



TDA7052A

LINEAR INTEGRATED CIRCUIT

1W BTL MONO AUDIO AMPLIFIER WITH DC VOLUME CONTROL

DESCRIPTION

The UTC **TDA7052A** is mono BTL output amplifier with DC volume control. It is designed for use in TV and monitors, additionally it is suitable for portable recorders and radios.

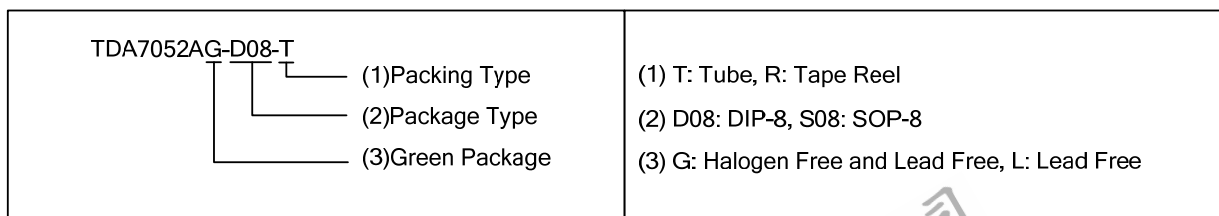
In the IC, a Missing Current Limiter (MCL) is built-in. This function is activated when the difference of current between the OUT+ and OUT- exceed 100mA (typical 300mA). This level of 100mA suit for headphone applications (single-ended).

FEATURES

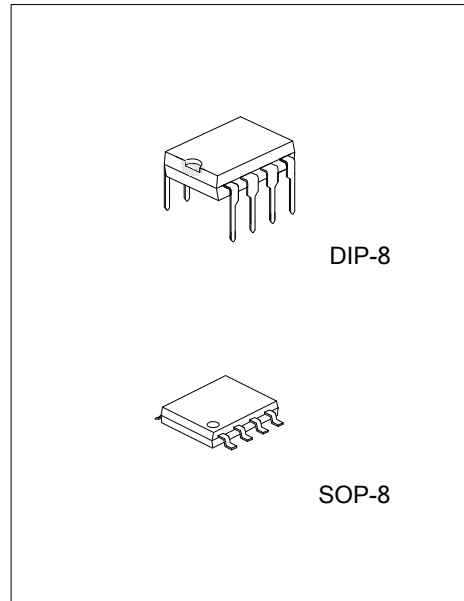
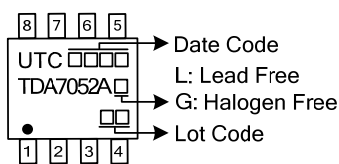
- * Low power consumption
- * DC volume control
- * Mute mode
- * No switch-on and off clicks
- * Short-circuit proof
- * Good overall stability
- * Low HF radiation
- * Few external components
- * Thermal protection
- * ESD protected on all pins
- * Missing Current Limiter (MCL)

ORDERING INFORMATION

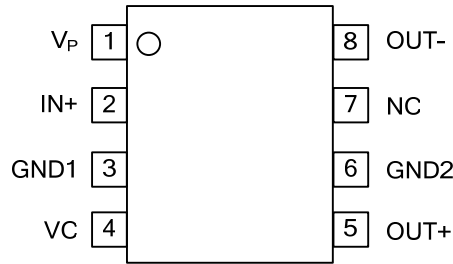
Ordering Number		Package	Packing
Lead Free	Halogen Free		
TDA7052AL-D08-T	TDA7052AG-D08-T	DIP-8	Tube
TDA7052AL-S08-T	TDA7052AG-S08-T	SOP-8	Tube
TDA7052AL-S08-R	TDA7052AG-S08-R	SOP-8	Tape Reel



MARKING



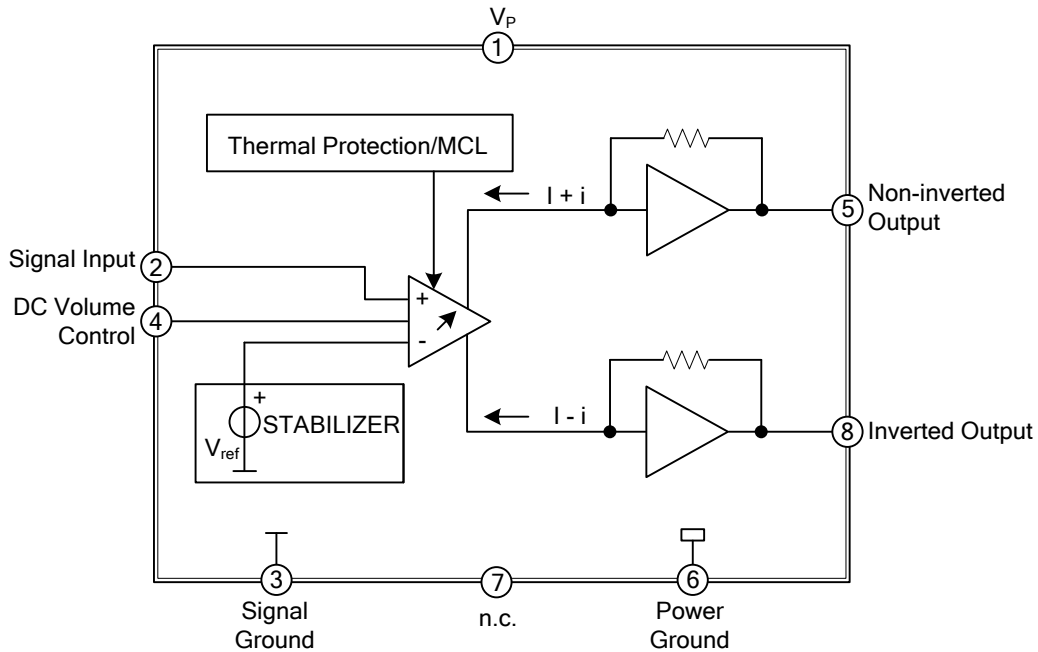
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V_P	Power Supply
2	$IN+$	Signal Input Terminal
3	$GND1$	Signal Ground
4	VC	DC Volume Control Terminal
5	$OUT+$	Non-inverted Output Terminal
6	$GND2$	Power Ground
7	NC	Not Connected
8	$OUT-$	Inverted Output Terminal

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage Range	V_P	18	V
Input Voltage Pin 2	V_2	8	V
Input Voltage Pin 4	V_4	8	V
Repetitive Peak Output Current	I_{ORM}	1.25	A
Non-Repetitive Peak Output Current	I_{OSM}	1.5	A
Short-Circuit Time	T_{SC}	1	hr
Total Power Dissipation ($T_A \leq 25^\circ\text{C}$)	DIP-8	1.25	W
	SOP-8	0.8	W
Operating Ambient Temperature Range	T_A	-40 ~ +85	$^\circ\text{C}$
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS

$V_P=6\text{V}$, $T_{amb}=25^\circ\text{C}$, $f=1\text{kHz}$; $R_L=8\Omega$, unless otherwise specified.

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Supply Voltage Range	V_P		4.5		18	V
Total Quiescent Current	I_P	$V_P=6\text{V}$, $R_L=\infty$, Note 1		7	12	mA
DC Volume Control						
Gain Control Range	ϕ		75	80		dB
Control Current	I_4	$V_4=0.4\text{V}$		70	80	μA
Characteristics In Mute Position						
Output Voltage In Mute Position	V_O	$V_4 \leq 0.3\text{V}$, $V_I=600\text{mV}$			30	μV
Characteristics In Minimum Gain, $V_4=0.5\text{V}$						
Voltage Gain	G_V			-44		dB
Noise Output Voltage (RMS value)	$V_{NO(RMS)}$	Note 2		20	30	μV
Characteristics In Maximum Gain, $V_4=1.4\text{V}$						
Output Power	P_O	THD=10%	1.0	1.1		W
Total Harmonic Distortion	THD	$P_O=0.5\text{W}$		0.3	1	%
Voltage Gain	G_V		34.5	35.5	36.5	dB
Input Signal Handling	V_I	$V_4=0.8\text{V}$, THD<1%	0.5	0.65		V
Noise Output Voltage (RMS value)	$V_{NO(RMS)}$	$f=500\text{kHz}$, Note 3		210		μV
Bandwidth	B	-1dB		0.02~300		kHz
Supply Voltage Ripple Rejection	SVRR	Note 4	38	46		dB
DC Output Offset Voltage	$ V_{OFF} $			0	150	mV
Input Impedance (Pin 2)	Z_I		15	20	25	k Ω

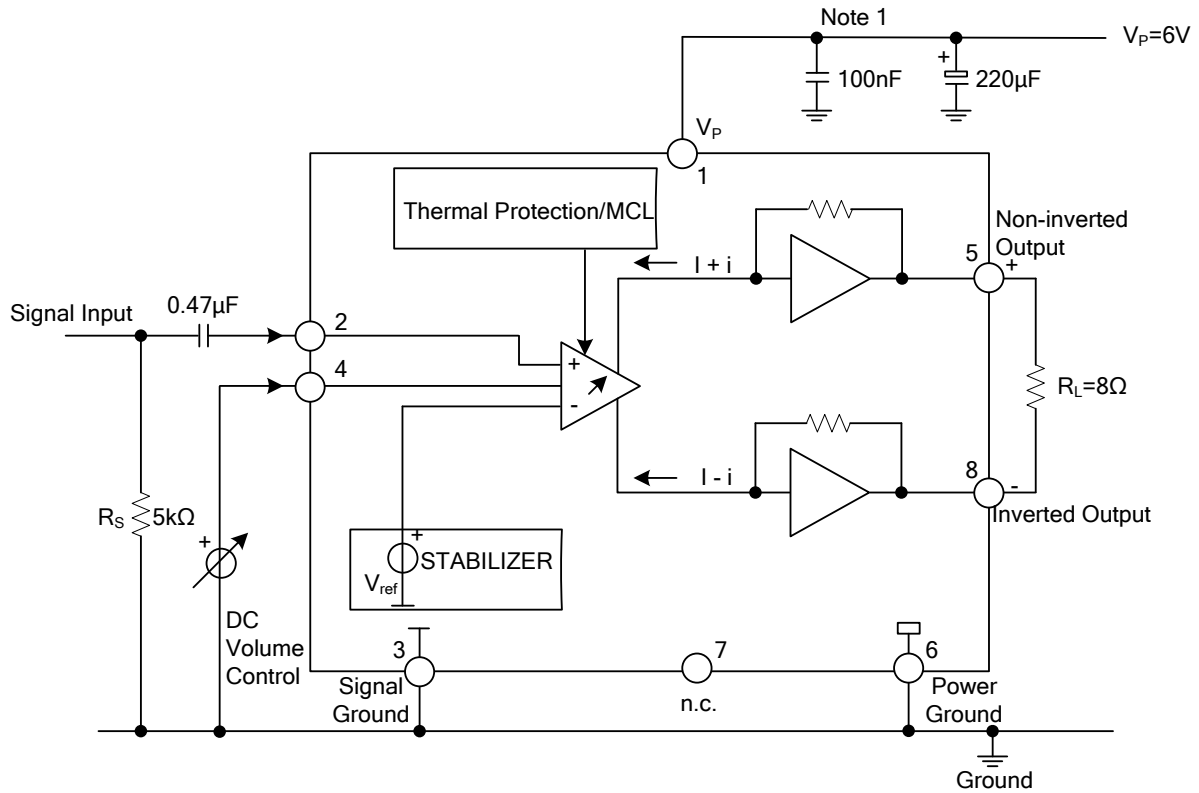
Notes: 1. With a load connected to the outputs the quiescent current will increase, the maximum value of this increase being equal to the DC output offset voltage dividend by R_L .

2. The noise output voltage (RMS value) is measured with $R_S=5\text{k}\Omega$ unweighted.

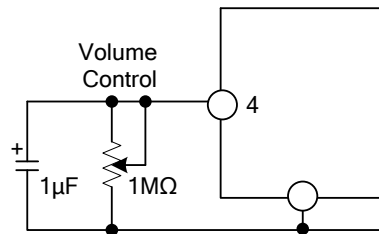
3. The noise output voltage (RMS value) at $f=500\text{kHz}$ is measured with $R_S=0\Omega$ and bandwidth=5kHz.

4. The ripple rejection is measured with $R_S=0\Omega$ and $f=100\text{Hz}\sim 10\text{kHz}$. The ripple voltage of 200mV, (RMS value) is applied to the positive supply rail.

■ TYPICAL APPLICATION CIRCUIT

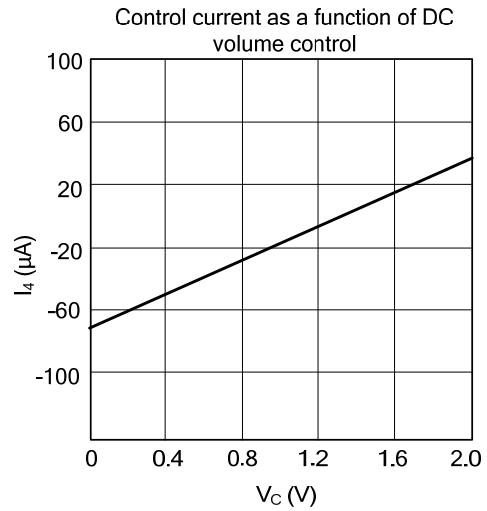
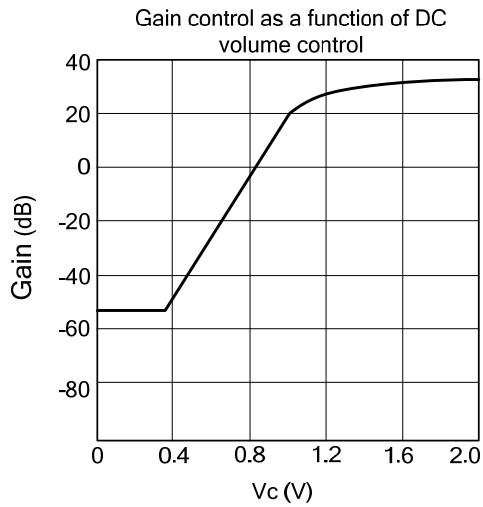


Note 1. This capacitor can be omitted if the 220μF electrolytic capacitor is connected close to pin 1.



Application with potentiometer as volume control; maximum gain=30dB

■ TYPICAL CHARACTERISTICS



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