



## TDA22003

LINEAR INTEGRATED CIRCUIT

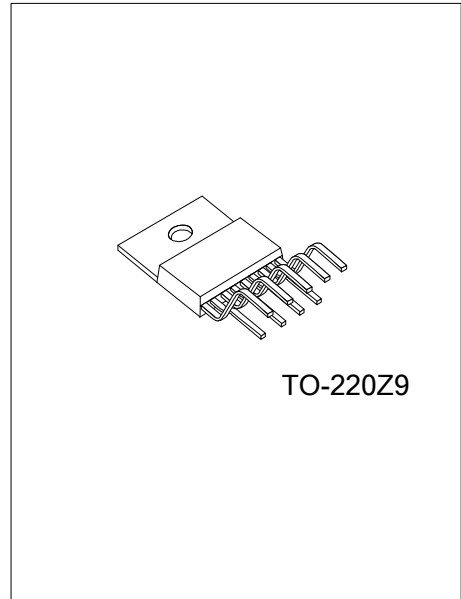
### 10 +10W STEREO AMPLIFIER

#### DESCRIPTION

The UTC **TDA22003** is a class AB stereo audio power amplifier that contains two identical amplifiers capable of delivering 10W per channel. It is designed for quality Hi-Fi stereo applications and is easily constructed and with minimum need of external components.

#### FEATURES

- \* Supply range 8V ~ 28V
- \* High power outputs (10W/Channel)
- \* High output current up to 3.5A
- \* Short circuit protection
- \* Thermal protection

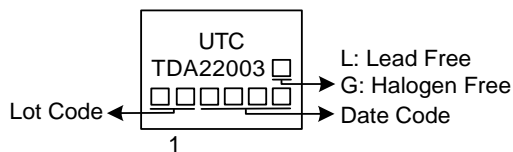


#### ORDERING INFORMATION

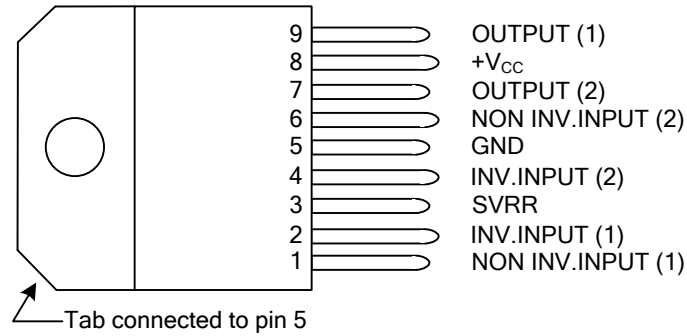
Ordering Number		Package	Packing
Lead Free	Halogen Free		
TDA22003L-TB9-T	TDA22003G-TB9-T	TO-220Z9	Tube

<p>TDA22003G-TB9-T</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) T: Tube (2) TB9: TO-220Z9 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



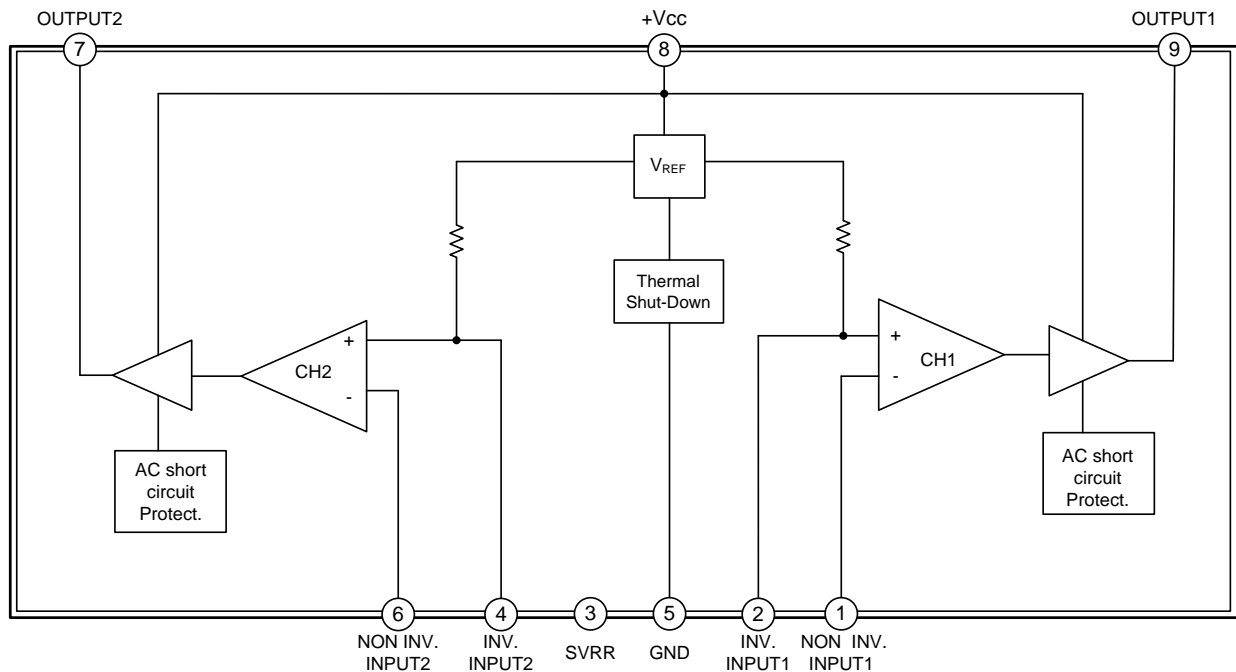
## ■ PIN CONFIGURATION



## ■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	NON INV.INPUT1	Non-inverting input1
2	INV.INPUT1	Inverting input1
3	SVRR	Internal 1/2 V <sub>CC</sub> supply rejection
4	INV.INPUT2	Inverting input2
5	GND	Ground
6	NON INV.INPUT2	Non-inverting input2
7	OUTPUT2	Output2
8	+V <sub>CC</sub>	Supply voltage
9	OUTPUT1	Output1

## ■ BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		$V_{CC}$	28	V
Peak Output Current	repetitive, $f \geq 20\text{Hz}$	$I_{O(PEAK)}$	3.5	A
	non repetitive, $t_p=100\mu\text{s}$		4.5	A
Power Dissipation ( $T_C = 90^\circ\text{C}$ )		$P_D$	20	W
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-40 ~ +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.

## ■ THERMAL DATA

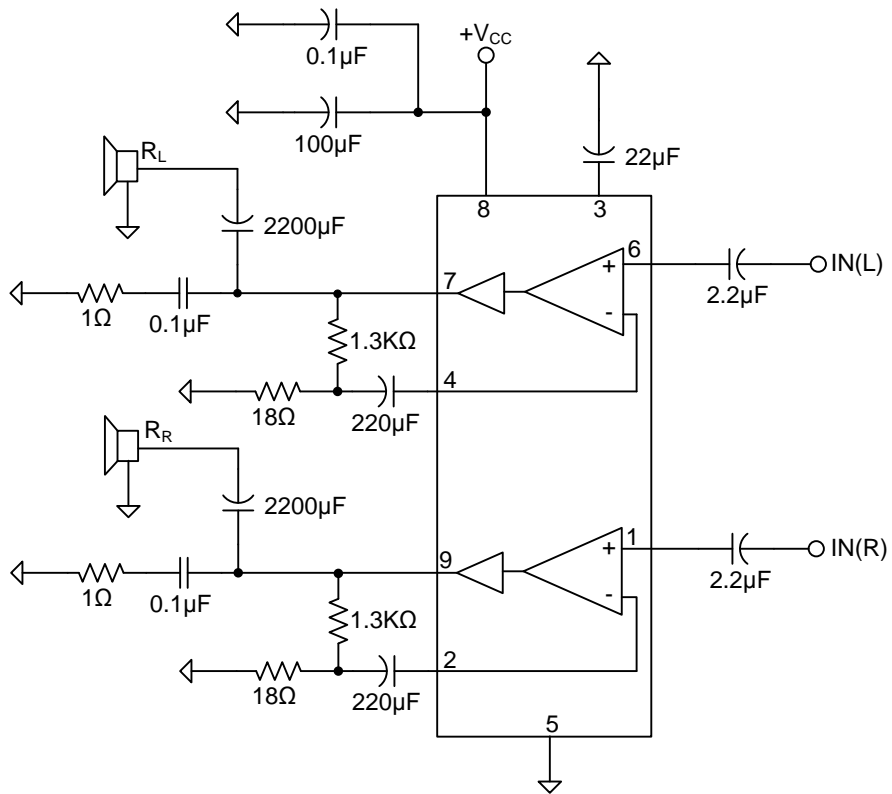
PARAMETER	SYMBOL	RATING	UNIT
Junction to Case	$\theta_{JC}$	3	$^\circ\text{C/W}$

## ■ ELECTRICAL CHARACTERISTICS

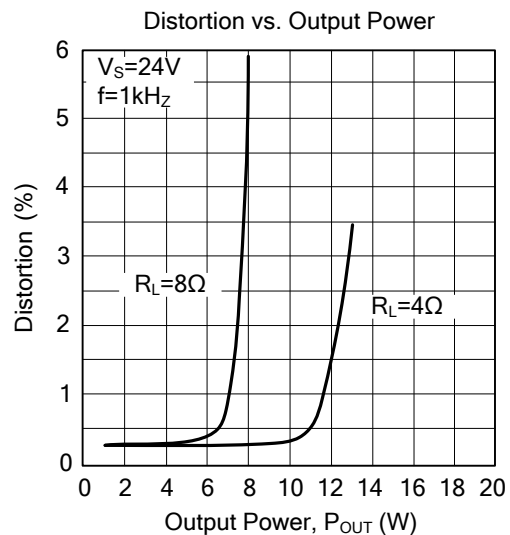
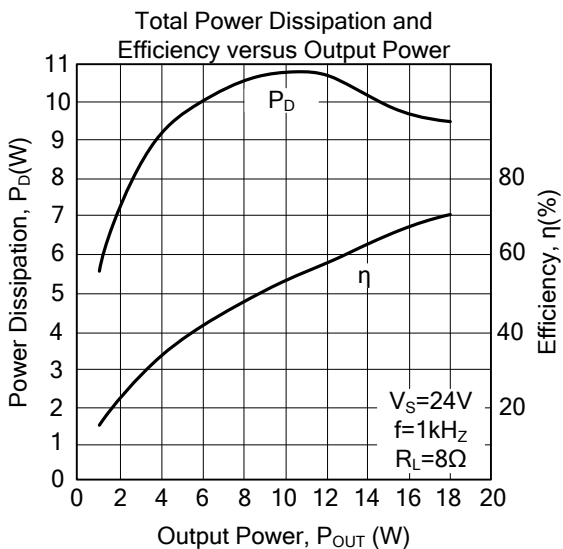
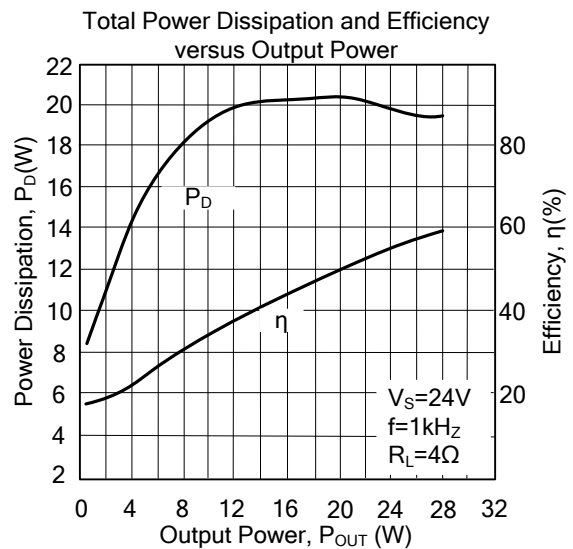
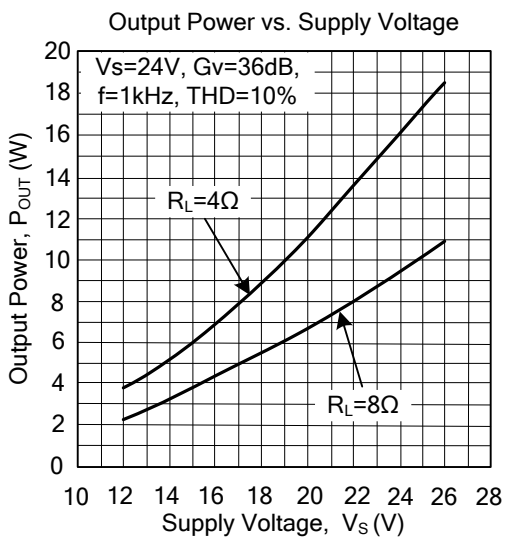
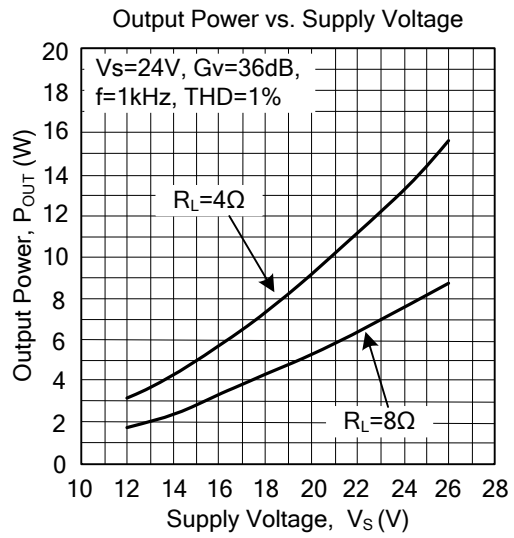
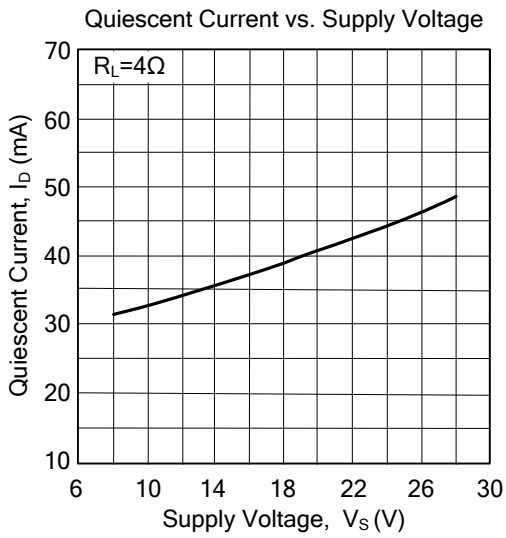
(Refer to test circuit,  $T_A = 25^\circ\text{C}$ ,  $V_{CC} = 24\text{V}$ ,  $G_V = 36\text{dB}$ , unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Supply Voltage		$V_{CC}$		8		28	V	
Quiescent Output Voltage		$V_{OUT}$	$V_{CC} = 24\text{V}$		11.5		V	
Input Saturation Voltage (rms)		$V_{IN(SAT)}$		300			mV	
Total Input Noise Voltage		$e_N$	$R_g = 10\text{k}\Omega$ , 22Hz~22KHz		2.5	8	$\mu\text{V}$	
Total Quiescent Drain Current		$I_Q$	$V_{CC} = 24\text{V}$		60	120	mA	
Output Power for each channel	$R_L=4\Omega$	$P_{OUT}$	THD=1%, $V_{CC}=24\text{V}$ , $f=1\text{kHz}$		12.5		W	
	$R_L=8\Omega$				7		W	
	$R_L=4\Omega$		$f = 40\text{Hz} \sim 12.5\text{kHz}$		10		W	
	$R_L=8\Omega$				5		W	
	$R_L=4\Omega$		$V_{CC} = 18\text{V}$ , $f = 1\text{kHz}$			7		W
	$R_L=8\Omega$					4		W
Total Harmonic Distortion for each channel	$R_L=4\Omega$	THD	$V_{CC}=24\text{V}$ , $f = 1\text{kHz}$	$P_{OUT} = 0.1\sim 7.0\text{W}$		0.2	%	
	$R_L=8\Omega$			$P_{OUT} = 0.1\sim 3.5\text{W}$		0.1	%	
	$R_L=4\Omega$		$V_{CC}=18\text{V}$	$P_{OUT} = 0.1\sim 5.0\text{W}$		0.2	%	
	$R_L=8\Omega$			$P_{OUT} = 0.1\sim 2.5\text{W}$		0.1	%	
Input Resistance		$R_{IN}$	$f = 1\text{kHz}$ , Non-Inverting Input	70	200		$\text{k}\Omega$	
Frequency Roll off (-3dB)	Low	$f_L$	$R_L = 4\Omega$		20		Hz	
	High	$f_H$	$R_L = 4\Omega$		80		kHz	
Closed Loop Voltage Gain		$G_V$	$f = 1\text{kHz}$	35.5	36	36.5	dB	
Closed Loop Gain Matching		$\Delta G_V$			0.5		dB	
Cross Talk	$f = 1\text{kHz}$	CT	$R_L = \infty$ , $R_g = 10\text{k}\Omega$		60		dB	
	$f = 10\text{kHz}$				50		dB	
Supply Voltage Rejection for each channel		SVR	$f_{RIPPLE} = 100\text{Hz}$ , $V_{RIPPLE} = 0.5\text{V}$ , $R_g = 10\text{k}\Omega$		55		dB	
Thermal Shut-Down Junction Temp.					145		$^\circ\text{C}$	

## ■ TEST AND APPLICATION CIRCUIT ( $G_v = 36\text{dB}$ )



## TYPICAL CHARACTERISTICS



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