

DATA SHEET

TDA2616/TDA2616Q 2 x 12 W hi-fi audio power amplifiers with mute

Product specification
File under Integrated Circuits, IC01

July 1994

2 x 12 W hi-fi audio power amplifiers with mute

TDA2616/TDA2616Q

FEATURES

- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Excellent gain balance of both amplifiers
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility.

GENERAL DESCRIPTION

The TDA2616 and TDA2616Q are dual power amplifiers. The TDA2616 is supplied in a 9-lead single-in-line (SIL9) plastic power package (SOT131), while the TDA2616Q is supplied in a 9-lead SIL-bent-to-DIL plastic power package (SOT157). They have been especially designed for mains fed applications, such as stereo radio and stereo TV.

QUICK REFERENCE DATA

Stereo application

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$\pm V_P$	supply voltage range		7.5	–	21	V
P_O	output power	$V_P = \pm 16$ V; THD = 0.5%	–	12	–	W
G_V	internal voltage gain		–	30	–	dB
$ G_V $	channel unbalance		–	0.2	–	dB
α	channel separation		–	70	–	dB
SVRR	supply voltage ripple rejection		–	60	–	dB
V_{no}	noise output voltage		–	70	–	μ V

ORDERING INFORMATION

EXTENDED TYPE NUMBER	PACKAGE			
	PINS	PIN POSITION	MATERIAL	CODE
TDA2616	9	SIL	plastic	SOT131 ⁽¹⁾
TDA2616Q	9	SIL-bent-to-DIL	plastic	SOT157 ⁽²⁾

Notes

1. SOT131-2; 1996 August 27.
2. SOT157-2; 1996 August 27.

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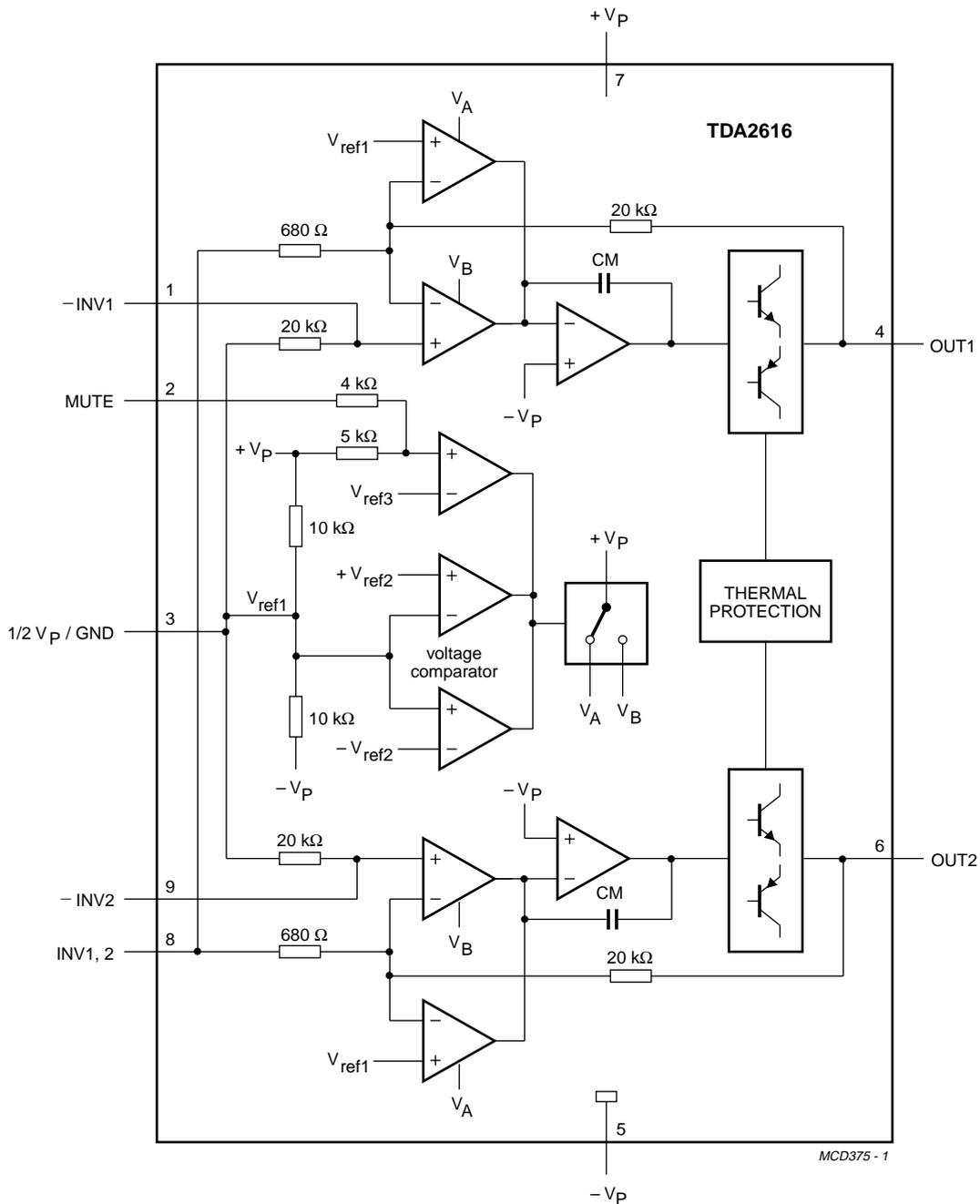


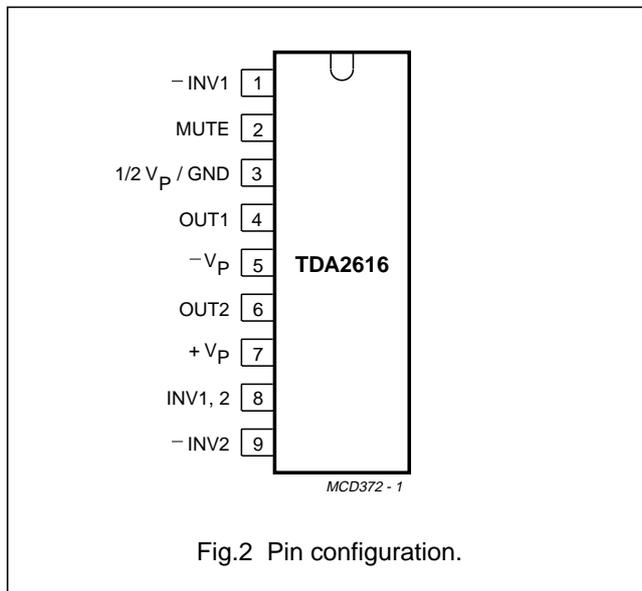
Fig.1 Block diagram.

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PINNING

SYMBOL	PIN	DESCRIPTION
-INV1	1	non-inverting input 1
MUTE	2	mute input
1/2V _P /GND	3	1/2 supply voltage or ground
OUT1	4	output 1
-V _P	5	supply voltage (negative)
OUT2	6	output 2
+V _P	7	supply voltage (positive)
INV1, 2	8	inverting inputs 1 and 2
-INV2	9	non-inverting input 2



FUNCTIONAL DESCRIPTION

The TDA2616 is a hi-fi stereo amplifier designed for mains fed applications, such as stereo radio and TV. The circuit is optimally designed for symmetrical power supplies, but is also well-suited to asymmetrical power supply systems.

An output power of 2×12 W (THD = 0.5%) can be delivered into an 8Ω load with a symmetrical power supply of ± 16 V. The gain is internally fixed at 30 dB, thus offering a low gain spread and a very good gain balance between the two amplifiers (0.2 dB).

A special feature is the input mute circuit. This circuit disconnects the non-inverting inputs when the supply voltage drops below ± 6 V, while the amplifier still retains its DC operating adjustment. The circuit features suppression of unwanted signals at the inputs, during switch-on and switch-off.

The mute circuit can also be activated via pin 2. When a current of $300 \mu\text{A}$ is present at pin 2, the circuit is in the mute condition.

The device is provided with two thermal protection circuits. One circuit measures the average temperature of the crystal and the other measures the momentary temperature of the power transistors. These control circuits attack at temperatures in excess of $+150^\circ\text{C}$, so a crystal operating temperature of max. $+150^\circ\text{C}$ can be used without extra distortion.

With the derating value of 2.5 K/W, the heatsink can be calculated as follows:

at $R_L = 8 \Omega$ and $V_P = \pm 16$ V, the measured maximum dissipation is 14.6 W.

With a maximum ambient temperature of $+65^\circ\text{C}$, the thermal resistance of the heatsink is:

$$R_{th} = \frac{150 - 65}{14.6} - 2.5 = 3.3 \text{ K/W.}$$

The internal metal block has the same potential as pin 5.