九齊科技股份有限公司

Nyquest Technology Co., Ltd.

DATA SHEET

NY9A008A

Power PWM Audio Amplifier

Version 1.0

Aug. 5, 2014

Revision History

Version	*Date*	*Description*	*Modified Page*
1.0	2014/08/05	New release.	-

1. 概述

NY9A008A 爲單晶片CMOS的 PWM 音頻功率放大器IC，利用大型積體電路(LSI)製造技術，具有低電源及低成本的特性，在使用時只需要很少的週邊元件，並可應用於高電壓工作模式。電路內置大功率 MOSFET 的 Power PWM 驅動線路，可用來實現對 PWM 音頻的放大。

2. 功能

(1). 寬廣的工作電壓： 1.8V ~ 9.0V。

(2). 內置大功率 PMOS/NMOS 的 Power PWM 驅動器。

※ 注意: 由於Power PWM 的輸出功率很大，0.25W喇叭會被燒毀，請搭配0.5W以上的喇叭。

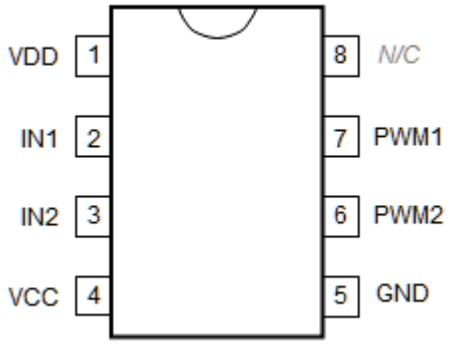
(3). 低待機電流 (Typ.=0.1uA)。

(4). 800mA 以上電流輸出能力。

(5). CMOS 輸入，輸入腳內建下拉電阻，無需外加限流電阻。

(6). 高達 5KV 的人體靜電模式 (HBM) 的 ESD 保護。

(7). 僅提供 SOP-8 封裝出貨。



1. GENERAL DESCRIPTION

NY9A008A is a single-chip Audio Amplifier PWM driver CMOS IC. It is designed by LSI high technology with a low-power and low-cost process, and can be applied at high voltage application. It has built-in Power PWM driver with large power MOSFET circuit to amplify PWM audio signal.

2. FEATURES

(1). Wide operating voltage: 1.8V ~ 9.0V.

(2). Built-in Power PWM driver of large power PMOS/NMOS circuit.

※ *Note: Due to large power of Power PWM output, 0.25W speaker will be damaged and 0.5W or above speaker is suggested.*

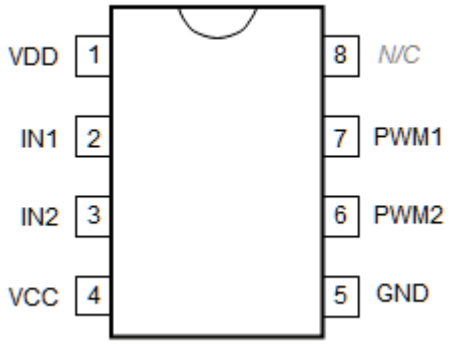
(3). Low standby current. (Typ.=0.1uA)

(4). Over 800mA output current capability.

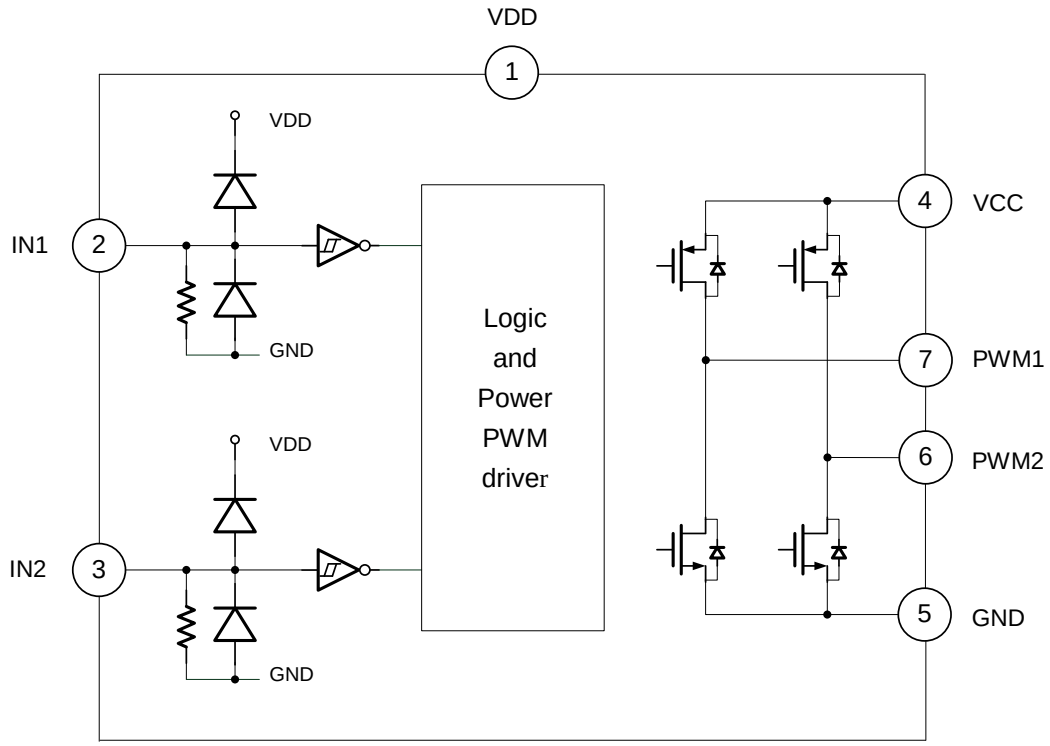
(5). CMOS input. Built-in input pull-low resistance and no current-limit resistance required.

(6). High 5KV Human Body Mode (HBM) ESD protection.

(7). Only SOP-8 package type is available.



3. BLOCK DIAGRAM



4. PIN DESCRIPTION

Pin Name	*Pin No.*	*ATTR.*	*Description*
IN1	2	I	PWM signal input 1.
IN2	3	I	PWM signal input 2.
PWM1	7	O	Power PWM output 1.
PWM2	6	O	Power PWM output 2.
VDD	1	Power	Positive power of logic control circuit.
VCC	4	Power	Positive power of Power PWM.
GND	5	Power	Negative power.
NC	8	NC	No connect.

5. ELECTRICAL CHARACTERISTICS

5.1 Absolute Maximum Rating

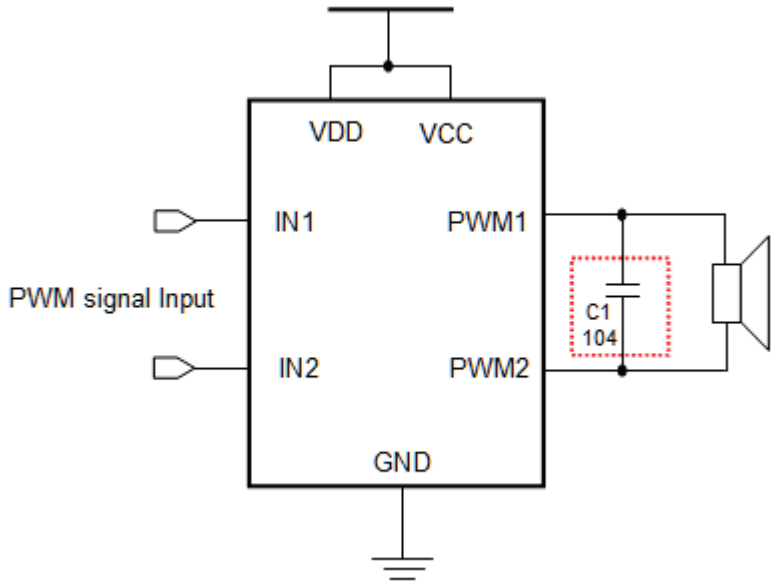
Symbol	Parameter		Rating	Unit
V_{DD} - V_{SS}	Supply voltage of logic control circuit		-0.5 ~ +7.5	V
V_{CC}	Supply voltage of Power PWM		9.6	V
$I_{OUT-PEAK}$	Output peak current		1.0	A
θ_{JA}	Thermal resistance (Junction to Ambient)	SOP-8	150	°C/W
P_D	Power dissipation	SOP-8	0.9	W
T_A	Operating ambient temperature		-40 ~ +85	°C
T_J	Operating junction temperature		+160	°C
T_{ST}	Storage temperature		-55 ~ +160	°C

5.2 DC Characteristics *(V_{DD}=3.0V, V_{CC}=6.0V, T_A=25ºC, unless otherwise specified)*

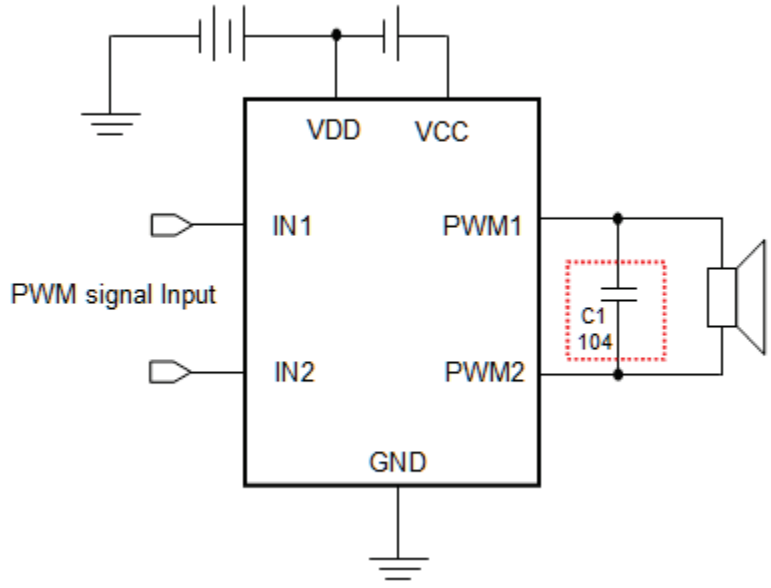
Symbol	Parameter		Min.	Typ.	Max.	Unit	Condition
V_{DD}	Operating voltage (Logic)		1.8		6.8	V	
V_{CC}	Operating voltage (PWM)		1.8		9.0	V	
I_{SB}	Standby current			0.1	1	uA	IN1=IN2=0
I_{OP}	Operating current	V_{DD} = V_{CC} = 3.0V		25		uA	PWM=20kHz, Duty=50%
		V_{DD} = V_{CC} = 6.0V		35		uA	
I_{IH}	Input high current (12kΩ pull-low resistance)			260		uA	V_{IH} = 3.0V
				510		uA	V_{IH} = 6.0V
V_{IH}	Input high voltage		0.7V_{DD}			V	
V_{IL}	Input low voltage				0.3V_{DD}	V	
I_{OUT}	Output continuous current			800	850	mA	SOP-8
T_{RISE}	Output rise time			46		ns	PWM=20kHz, Duty=50%
T_{FALL}	Output fall time			35		ns	
T_{RP}	Input-to-Output response time			65		ns	

6. APPLICATION CIRCUIT

(1) Single Power

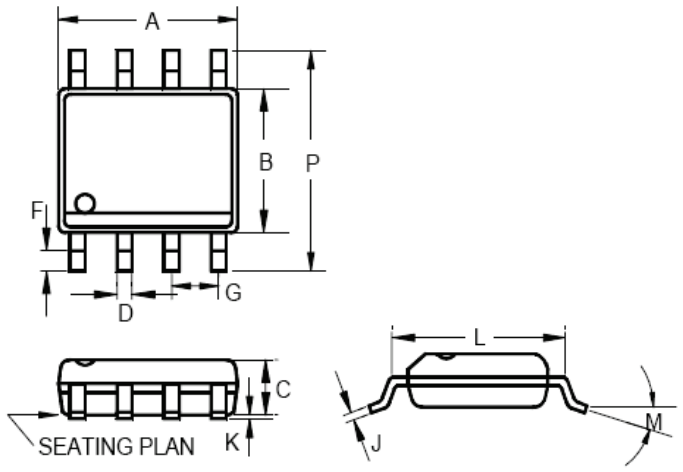


(2) Dual Power



** If voltage is higher than 6.0V, C1 (0.1uF) is necessary for endure high voltage.*

7. PACKAGE DIMENSION



	INCHES			MILLIMETERS		
	MIN	TYP	MAX	MIN	TYP	MAX
A	0.183	-	0.202	4.65	-	5.13
B	0.144	0.150	0.163	3.66	3.81	4.14
C	0.068	-	0.074	1.35	-	1.88
D	0.010	-	0.020	0.25	-	0.51
F	0.015	-	0.035	0.38	-	0.89
G	0.050 BSC			1.27 BSC		
J	0.007	-	0.010	0.19	-	0.25
K	0.005	-	0.010	0.13	-	0.25
L	0.189	-	0.205	4.80	-	5.21
M	-	-	8°	-	-	8°
P	0.228	-	0.244	5.79	-	6.20

Note: For 8-pin SOP IC, 100 units per tube.

8. ORDERING INFORMATION

P/N	*Package Type*	*Package Width*	*Shipping*
NY9A008AS8	SOP-8	150 mil.	Tape & Reel: 2.5K pcs per Reel Tube: 100 pcs per Tube