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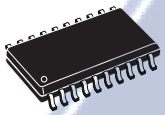
TDA7448

6 CHANNEL VOLUME CONTROLLER

PRODUCT PREVIEW

- 6 CHANNEL INPUTS
- 6 CHANNEL OUTPUTS
- VOLUME ATTENUATION RANGE OF 0 TO -79dB
- VOLUME CONTROL IN 1.0dB STEPS
- 6 CHANNEL INDEPENDENT CONTROL
- ALL FUNCTION ARE PROGRAMMABLE VIA SERIAL BUS



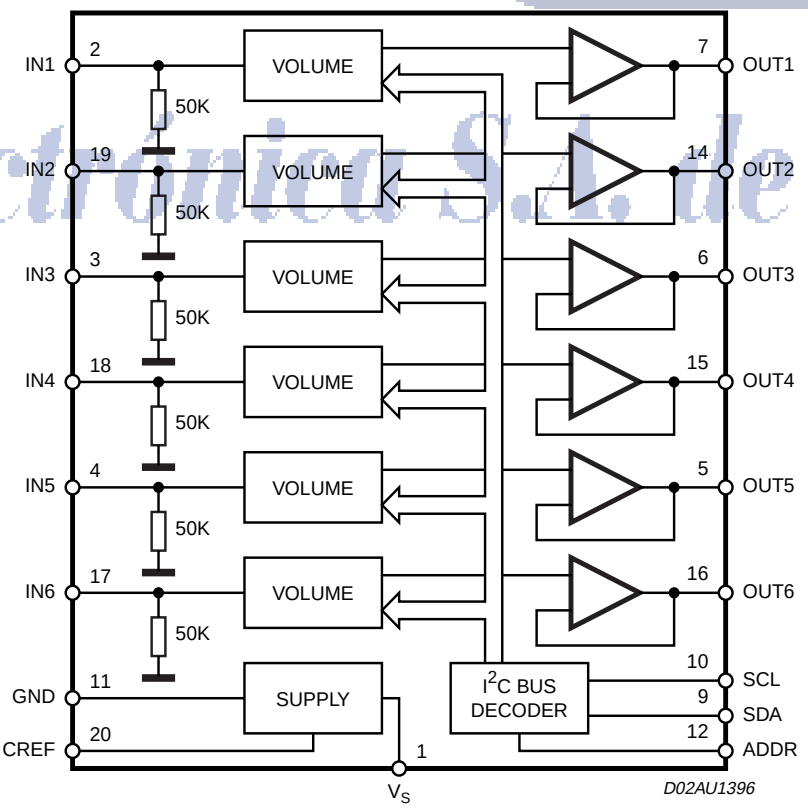
SO20
ORDERING NUMBER: TDA7448

DESCRIPTIO

The TDA7448 is a 6 channel volume controller for quality audio applications in Multi-Channels Audio Systems

Thanks to the used BIPOLAR/CMOS Technology, Low Distortion, Low Noise and DC stepping are obtained.

BLOCK DIAGRAM



This is preliminary information on a new product now in development. Details are subject to change without notice.

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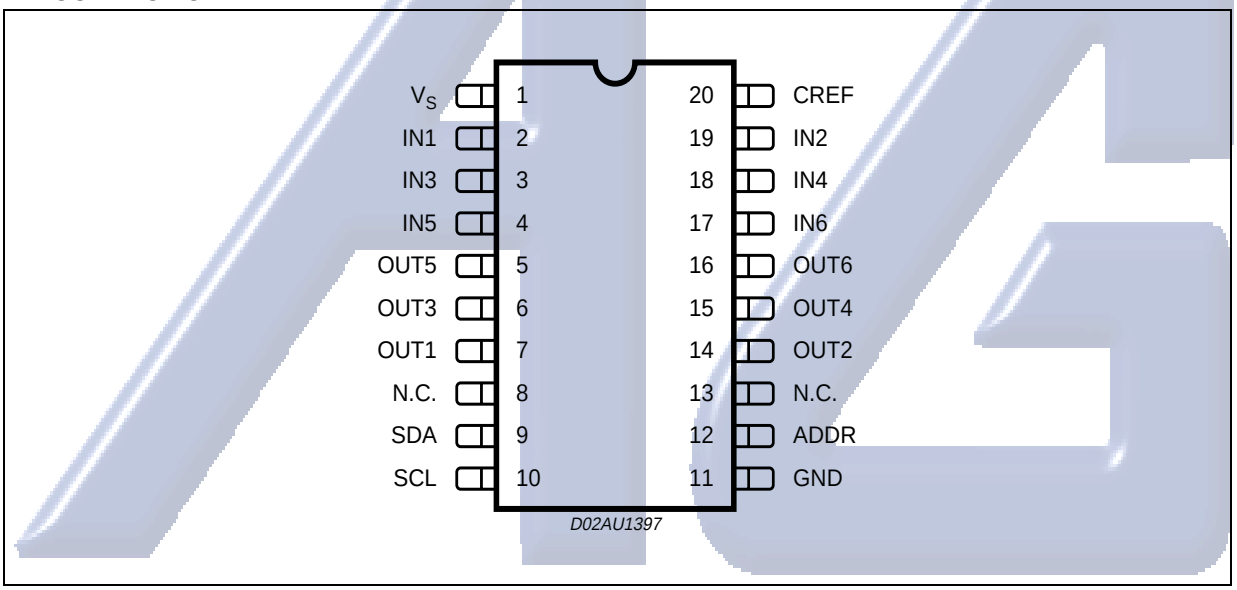
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	Operating Supply Voltage	10.5	V
T_{amb}	Operating Ambient Temperature	-10 to 85	°C
T_{stg}	Storage Temperature Range	-55 to 150	°C

PIN CONNECTION



THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ j\text{-}pin}$	thermal Resistance junction-pins	150	°C/W

QUICK REFERENCE DATA

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_S	Supply Voltage	4.75	9	10	V
V_{CL}	Max Input Signal Handling	2			Vrms
THD	Total Harmonic Distortion V = 1Vrms f =1KHz		0.01	0.1	%
S/N	Signal to Noise Ratio Vout = 1Vrms		100		dB
S_C	Channel Separation f = 1KHz		90		dB
	Volume Control (1dB step)	-79		0	dB
	Mute Attenuation		90		dB

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ELECTRICAL CHARACTERISTCS

(refer to the test circuit T_{amb} = 25°C, V_S = 9V, R_L = 10KΩ, R_G = 600Ω, unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
SUPPLY						
V_S	Supply Voltage		4.75	9	10	V
I_S	Supply Current			7		mA
SVR	Ripple Rejection			80		dB
INPUT STAGE						
R_{IN}	Input Resistance		35	50	65	KΩ
V_{CL}	Clipping Level	THD = 0.3%	2	2.5		Vrms
S_{IN}	Input Separation	The selected input is grounded through a 2.2µ capacitor		90		dB
VOLUME CONTROL						
C_{RANGE}	Control Range			79		dB
A_{VMAX}	Max. Attenuation			79		dB
A_{STEP}	Step Resolution		0.5	1	1.5	dB
E_A	Attenuation Set Error	A_V = 0 to -24dB	-1	0	1	dB
		A_V = -24 to -79dB	-2.0	0	2.0	dB
E_T	Tracking Error	A_V = 0 to -24dB	-1	0	1	dB
		A_V = -24 to -79dB	-2	0	2	dB
V_{DC}	DC Step	adyacent attenuation steps	-3	0	3	mV
A_{mute}	Mute Attenuation			90		db
AUDIO OUTPUTS						
V_{CLIP}	Clipping Level	THD = 0.3%	2	2.5		Vrms
R_L	Output Load Resistance		2			KΩ
V_{DC}	DC Voltage Level			4.5		V
GENERAL						
E_{NO}	Output Noise	BW = 20Hz to 20KHz All gains = 0dB, Flat		10	15	µV
S/N	Signal to Noise Ratio	All gains = 0dB; V_O = 1Vrms		100		dB
S_C	Channel Separation left/Right		80	90		dB
THD	Distortion	A_V = 0; V_I = 1Vrms		0.01	0.1	%
BUS INPUT						
V_{II}	Input Low Voltage				1	V
V_{IH}	Input High Voltage		2.5			V
I_{IN}	Input Current	V_{IN} = 0.4V	-5		5	µA
V_O	Output Voltage SDA Achnowledge	I_O = 1.6mA		0.4	0.8	V

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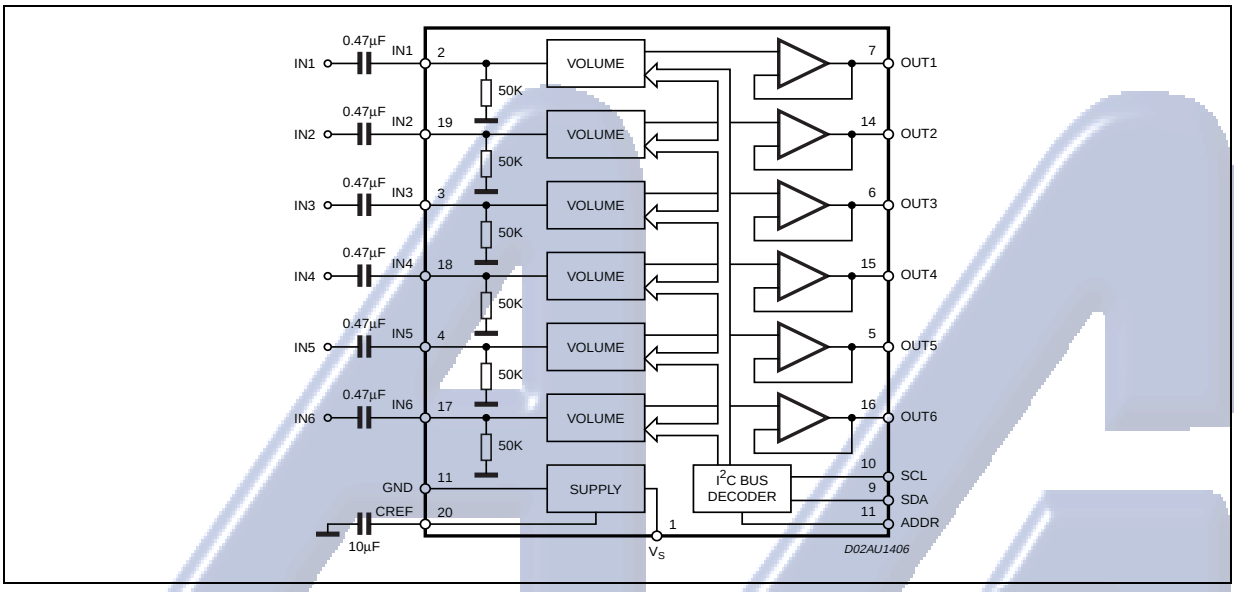
Figure 1. Test circuit



APPLICATION SUGGESTIONS

The volume control range is 0 to -79dB, by 1dB step resolution.

The very high resolution allows the implementation of systems free from any noise acoustical effect.

CREF

The suggested 10µF reference capacitor (CREF) value can be reduced to 4.7µF if the application requires faster power ON.

Figure 2. THD vs. frequency

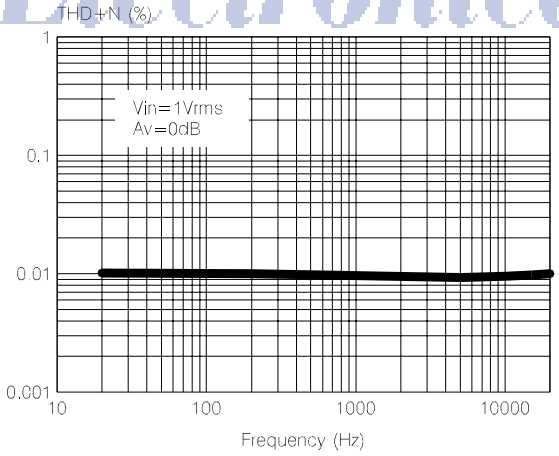


Figure 3. THD vs. R_{LOAD}

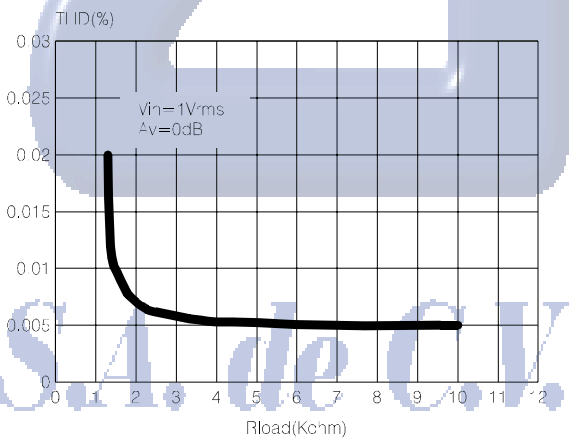
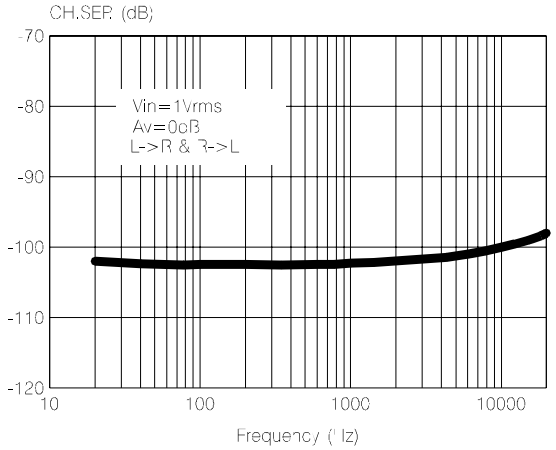


Figure 4. Channel separation vs. frequency



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