DUAL AUDIO POWER AMPLIFIER AA8227

General Description

The AA8227 is a monolithic dual audio power amplifier with built-in power on/off switch. It is designed for use in portable radio cassette, tape recorder and other audio products.

Because it needs only few external components to work, an audio system adopting AA8227 will have a remarkable merit to save system space.

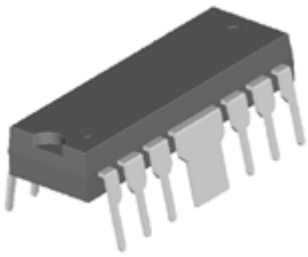
This IC is available in HDIP-12 package.

Features

- High Power: P_{OUT}=2.5W/CH (Typ) at R_L=4Ω, V_{CC1}=V_{CC2}=9V, THD=10%
- Built-in Standby Switch
- Built-in Thermal Shutdown Protection Circuit
- Low Popping Noise at Power On
- Soft Clip
- Few External Components
- Operating Supply Voltage Range: 5 to 15 V

Applications

- Mini 2.1-CH or 5.1-CH Audio Sound System
- PC External Audio Power Amplifier
- Portable Radio Cassette
- Tape Recorder
- Active Speaker



HDIP-12

Figure 1. Package Type of AA8227

Pin Configuration

PH Package
(HDIP-12)

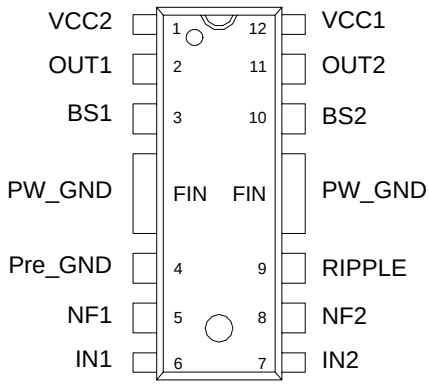


Figure 2. Pin Configuration of AA8227 (Top View)

Pin Description

Pin Number	Pin Name	Function
1	VCC2	Supply voltage 2
2	OUT1	Output of channel 1
3	BS1	Bootstrap of channel 1
4	Pre_GND	Prestage ground
5	NF1	Negative feedback of channel 1
6	IN1	Input of channel 1
7	IN2	Input of channel 2
8	NF2	Negative feedback of channel 2
9	RIPPLE	Ripple rejection
10	BS2	Bootstrap of channel 2
11	OUT2	Output of channel 2
12	VCC1	Supply voltage 1
FIN	PW_GND	Power ground

Functional Block Diagram

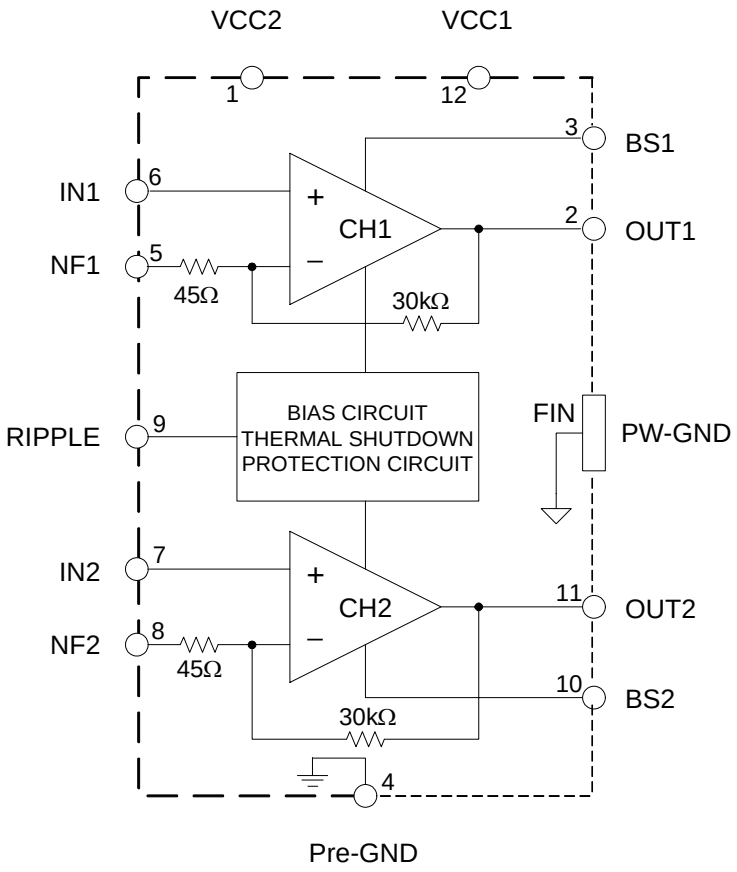
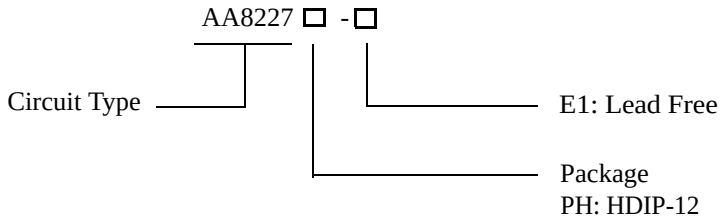


Figure 3. Functional Block Diagram of AA8227

Ordering Information



Package	Temperature Range	Part Number	Marking ID	Packing Type
HDIP-12	0 to 70 °C	AA8227PH-E1	AA8227PH-E1	Tube

BCD Semiconductor's Pb-free products, as designated with "E1" suffix in the part number, are RoHS compliant.

Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC1}, V_{CC2}	18	V
Peak Output Current (Each Channel)	I_O (peak)	2.5	A
Total Power Dissipation	P_D	4	W
Operating Ambient Temperature	T_A	-20 to 85	°C
Storage Temperature	T_{STG}	-50 to 150	°C

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC1}, V_{CC2}	5	15	V
Operating Ambient Temperature	T_A	0	70	°C

Electrical Characteristics

(V_{CC1}=V_{CC2}=9V, T_A=25°C, R_L=4Ω, Rg=600Ω, f=1KHz, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}		5		15	V
Quiescent Current	I_{CC}	V_{IN}=0		21	45	mA
Quiescent Output Voltage	V2, V11	V_{IN}=0		4.5		V
Output Power (Each Channel)	P_{OUT}	THD=10%, R_L=4Ω	2.0	2.5		W
		THD=10%, R_L=3Ω		3.0		
Total Harmonic Distortion	THD	P_{OUT}=0.4W/CH		0.2	1.0	%
Closed Loop Voltage Gain	G_V	R_{NF}=120Ω, V_{OUT}=0.775Vrms	43	45	47	dB
		R_{NF}=0Ω, V_{OUT}=0.775Vrms		56.5		
Channel Balance	ΔG_V			0.3	± 1	dB
Input Resistance	R_I			30		kΩ
Output Noise Voltage	V_{NO}	Rg=10kΩ, BW=20 to 20kHz		0.3	1.0	mVrms
Ripple Rejection Ratio	PSRR	f=100Hz		52		dB
Channel Separation	C_S	V_{OUT}=0.775Vrms		50		dB
Input Offset Voltage	V6, V7			30	60	mV
Standby Current	I_{STB}	SW1=off		1		μA
Thermal Shutdown Junction Temperature	T_{SD}			175		°C

Typical Pin DC Voltage (V_{CC1}=V_{CC2}=9V, T_A=25°C)

Pin Number	Pin Name	DC Voltage (V)
1	VCC2	9
2	OUT1	4.5
3	BS1	8.7
4	Pre_GND	GND
5	NF1	0.7
6	IN1	0.03
7	IN2	0.03
8	NF2	0.7
9	RIPPLE	5
10	BS2	8.7
11	OUT2	4.5
12	VCC1	9

Typical Performance Characteristics

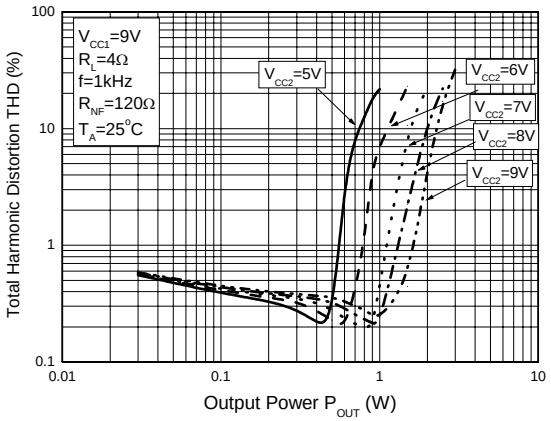


Figure 4. Total Harmonic Distortion vs. Output Power

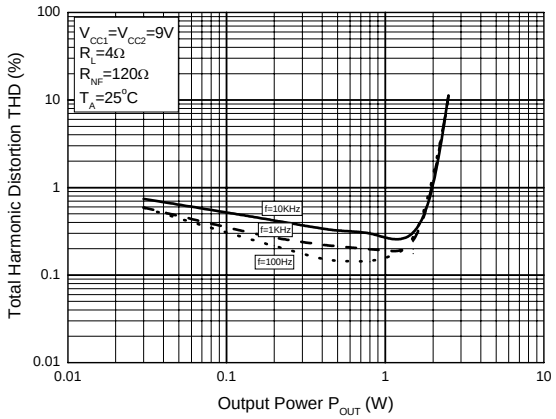


Figure 5. Total Harmonic Distortion vs. Output Power

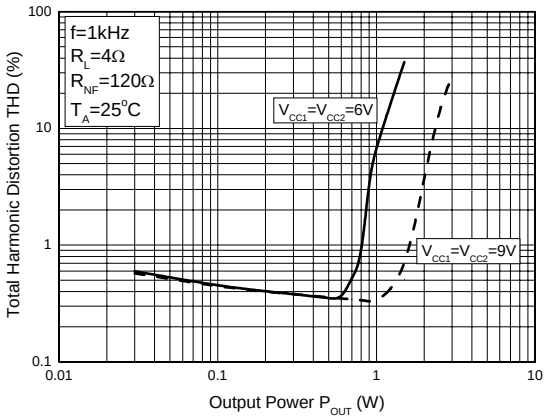


Figure 6. Total Harmonic Distortion vs. Output Power

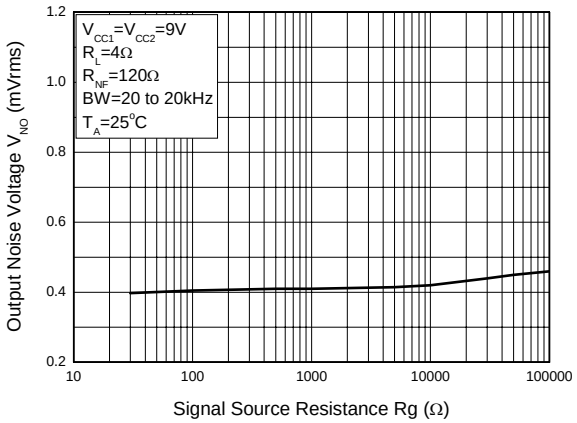


Figure 7. Output Noise Voltage vs. Signal Source Resistance

Typical Performance Characteristics (Continued)

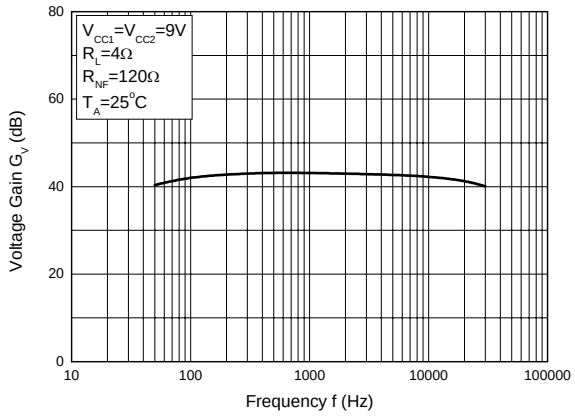


Figure 8. Voltage Gain vs. Frequency

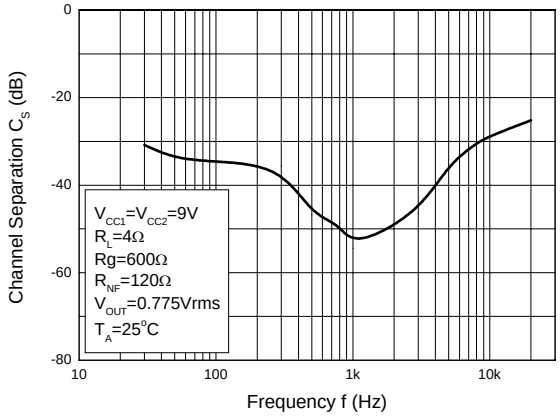


Figure 9. Channel Separation vs. Frequency

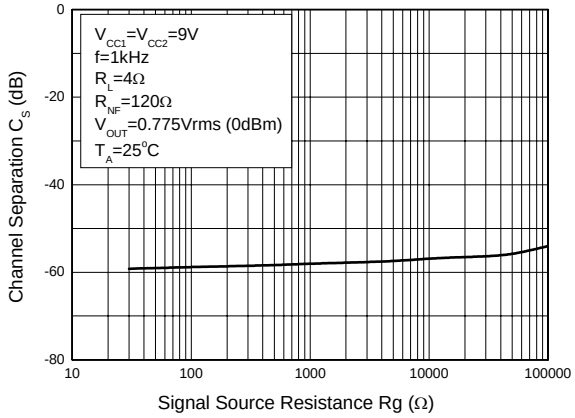


Figure 10. Channel Separation vs. Signal Source Resistance

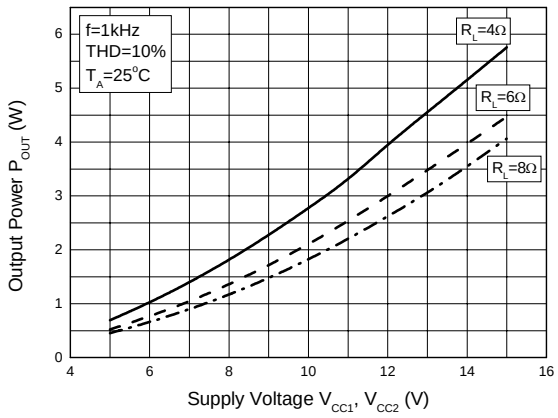


Figure 11. Output Power vs. Supply Voltage

Typical Performance Characteristics (Continued)

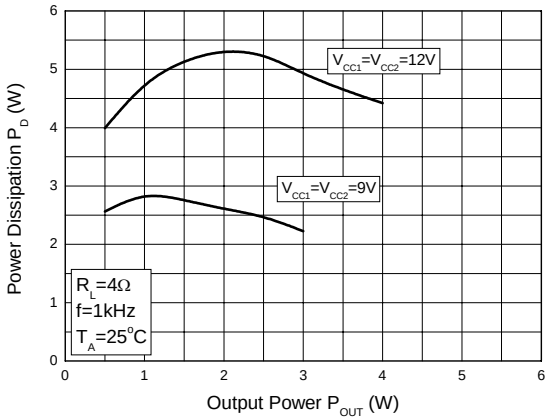


Figure 12. Power Dissipation vs. Output Power

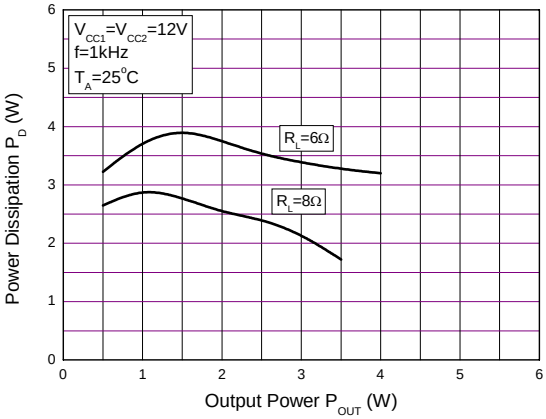


Figure 13. Power Dissipation vs. Output Power

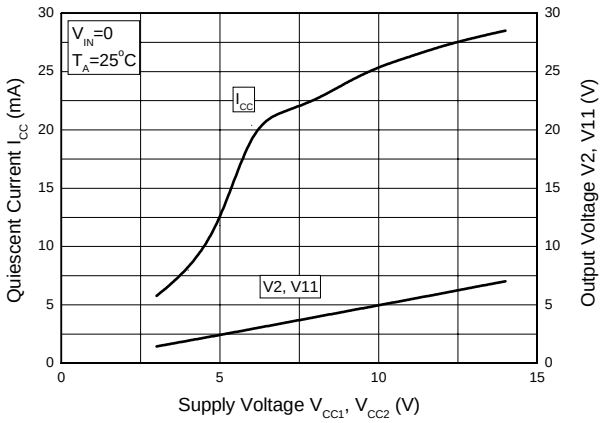


Figure 14. Quiescent Current and Output Voltage vs. Supply Voltage

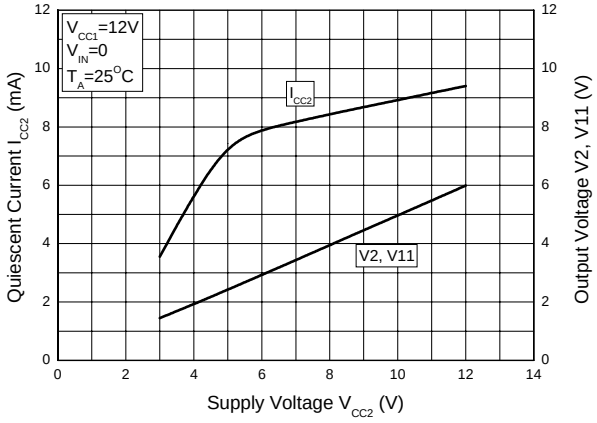


Figure 15. Quiescent Current and Output Voltage vs. Supply Voltage

Typical Performance Characteristics (Continued)

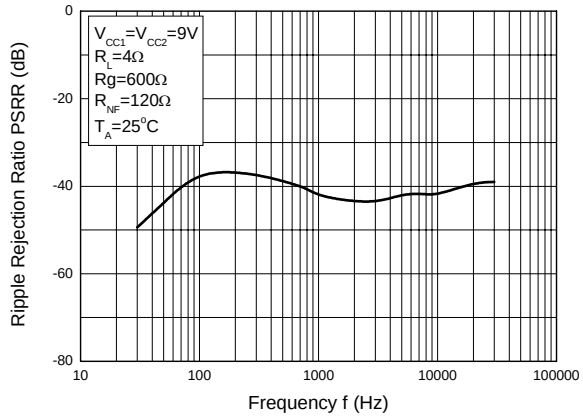


Figure 16. Ripple Rejection Ratio vs. Frequency

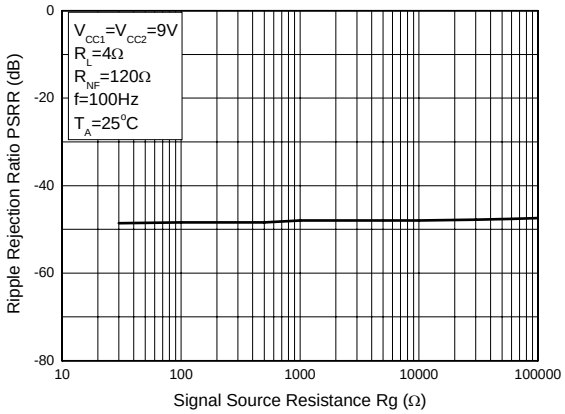


Figure 17. Ripple Rejection Ratio vs. Signal Source Resistance

Typical Application Circuit

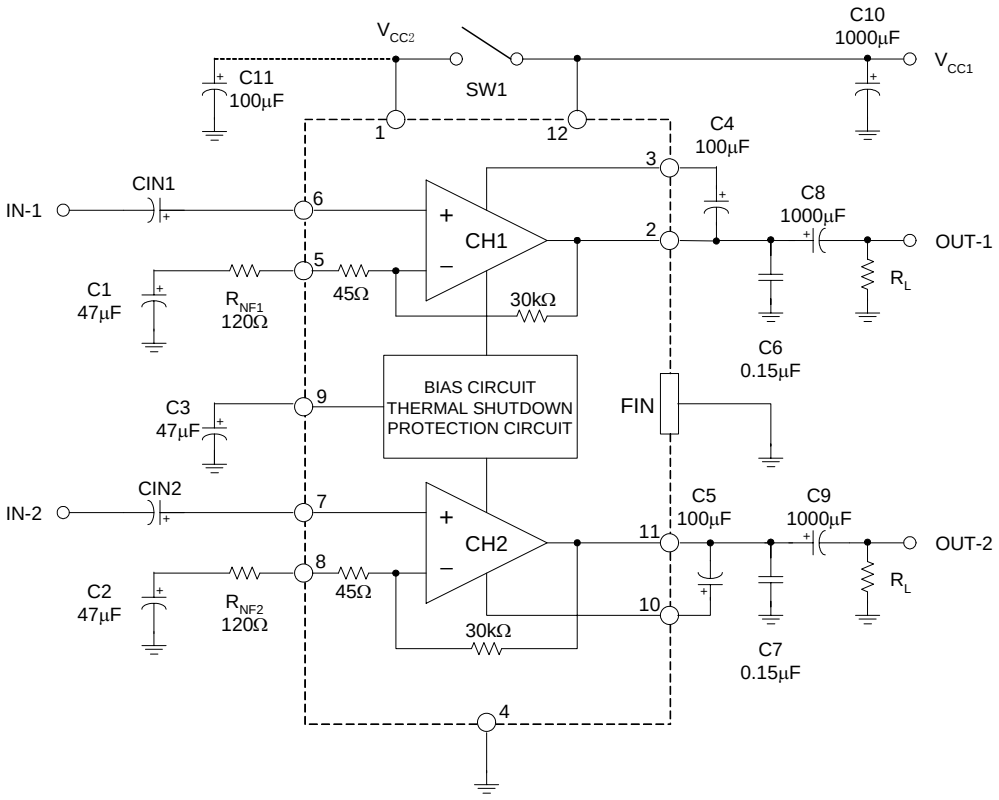
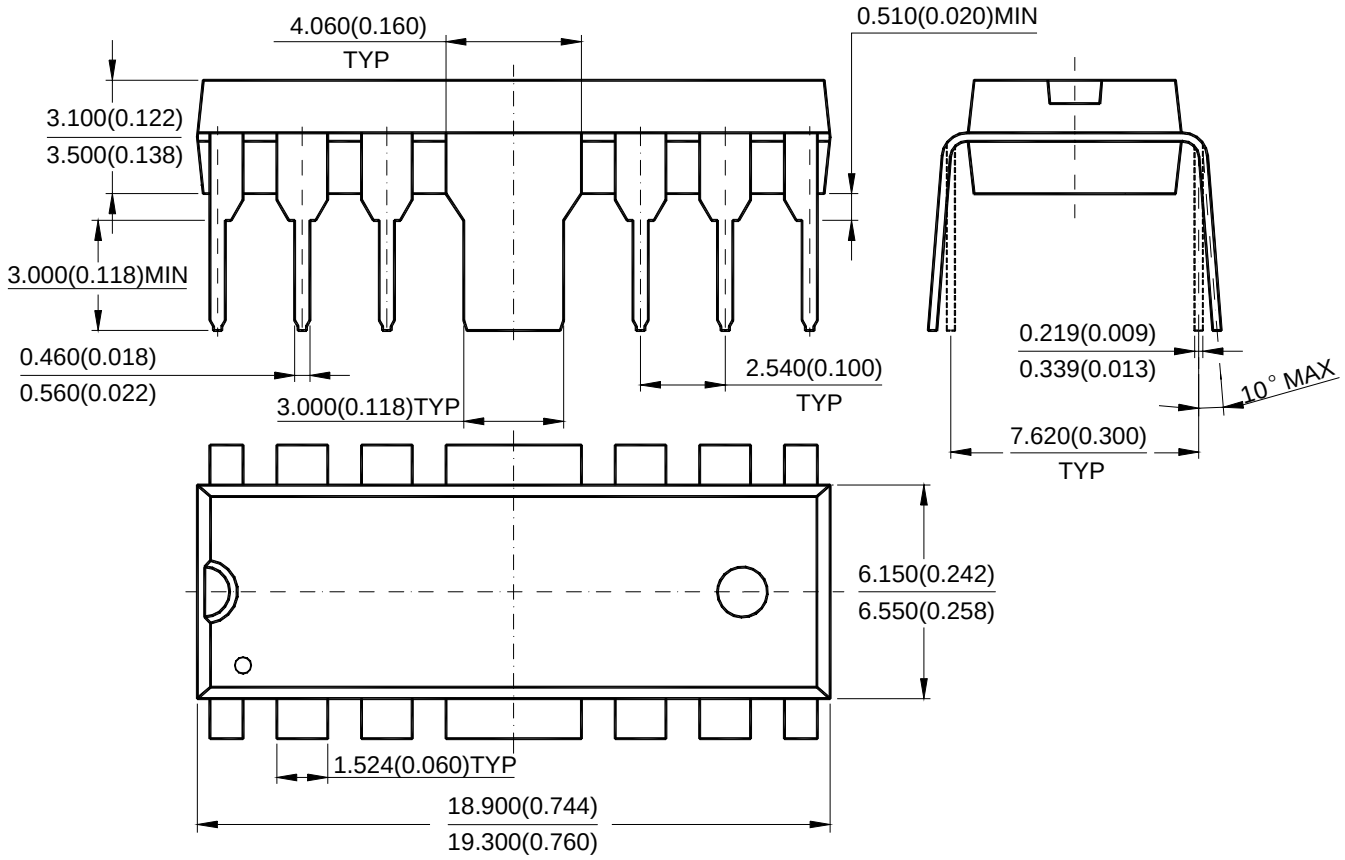


Figure 18. Applicaton Circuit for AA8227

Mechanical Dimensions

HDIP-12 **Unit: mm(inch)**



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