

AN7077Z

Power supply and boost IC for class-H power amplifier

■ Overview

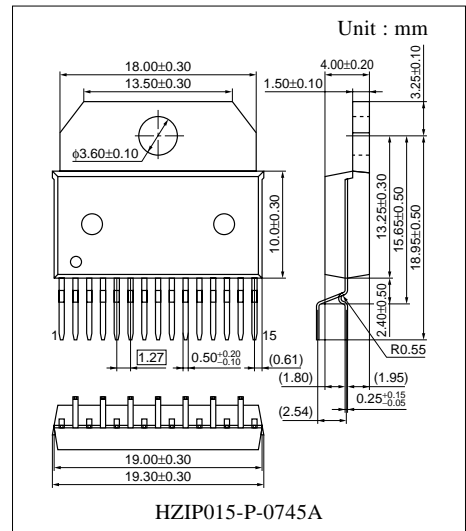
A BTL 50 W × 2-channel (maximum. 75 W × 2-channel) class-H power amplifier can be made up by combining the power supply boost amplifier AN7077Z and the single power supply BTL audio power amplifier AN7194Z, and it is possible to make a low consumption power system.

■ Features

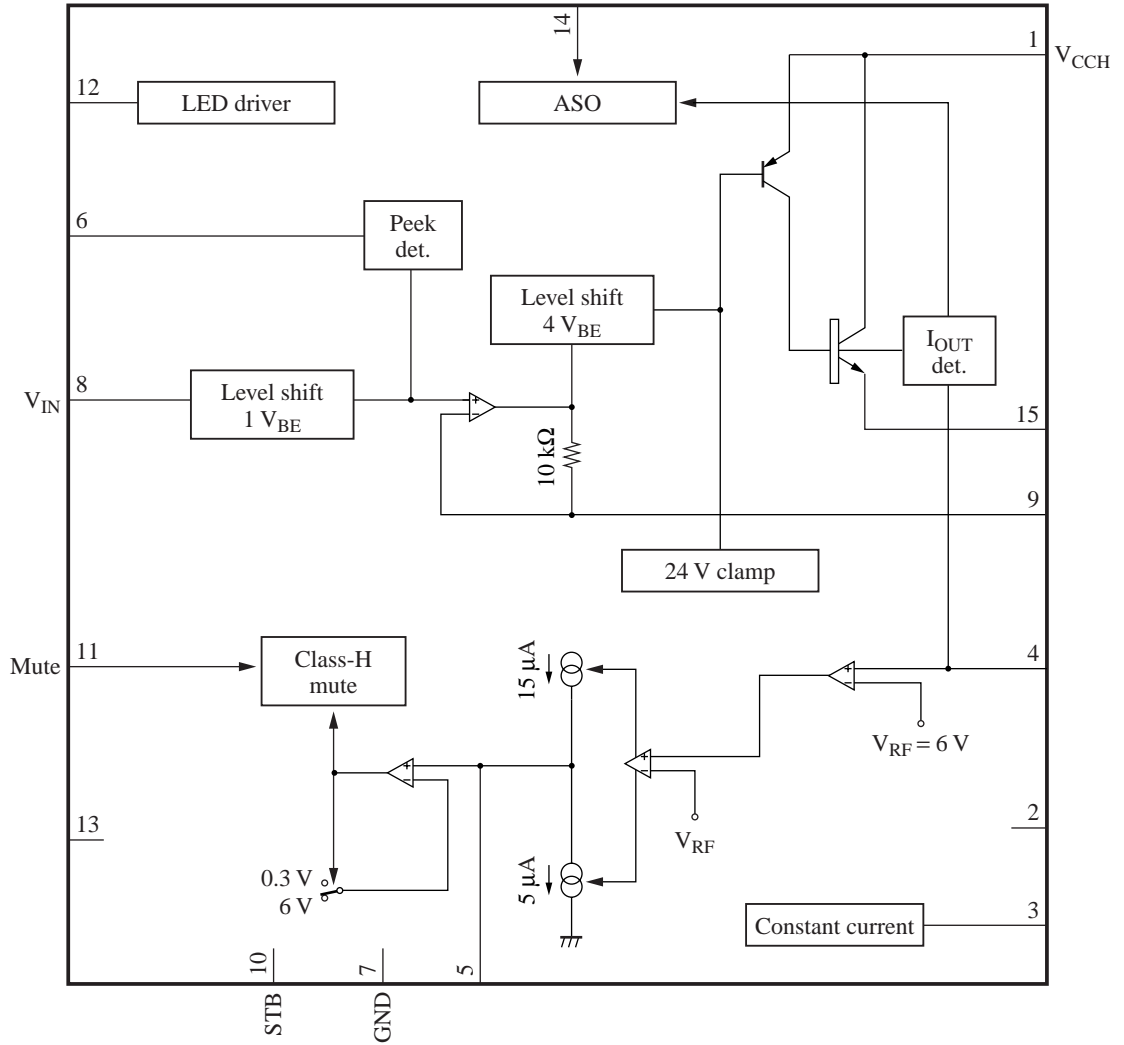
- Incorporating various protection circuits
- Built-in standby circuit
- Peak detection circuit : Limits class-H operation at high frequency
- Built-in timer circuit
If a current larger than allowable value continues to flow into the power supply transformer, this circuit stops the class-H operation to prevent the transformer from damage by a fire.
- Built-in mute function
- Built-in LED driver

■ Applications

- Miniature audio component, CD player radio cassette, karaoke and other audio equipment



■ Block Diagram



■ Pin Descriptions

Pin No.	Description	Pin No.	Description
1	Power supply	9	NF
2	N.C.	10	Standby
3	Timer current setting	11	Muting
4	Current detection	12	LED
5	Timer	13	Ripple filter
6	Peak detection	14	ASO
7	GND	15	Output
8	Input		

■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage *2	V_{CC}	34	V
Supply current	I_{CC}	9.0	A
Power dissipation *3	P_D	68.2	W
Operating ambient temperature *1	T_{opr}	-25 to +75	°C
Storage temperature *1	T_{stg}	-55 to +150	°C

Note) *1 : $T_a = 25^\circ\text{C}$ except operating ambient temperature and storage temperature.

*2 : Without input signals (output current 0 mA).

*3 : The value when $R_{th(j-c)} = 1.1^\circ\text{C/W}$, $T_a = 75^\circ\text{C}$.

■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V_{CC}	10.0 to 28.0	V

■ Electrical Characteristics at $V_{CCH} = 24.0\text{ V}$, $V_{CCL} = 12\text{ V}$, $f_{rep.} = 1\text{ kHz}$, $T_a = 25^\circ\text{C}$

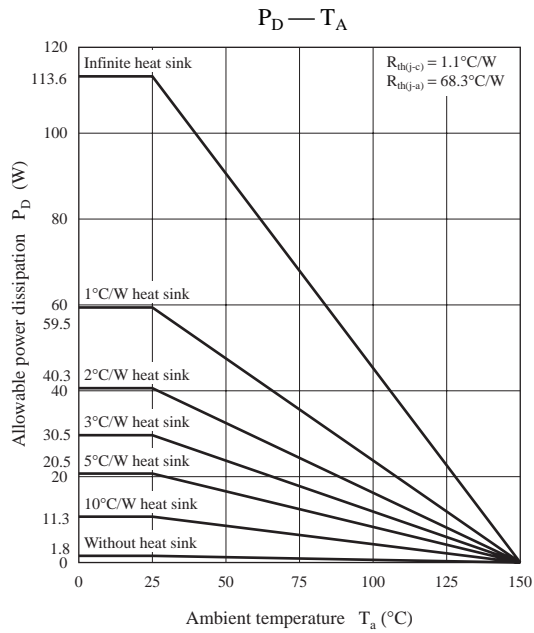
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Quiescent current	I_{CQ}	$V_{IN} = \text{open}$	—	25	50	mA
Standby current	I_{STB}	$V_{IN} = \text{open}$	—	1	10	μA
Output offset voltage 1	V_{OFF1}	$V_{IN} = 8\text{ V}$, $R_L = 4\ \Omega$	2.0	2.5	3.0	V
Output offset voltage 2	V_{OFF2}	$V_{IN} = 16\text{ V}$, $R_L = 4\ \Omega$	2.5	3.0	3.5	V
Output current	I_{OUT}	$V_{IN} = 14\text{ V}$, $R_L = 2\ \Omega$	7.0	8.0	—	A
Voltage gain	G_V	$V_{IN} = 3\text{ V}_{rms}$ (DC 15 V), $R_L = 4\ \Omega$	-1.0	0.0	1.0	dB
Pin 4 output current	I_{DET}	$I_{OUT} = 2\text{ A}$	150	190	230	μA
Pin 5 output current 1	I_{TI1}	Pin 4 = high, pin 5 = 3 V	13	15	17	μA
Pin 5 output current 2	I_{TI2}	Pin 4 = low, pin 5 = 3 V	4.5	5	5.5	μA
LED output current	I_{LED}	$V_{IN} = 1\text{ V}_{rms}$ (DC 16 V), $V_{LED} = 8\text{ V}$	15	30	—	mA
Standby terminal current	I_{CQ-STB}	$V_{IN} = \text{open}$, $V_{STB} = 5\text{ V}$	500	650	800	μA

■ Usage Notes

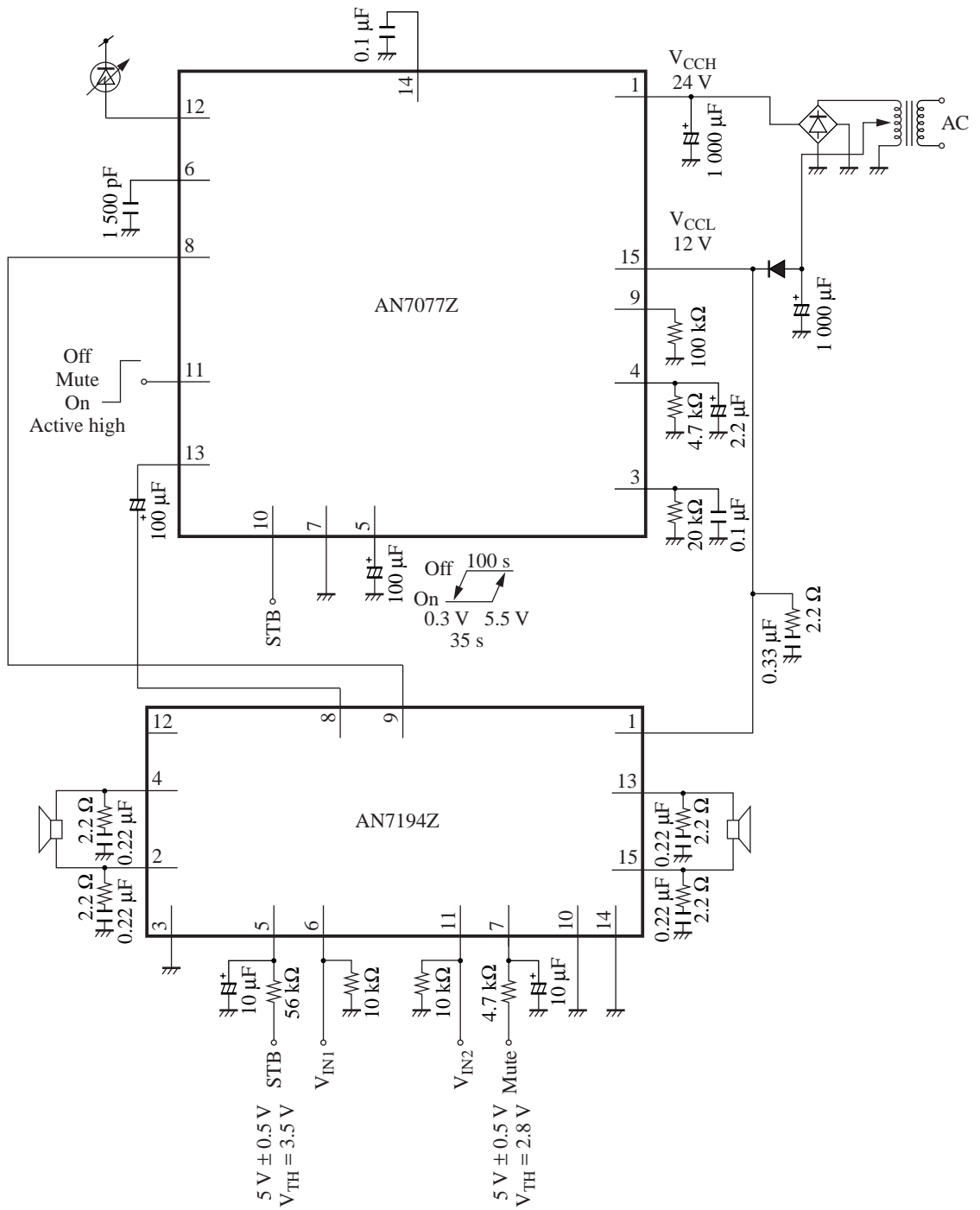
1. Always attach an outside heat sink to use the chip. In addition, the outside heat sink must be fastened onto a chassis for use.
2. Connect the radiation fin to GND potential.
3. Avoid short circuit to V_{CC} and short circuit to GND, and load short-circuit
4. The thermal protection circuit will be actuated at $T_J = \text{approx. } 145^\circ\text{C}$, but it is automatically reset when the chip temperature drops below the above set level.
5. The overvoltage protection circuit starts its operation at $V_{CC} = \text{approx. } 36\text{ V}$.
6. The protection circuit between V_{CC} and the output starts its operation when the $V_{CC} - \text{output voltage} = \text{approx. } 18\text{ V}$.
7. For the standby voltage, use a stabilized power supply of 3 V or more.

■ Technical Information

- $P_D - T_A$ curves of HZIP015-P-0745A



■ Application Circuit Example





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