



## TDA1519C

### LINEAR INTEGRATED CIRCUIT

## 22W BTL OR 2×11W STEREO POWER AMPLIFIER

### DESCRIPTION

The UTC **TDA1519C** is an integrated class-B dual output amplifier with gain fixed at 40dB. It's packed in a 9-lead plastic single in-line power package for Low thermal resistance and high heat dissipation.

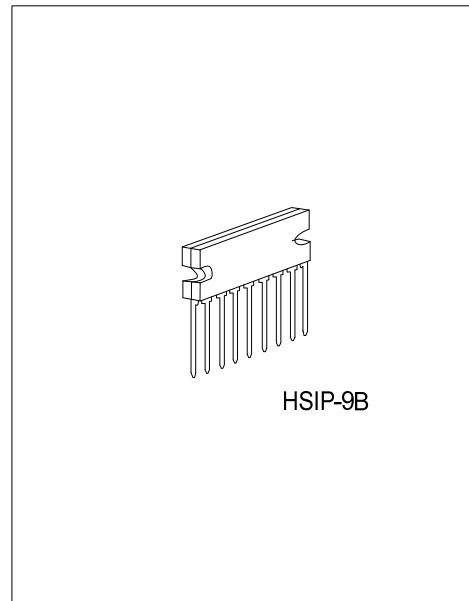
### FEATURES

- \* Two identical amplifiers with identical differential input stages suitable for Stereo or BTL application.
- \* Load dump, reverse polarity, short-circuit and over temperature protections
- \* Fixed gain at 40dB with Good ripple rejection
- \* Mute/standby switch with low switching current
- \* Requires very few external components for Bridge -Tied Load (BTL) operation
- \* No switch-on/switch-off pops
- \* Low standby current (<100μA)

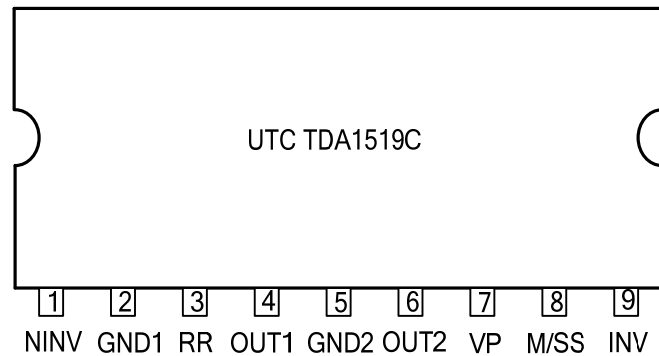
### ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
TDA1519CL-H09-B-T	TDA1519CG-H09-B-T	HSIP-9B	Tube

<p>TDA1519CL-H09-B-T</p> <p>(1) Packing Type (2) Package Type (3) Lead Free</p>	<p>(1) T: Tube (2) H09-B: HISP9B (3) G: Halogen Free, L: Lead Free</p>
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### ■ PIN CONFIGURATION



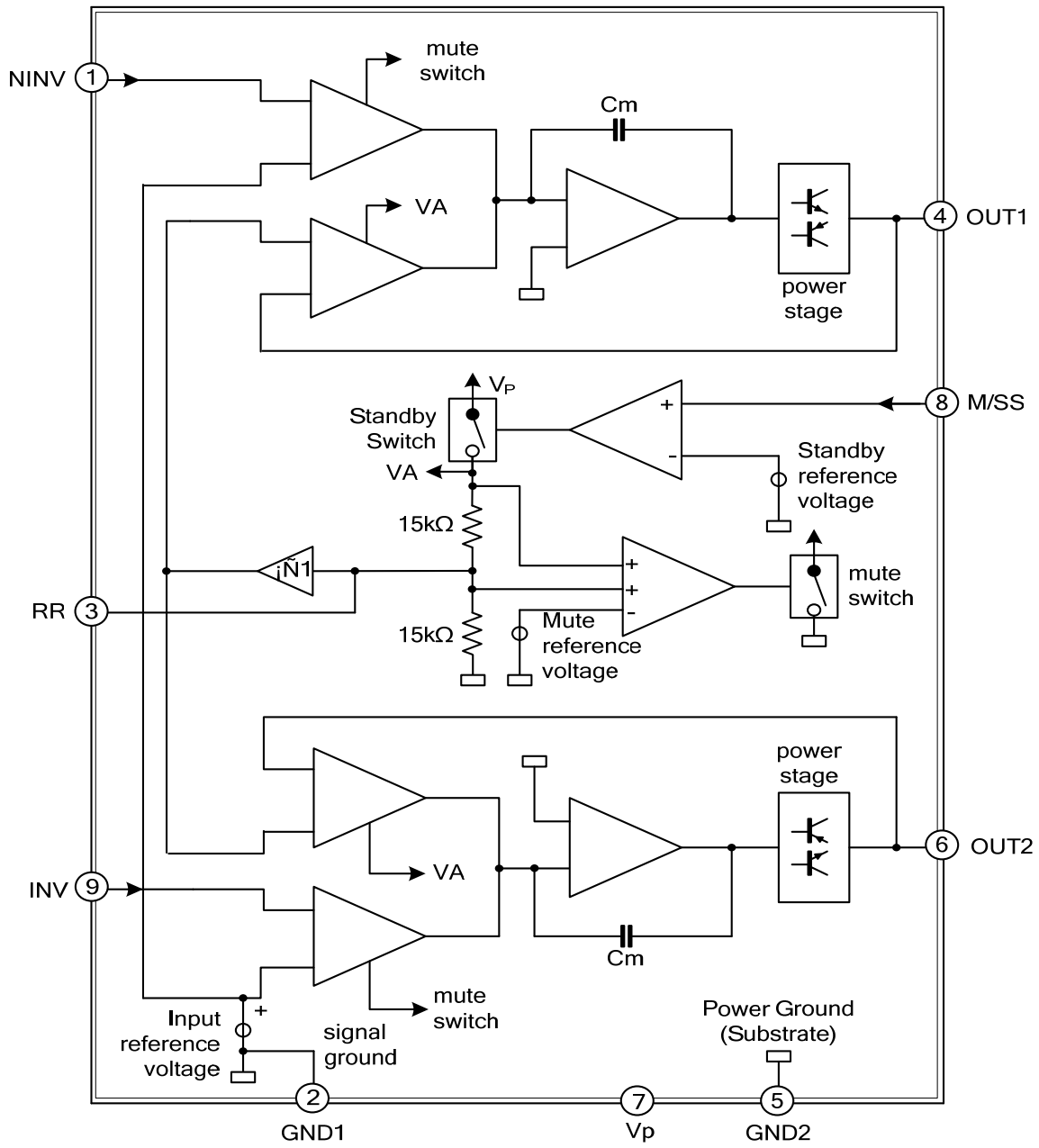
### ■ PIN DESCRIPTION

PIN NO	PIN NAME	DESCRIPTION
1	NINV	Non-inverting input
2	GND1	Ground 1(signal)
3	PSRR	Supply Voltage Ripple Rejection
4	OUT1	Output 1
5	GND2	Ground 2(substrate)
6	OUT2	Output 2
7	$V_P$	Positive Supply Voltage
8	M/SS	Mute/standby switch input
9	INV	Inverting Input

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## LINEAR INTEGRATED CIRCUIT

### ■ BLOCK DIAGRAM



### ■ ABSUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage	Operating	V <sub>P</sub>	17.5	V
	Non-operating		30	
	Load dump protected (Note 2)		45	
AC and DC Short-Circuit Safe Voltage		V <sub>sc</sub>	17.5	V
Reverse Polarity Voltage		V <sub>rp</sub>	6	V
Non-repetitive Peak Output Current		I <sub>osM</sub>	6	A
Repetitive Peak Output Current		I <sub>ORM</sub>	4	A
Energy Handling Capability At Outputs (V <sub>p</sub> =0V)		E <sub>o</sub>	200	mJ
Power Dissipation		P <sub>D</sub>	25	W
Junction Temperature		T <sub>J</sub>	0 ~ +125	°C
Storage Temperature		T <sub>STG</sub>	-65 ~ +125	°C

Note: 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. During 50ms, tr ≥ 2.5ms

### ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction-to-Ambient	θ <sub>JA</sub>	210	°C/W

### ■ DC CHARACTERISTICS (V<sub>P</sub>=14.4V, Ta=25°C, measured from test circuit, fig 1.)

PARAMETER	SYMBOL	TECT CONDITONS	MIN	TYP	MAX	UNIT
<b>SUPPLY</b>						
Supply Voltage	V <sub>P</sub>	(Note 1)	6.0	14.4	17.5	V
DC Output Voltage	V <sub>OUT</sub>	(Note 2)		6.95		V
DC Output Offset Voltage	ΔV <sub>OO</sub>				250	mV
Total Quiescent Current	I <sub>Q(TOT)</sub>			40	80	mA
<b>MUTE/STANDBY SWITCH</b>						
Switch-ON voltage Level	V <sub>SW(ON)</sub>		8.5			V
Mute Voltage Level	V <sub>MUTE</sub>		3.3		6.4	V
Standby Voltage Level	V <sub>STB</sub>		0		2	V
<b>MUTE/STANDBY CONDITION</b>						
Output Voltage	V <sub>OUT</sub>	Mute mode; V <sub>IN(MAX)</sub> =1V; fi=20Hz ~ 15kHz			20	mV
DC Output Offset Voltage	ΔV <sub>OO</sub>	Mute mode			250	mV
Standby Current	I <sub>STB</sub>	Standby mode			100	μA
Switch-ON Current	I <sub>SW(ON)</sub>			12	40	μA

Note: 1. The circuit is DC adjusted at V<sub>P</sub>=6~17.5V and AC operating at V<sub>P</sub>=8.5~17.5V.

2. At V<sub>P</sub>=17.5 ~ 30V, the DC output voltage is ≤ 0.5Vp.

■ AC CHARACTERISTICS ( $V_P=14.4V$ ,  $R_L=4\Omega$ ,  $T_a=25^\circ C$ ,  $f=1kHz$ , unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
<b>STEREO APPLICATION</b> (see fig.1)						
Noise output Voltage(RMS value)	$V_{N(O)(RMS)}$	ON, $R_S=0\Omega$	Bandwidth 20Hz~20kHz.		150	$\mu V$
		ON, $R_S=10k\Omega$		250	500	
		Mute, (Note 4)		120		
Input Impedance	$ Z_i $		50	60	75	k $\Omega$
Output Power(Note 1)	$P_{OUT}$	THD=0.5%	4	5		W
		THD=10%	5.5	6.0		
		THD=0.5%, $R_L=2\Omega$	7.5	8.5		
		THD=10%, $R_L=2\Omega$	10	11		
Channel Separation	$\alpha_{CS}$	$R_S=10k\Omega$	40			dB
Channel Unalance	$ \Delta Gv(ub) $			0.1	1	dB
Closed-loop voltage Gain	$Gv(cl)$		39	40	41	dB
Supply voltage Ripple rejection (Note 3)	SVRR	ON, $f=100Hz$ .	40			dB
		ON, $f=1$ to 10kHz.	45			
		Mute, 100Hz to 10kHz.	45			
		Standby, 100Hz to 10kHz	80			
High Frequency Roll-OFF	$f_{ro}(h)$	-1dB	20			KHz
Low Frequency Roll-OFF	$f_{ro}(l)$	-3dB (Note 2)		45		Hz
Total Harmonic Distortion	THD	$P_{OUT}=1W$		0.1		%
<b>BTL APPLICATION</b> (see fig 2)						
Noise Output Voltage (RMS Value)	$V_{N(O)(RMS)}$	ON, $R_S=0\Omega$	Bandwidth 20Hz ~ 20kHz.		200	$\mu V$
		ON, $R_S=10k\Omega$		350	700	
		Mute, Note 4		180		
Input Impedance	$ Z_i $		25	30	38	k $\Omega$
Output Power(Note 1)	$P_{OUT}$	THD=0.5%	15	17		W
		THD=10%	20	22		
		THD=0.5%, $V_P=13.2V$		13		
		THD=10%, $V_P=13.2V$		17.5		
Closed-Loop Voltage Gain	$Gv(cl)$		45	46	47	dB
Supply Voltage Ripple Rejection (Note 3)	SVRR	On, $f=100Hz$	34			dB
		On, $f=1$ to 10kHz	48			
		Mute, 100Hz to 10kHz.	48			
		Standby, 100Hz to 10kHz	80			
High Frequency Roll-OFF	$f_{ro}(h)$	-1dB	20			KHz
Low Frequency Roll-OFF	$f_{ro}(l)$	-1dB, (Note 2)		45		Hz
Power Bandwidth	Bp	THD=0.5%, $P_{OUT}=-1dB$ with respect to 15W		35 ~ 15000		Hz
Total Harmonic Distortion	THD	$P_{OUT}=1W$		0.1		%

Note: 1. Output power is measured directly at the output pins of the device.

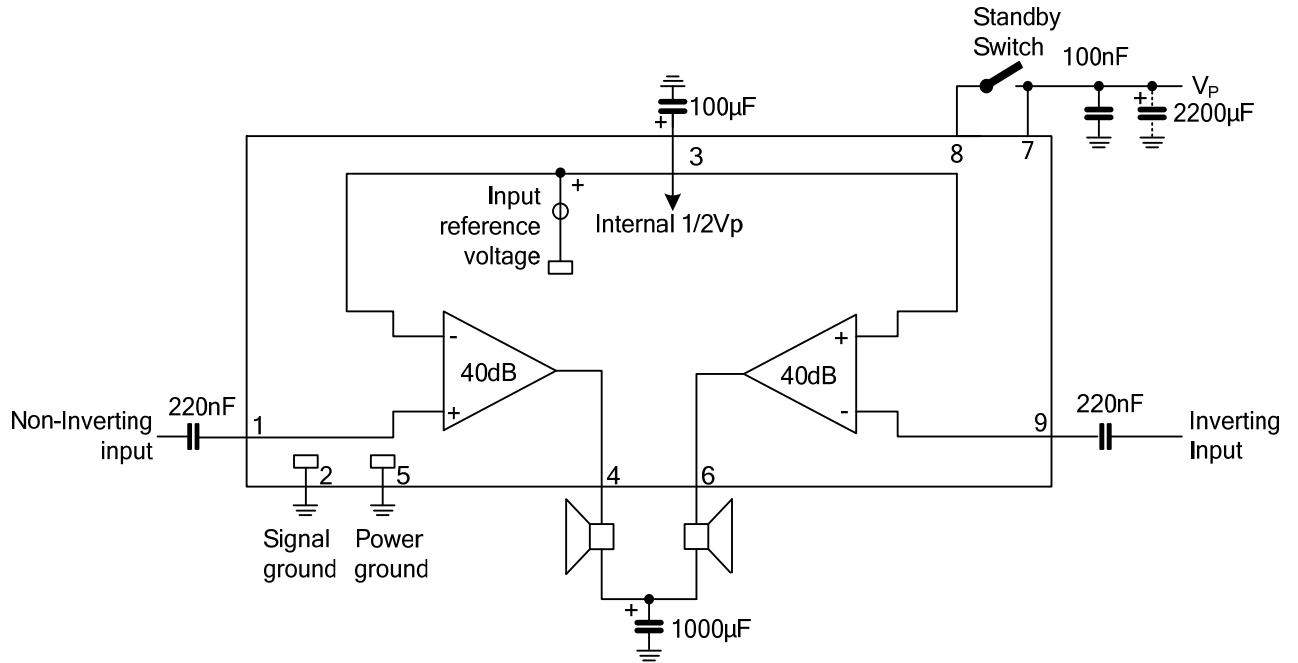
2. Frequency response is externally fixed.

3. Ripple rejection is measured at the output with a source impedance of  $0\Omega$ (maximum ripple amplitude of 2V).

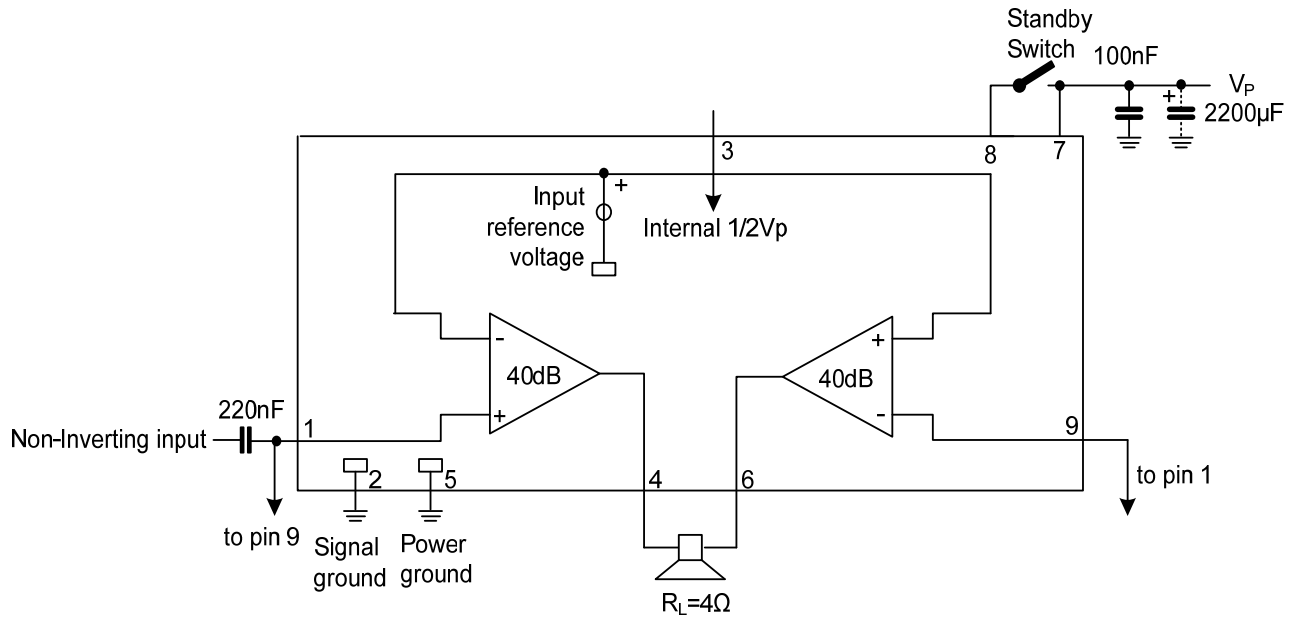
4. Noise output voltage independent of  $R_S$  ( $V_{IN}=0V$ ).

### APPLICATION INFORMATION

#### Stereo application diagram



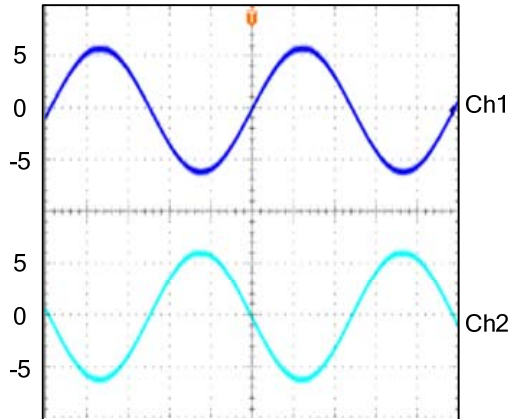
#### BTL application diagram



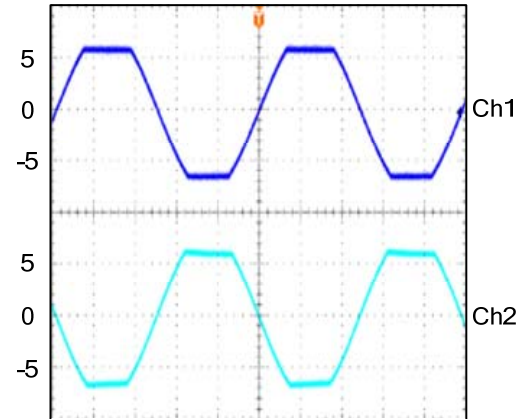
### ■ TYPICAL CHARACTERISTICS

#### P<sub>o</sub> Output Waveform

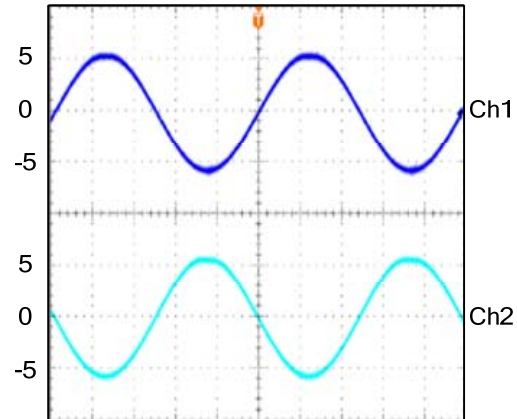
V<sub>CC</sub>=14.4V, R<sub>L</sub>=4Ω, f=1KHz, THD=0.5% (Stereo)



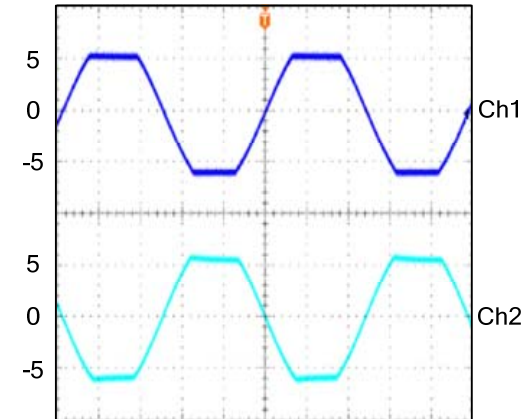
V<sub>CC</sub>=14.4V, R<sub>L</sub>=4Ω, f=1KHz, THD=10% (Stereo)



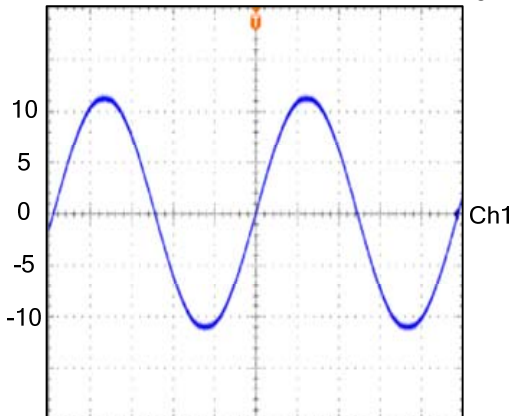
V<sub>CC</sub>=14.4V, R<sub>L</sub>=2Ω, f=1KHz, THD=0.5% (Stereo)



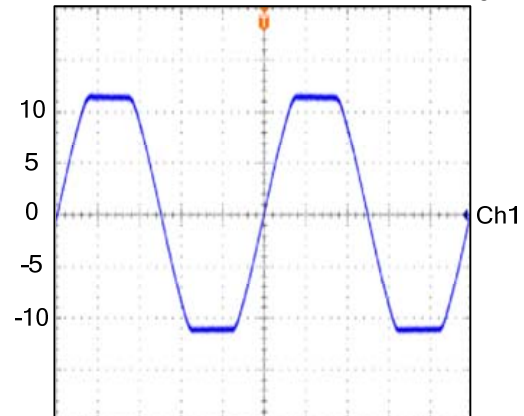
V<sub>CC</sub>=14.4V, R<sub>L</sub>=2Ω, f=1KHz, THD=10% (Stereo)



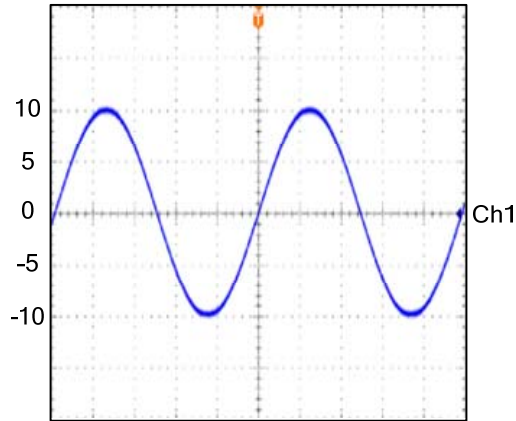
V<sub>CC</sub>=14.4V, R<sub>L</sub>=4Ω, f=1KHz, THD=0.5% (Bridge)



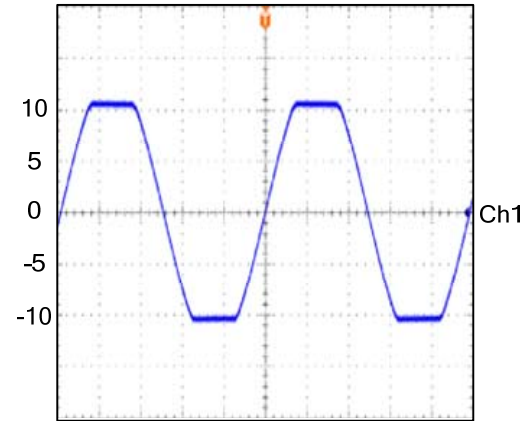
V<sub>CC</sub>=14.4V, R<sub>L</sub>=4Ω, f=1KHz, THD=10% (Bridge)



$V_{CC}=13.2V$ ,  $R_L=4\Omega$ ,  $f=1KHz$ ,  $THD=0.5\%$  (Bridge)



$V_{CC}=13.2V$ ,  $R_L=4\Omega$ ,  $f=1KHz$ ,  $THD=10\%$  (Bridge)



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