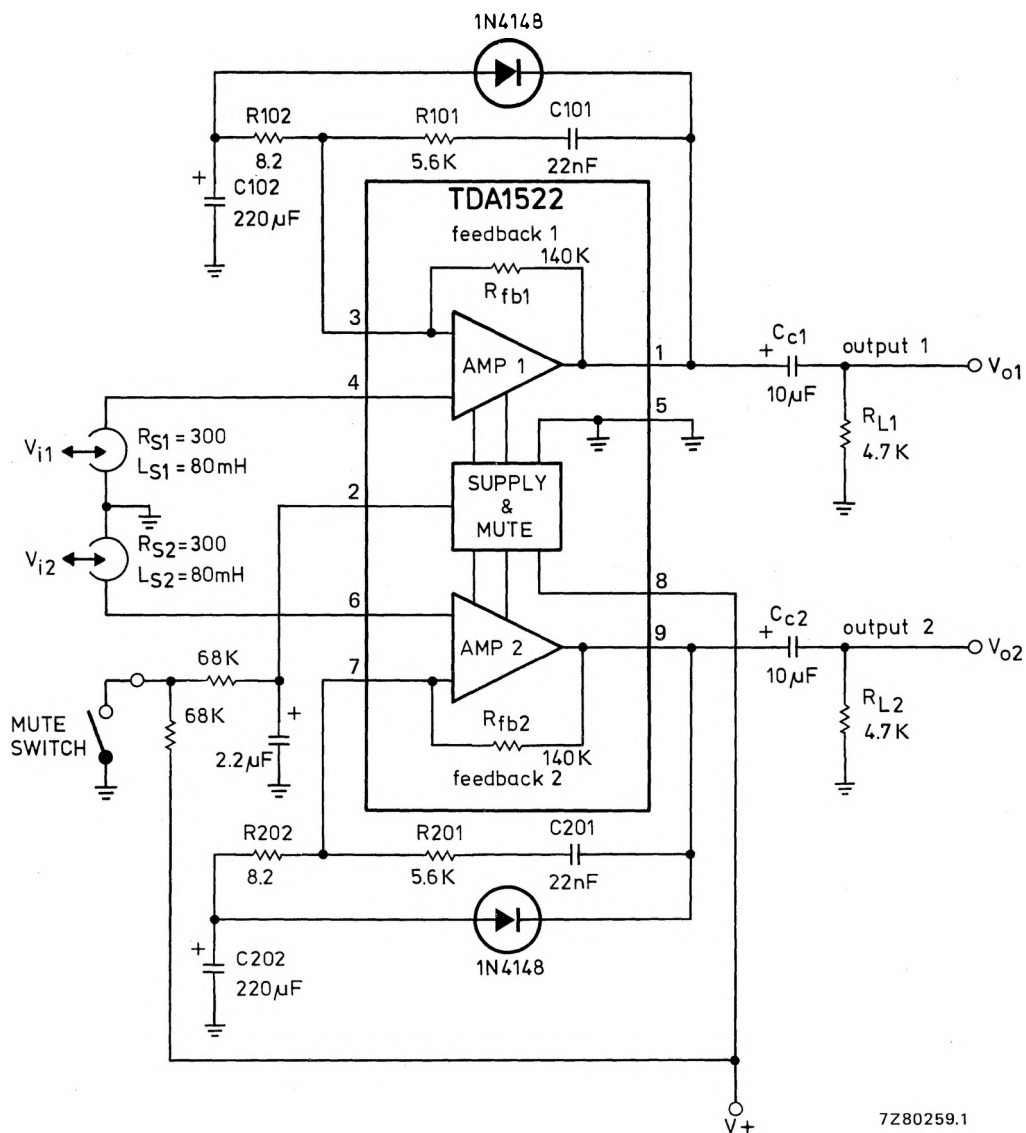


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Fig. 9 Simple mute application.

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Fig. 10 Application for plop-free muting.