

# AN7177

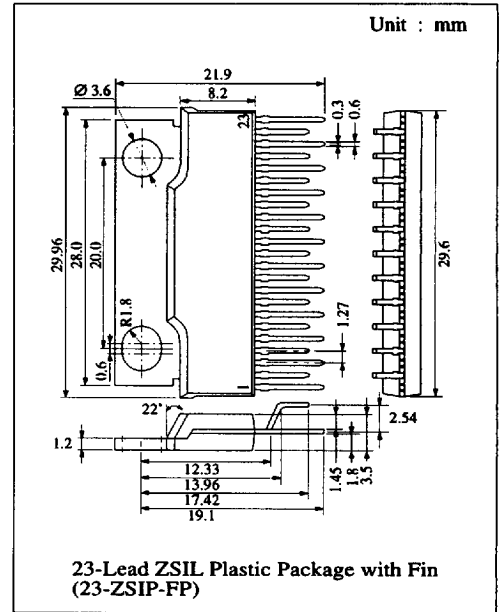
## Dual BTL 20W Audio Power Amplifier

### ■ Description

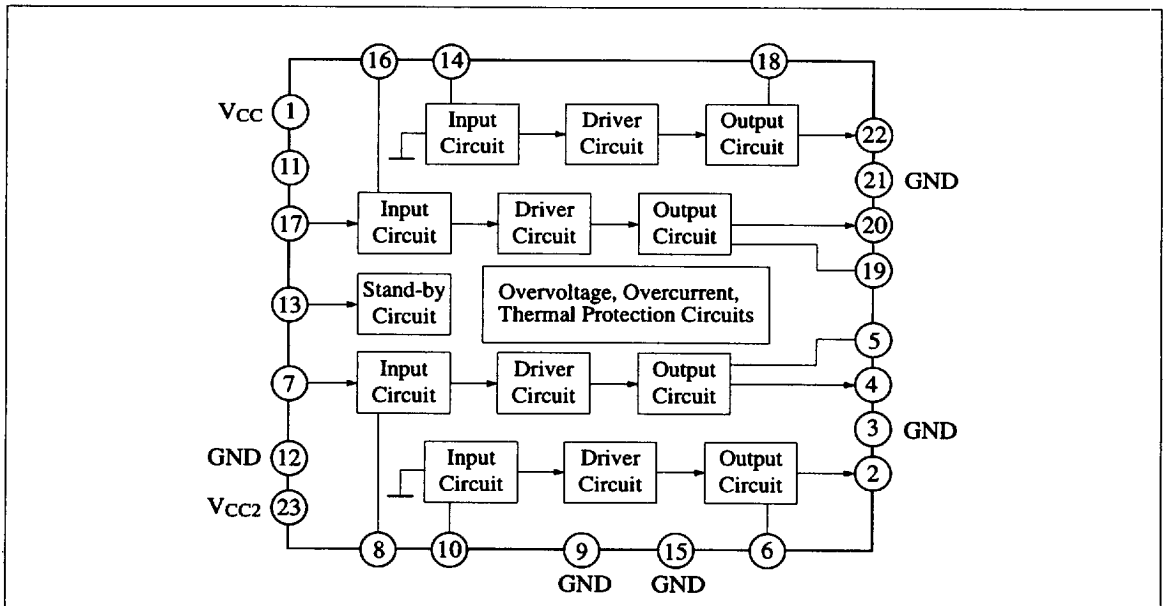
The AN7177 is a monolithic integrated circuit designed for Dual BTL audio power amplifier suitable for Hi-Fi and car stereo.

### ■ Features

- High output power (20W x 2)
- Incorporating stand-by circuits
- Low shock noise from power ON/OFF switching
- Fewer external components
- Incorporates protection circuits
- Highly stable operation



### ■ Block Diagram



## ■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V <sub>CC</sub> *1	24	V
Supply Current	I <sub>CC</sub>	6	A
Supply Voltage Surge	V <sub>CC(surge)</sub> *2	50	V
Power Dissipation	P <sub>D</sub> *3	62.5	W
Operating Ambient Temperature	T <sub>opr</sub>	-30 ~ +75	°C
Storage Temperature	T <sub>stg</sub>	-55 ~ +150	°C

\*1 Non-signal      \*2 Time = 0.2s      \*3 R $\theta_{j-c}$  = 2°C/W

Operating voltage range: V<sub>CC</sub> = 8V ~ 18V

## ■ Electrical Characteristics (V<sub>CC</sub>=13.2V, R<sub>L</sub>=4Ω, f=1kHz, Ta=25°C)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Quiescent Current	I <sub>CQ</sub>	1	V <sub>in</sub> = 0mV		110	200	mA
Output Noise Voltage	V <sub>no1</sub> *	1	V <sub>in</sub> = 0mV, R <sub>g</sub> = 10kΩ		0.6	1.5	mV
Voltage Gain	G <sub>v</sub>	1	V <sub>in</sub> = 5mV	49.5	51.5	53.5	dB
Total Harmonic Distortion	THD <sub>1</sub>	1	V <sub>in</sub> = 5mV		0.15	0.75	%
Maximum Output Power	P <sub>O</sub>	1	THD = 10%	14	18		W
Ripple Rejection	RR <sub>1</sub> *	1	R <sub>g</sub> = 0Ω, V <sub>in</sub> = 0mV, V <sub>r</sub> = 300mV, f <sub>r</sub> = 120Hz	45	55		dB
Output Offset Voltage	V <sub>O(offset)</sub>	1	V <sub>in</sub> = 0mV	-300	0	+300	mV
Channel Balance	CB	1	V <sub>in</sub> = 5mV	-1	0	+1	dB
Output Noise Voltage	V <sub>no2</sub> *	2	V <sub>in</sub> = 0mV, R <sub>g</sub> = 10kΩ, G <sub>v</sub> = 41dB		0.21		mV
Total Harmonic Distortion	THD <sub>2</sub>	2	V <sub>in</sub> = 10mV, G <sub>v</sub> = 41dB		0.05		%
Ripple Rejection	RR <sub>2</sub> *	2	R <sub>g</sub> = 0Ω, V <sub>in</sub> = 0mV, V <sub>r</sub> = 300mV, f <sub>r</sub> = 120Hz, G <sub>v</sub> = 41dB		64		dB

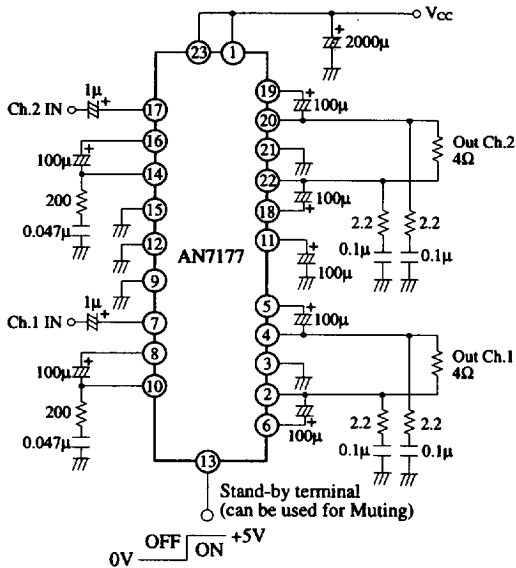
\* With 15Hz ~ 30kHz (12dB/OCT) filter

## ■ Pin

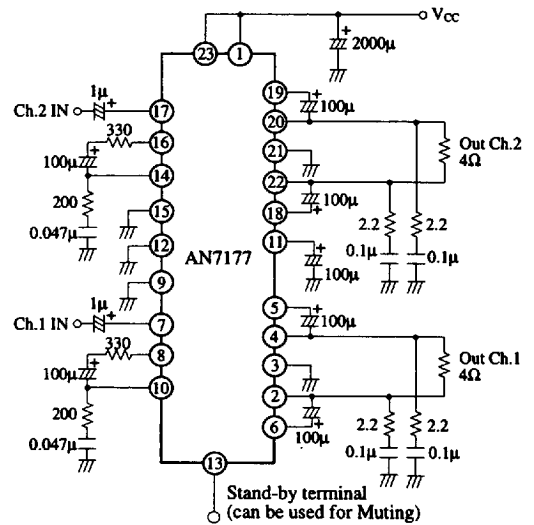
Pin No	Pin Name	Pin No	Pin Name
1	V <sub>CC</sub>	13	Stand-by
2	Output Ch.1	14	N.F.B. Ch.2
3	GND (Output Ch.1)	15	GND (Input Ch.2)
4	Output Ch.1	16	N.F.B. Ch.2
5	Bootstrap Ch.1	17	Input Ch.2
6	Bootstrap Ch.1	18	Bootstrap Ch.2
7	Input Ch.1	19	Bootstrap Ch.2
8	N.F.B. Ch.1	20	Output Ch.2
9	GND (Input Ch.1)	21	GND (Output Ch.2)
10	N.F.B. Ch.1	22	Output Ch.2
11	Ripple Filter	23	V <sub>CC2</sub>
12	GND (Input)		

■ 6932852 0013838 881 ■

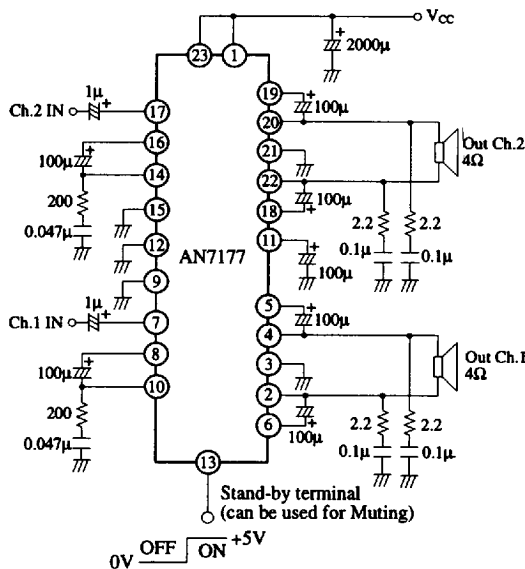
### Test Circuit 1 ( $I_{CQ}$ , $V_{no1}$ , $G_V$ , THD<sub>1</sub>, $P_O$ , $RR_1$ , $V_O$ (offset), CB)



### Test Circuit 2 ( $V_{no2}$ , THD<sub>2</sub>, $RR_2$ )



### Application Circuit



### Characteristics Curve

- (1)  $T_c = T_a$  ( $\theta_{JA} = 2^\circ\text{C/W}$ )
- (2) With a  $100\text{cm}^2 \times 3\text{mm}$  Al heat sink (black colour coated) or a  $200\text{cm}^2 \times 2\text{mm}$  Al heat sink (not lacquered)
- (3) With a  $100\text{cm}^2 \times 2\text{mm}$  Al heat sink (not lacquered)
- (4) Without heat sink

