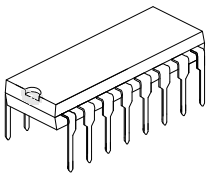
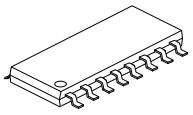
TDA7053A

LINEAR INTEGRATED CIRCUIT

STEREO BTL AUDIO OUTPUT AMPLIFIER WITH DC VOLUME CONTROL



DIP-16



SOP-16

■ DESCRIPTION

The UTC **TDA7053A** is stereo BTL output amplifiers with DC volume control and specially is designed for use in TV and monitors, but are also suitable for battery-fed portable recorders and radios.

Different packages are supplied for different output power, DIP-16 for 2×1W and SOP-16 for 2×0.5W.

■ FEATURES

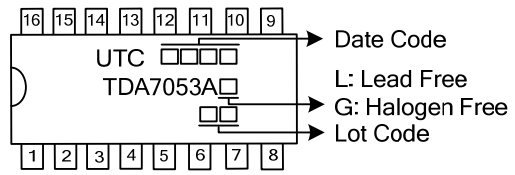
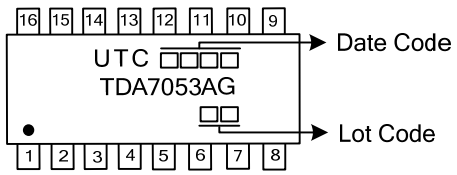
* DC volume control
* Few external components
* Mute mode
* Thermal protection
* Short-circuit proof
* No switch-on and switch-off clicks
* Good overall stability
* Low power consumption
* Low HF radiation
* ESD protected on all pins.

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
TDA7053AL-D16-T	TDA7053AG-D16-T	DIP-16	Tube
-	TDA7053AG-S16-R	SOP-16	Tape Reel

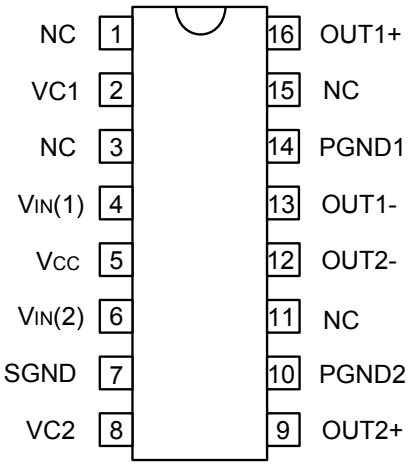
TDA7053AL-D16-T (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel, T: Tube (2) D16: DIP-16, S16: SOP-16 (3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING

DIP-16	SOP-16
	

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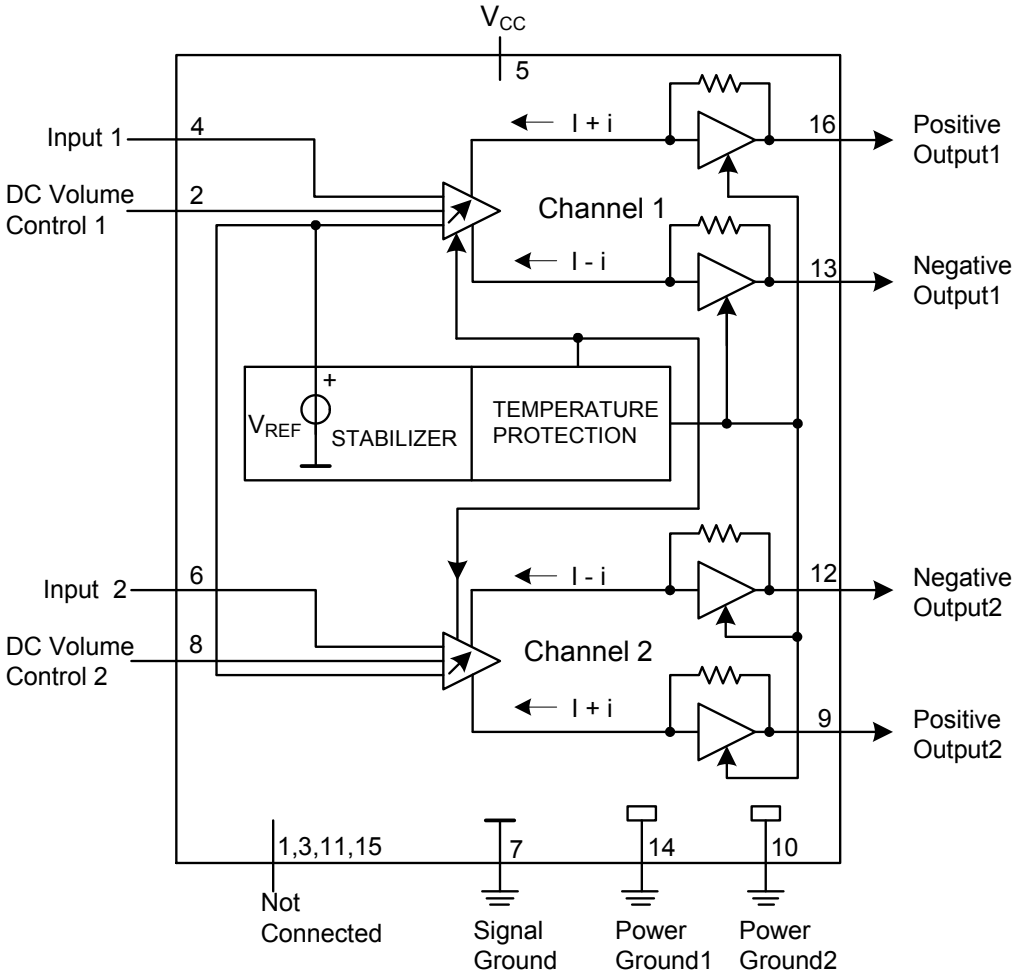
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	SYMBOL	DESCRIPTON
1	NC	No connection
2	VC1	DC volume control 1
3	NC	No connection
4	$V_{IN}(1)$	Voltage input 1
5	V_{CC}	Positive supply voltage
6	$V_{IN}(2)$	Voltage input 2
7	SGND	Signal ground
8	VC2	DC volume control 2
9	OUT2+	Positive output 2
10	PGND2	Power ground 2
11	NC	No connection
12	OUT2-	Negative output 2
13	OUT1-	Negative output 1
14	PGND1	Power ground 1
15	NC	No connection
16	OUT1+	Positive output 1

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	18	V
Repetitive Peak Output Current		I_{ORM}	1.25	A
Non- Repetitive Peak Output Current		I_{OSM}	1.5	A
Total Power Dissipation ($T_A \leqq 25°C$)	DIP-16	P_D	2.5	W
	SOP-16		1.32	W
Short-Circuit Time		T_{SC}	1	hr
Input Voltage Pins 2, 4, 6 and 8		V_{IN}	5	V
Junction Temperature		T_J	+125	°C
Operating Ambient Temperature		T_{OPR}	-20~+85	°C
Storage Temperature		T_{STG}	-40~+150	°C

Notes: 1. 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.
2. The device is guaranteed to meet performance specification within 0°C ~ +70°C operating temperature range and assured by design from –20°C ~ +85°C.

■ THERMAL DATA

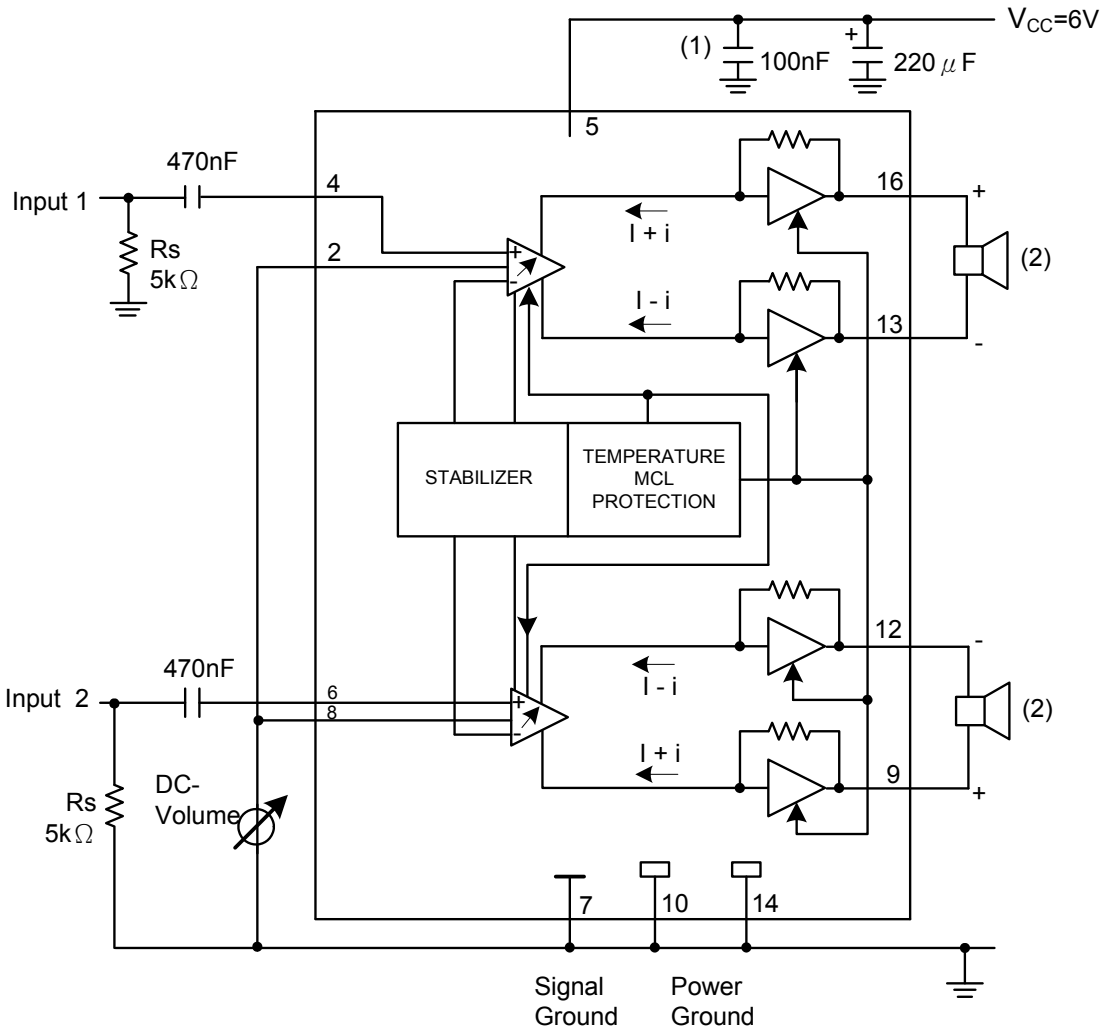
PARAMETER		SYMBOL	RATINGS	UNIT
Thermal Resistance From Junction To Ambient In Free Air	DIP-16	θ_{JA}	50	K/W
	SOP-16		95	K/W

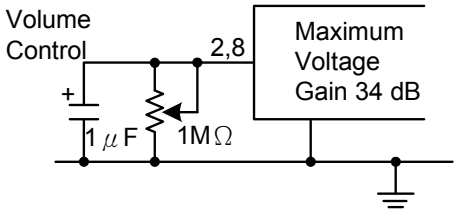
■ ELECTRICAL CHARACTERISTICS(V_{CC}= 6V, Ta= 25℃, f_{IN}=1kHz, unless otherwise specified)

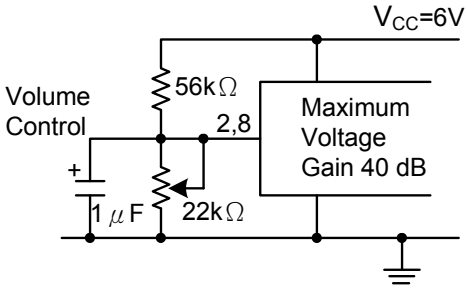
PARAMETER		SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Supply Voltage		V_{CC}		4.5		18	V
Total Quiescent Current (Note)		I_Q	V_{CC}=6V, R_L=∞		22	25	mA
Maximum Gain: V2,8 ≥1.4 V							
Output Power	DIP-16	P_{OUT}	THD=10%, R_L= 8Ω	1.0	1.1		W
	SOP-16		THD=10%, R_L= 16Ω	0.5	0.55		W
Total Harmonic Distortion	DIP-16	THD	P_{OUT}=0.5W		0.3	1	%
	SOP-16		P_{OUT}=0.25W		0.3	1	%
Voltage Gain		G_V		39.5	40.5	41.5	dB
Input Signal Handling (RMS value)		$V_{IN(RMS)}$	Gv=0dB, THD<1%	1			V
Noise Output Voltage		eN	f_{IN}=500kHz, R_S=0Ω, BW=5kHz		210		μV
Bandwidth		BW	At-1dB	20Hz ~ 300kHz(TYP.)			Hz
Supply Voltage Ripple Rejection		RR	$V_{IN(RMS)}$= 200mV, R_S = 0Ω, f_{IN} = 100Hz~10kHz	34	38		dB
DC Output Offset Voltage		$V_{O(OFF)}$	$\lvert V_{16}-V_{13} \rvert$ and $\lvert V_{12}-V_9 \rvert$		0	200	mV
Input Impedance (pins 4 and 6)		Z_{IN}		15	20	25	kΩ
Channel Separation		α_{CS}	R_S=5kΩ	40			dB
Channel Unbalance		$\lvert G_V \rvert$	V_{DC1} = V_{DC2}			1	dB
			G_1=0dB, V_{DC1} = V_{DC2}			1	dB
Mute Position: $V_{2,8}$ = 0.4 V ± 30 mV							
Output Voltage In Mute Position		$V_{O(MUTE)}$	V_{IN}=1.0V, Rs = 5 kΩ		30	40	μV
DC Volume Control							
Gain Control		G_C		68.5	73.5		dB
Volume Control Current		I_{DC}	V_2=V_8=0V	-20	-25	-30	μA

Notes: 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 divided by R_L.

■ TEST AND APPLICATION DIAGRAM CIRCUITS



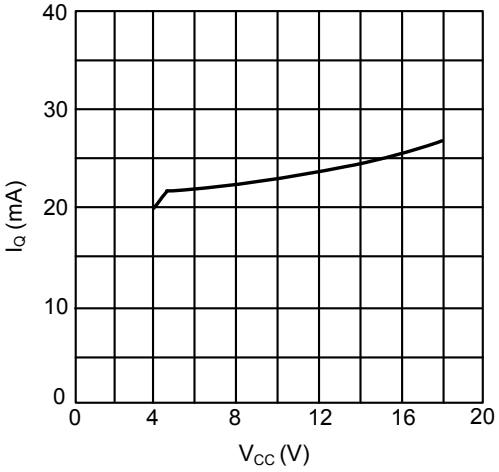




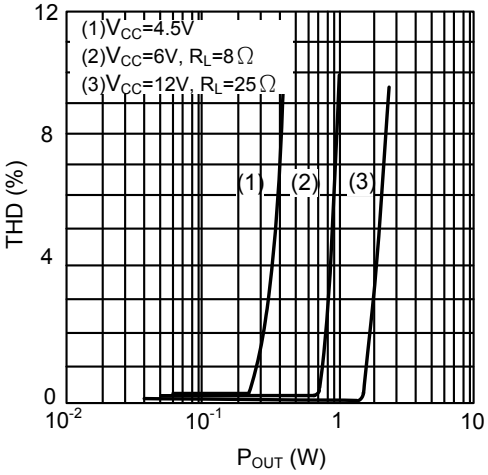
(1) This capacitor can be omitted if the 220 μF electrolytic capacitor is connected close to pin 5.
(2) R_L= 8Ω

■ TYPICAL CHARACTERISTICS

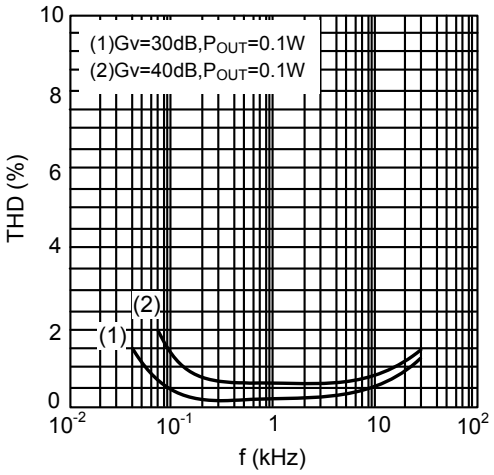
Quiescent Current as a Function of Voltage



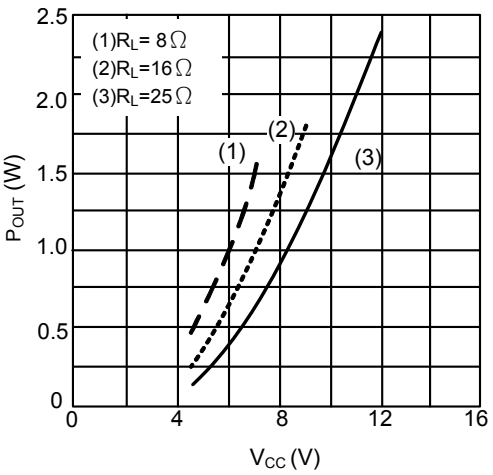
THD as a Function of Output Power



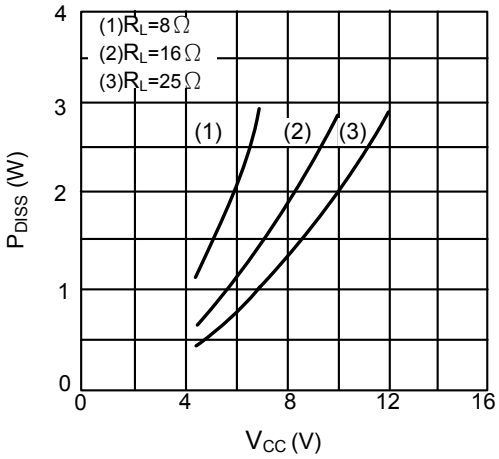
THD as a Function of Frequency



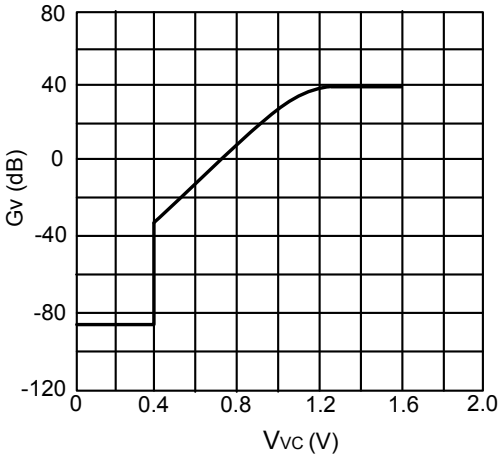
Output Power as a Function of Supply Voltage



Total Worst Wase Power Dissipation as a Function of Supply Voltage

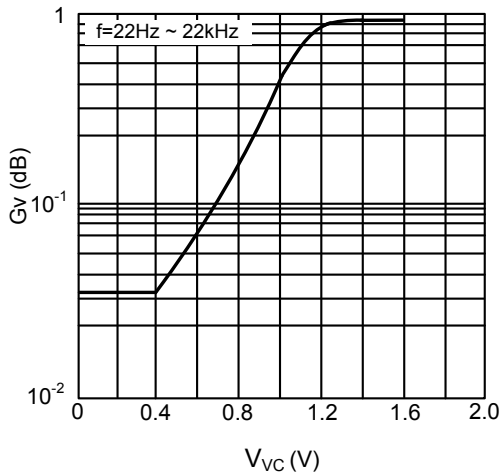


Voltage Gain as a Function of Volume Control Voltage

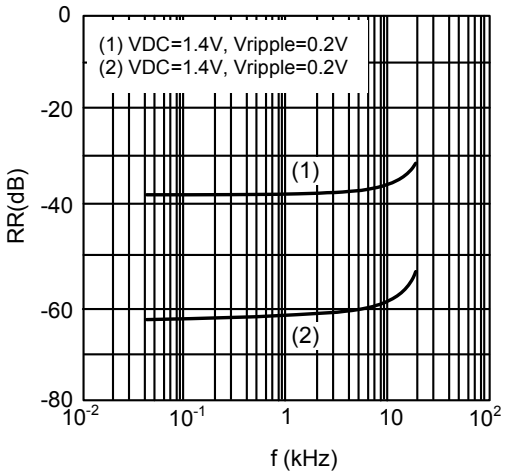


■ TYPICAL CHARACTERISTICS(Cont.)

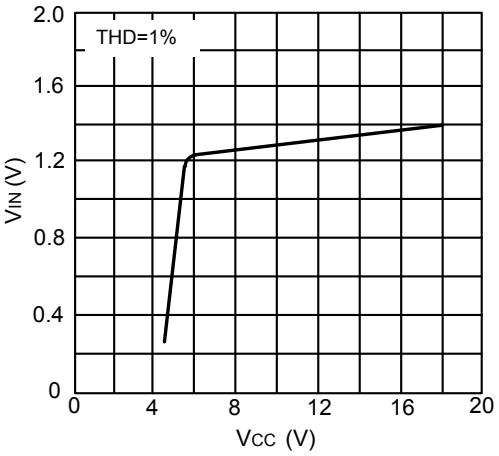
Noise Voltage as a Function of Volume Control Voltage



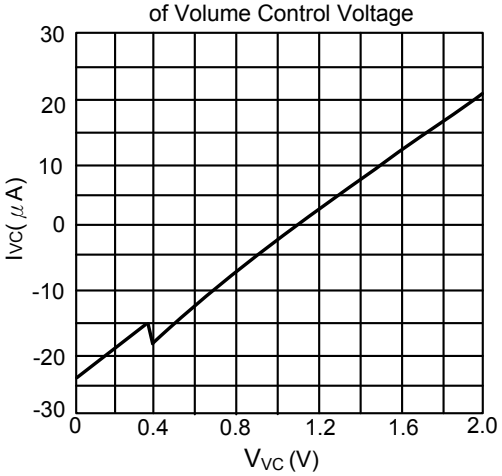
RR as a Function of Frequency



Input Signal Handling



Volume Control Current as a Function of Volume Control Voltage



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