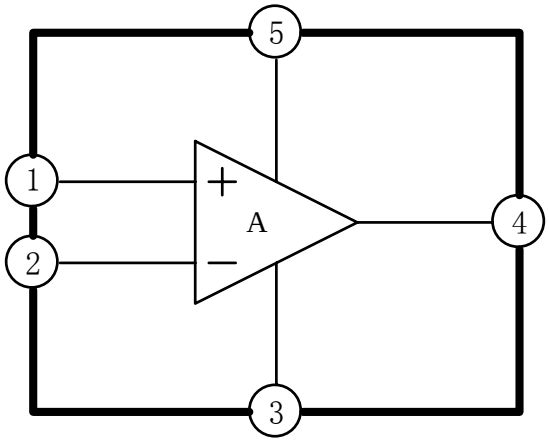
1. Overview

The V2030D is a monolithic IC intended for use as an audio amplifier or a driver circuit. It is particularly suited for audio amplifier without regulated supply, and also for driver circuits. With V_{CC} = 44V, using a few external components and low-cost complementary pairs, it can compose a 35W power amplifier. Its **features** are:

- High output current
- Low total harmonic distortion
- Incorporates a short circuit protection system
- Automatically limits the dissipated power so as to keep the working point of the output transistors within their safe operating area.
- Built-in thermal shut-down system
- FZIP5

2. Block Diagram and Pin Description

2. 1 Block Diagram



2. 2 Pin Description

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	IN	Signal Input	4	OUT	Output
2	NF	Negative feedback	5	V_{CC}	$+V_{EE}$
3	V_{EE}/GND	V_{EE}/Ground			

3. Electrical Characteristics

3. 1 Absolute Maximum Ratings

Unless otherwise specified, T_{amb}= 25℃

Parameter	Symbol	Test Conditions	Value	Unit
Supply Voltage	V_{CC}		±22	V
Input Voltage	V_{in}		V_{CC}	V
Differential Input Voltage	V_{ind}		±15	V
Peak Output Current	I_{OP}		3.5	A

Power Dissipation	P_D	T_C = 90℃	20	W
Operating Temperature	T_{amb}		-20 ~ 70	℃
Storage Temperature	T_{stg}		-40 ~ 150	℃

3. 2 Electrical Characteristics

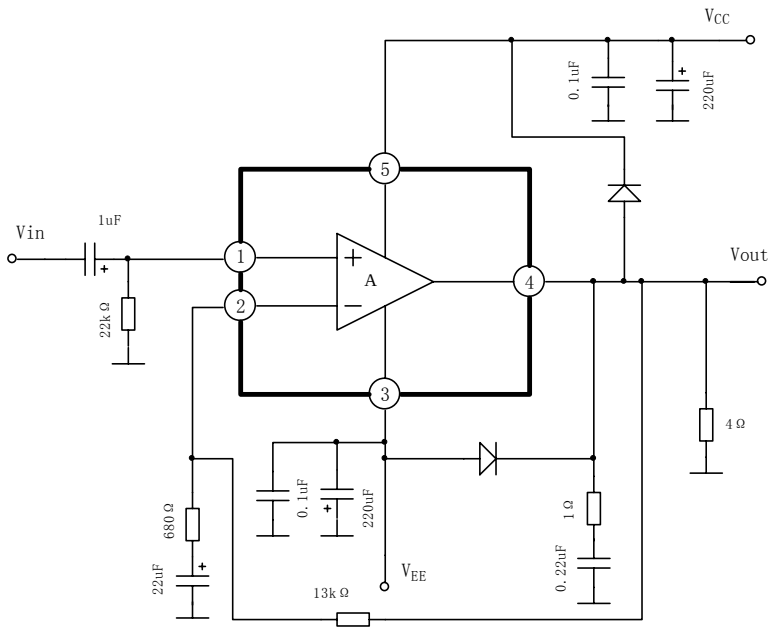
Unless otherwise specified, refer to the test circuit, T_{amb} = 25℃， V_{CC} = ±16V

Parameter	Symbol	Test Conditions	Value			Unit
			Min	Typ	Max	
Supply Voltage	V_{CC}		±6		±22	V
Quiescent Drain Current	I_{CCQ}			50	80	mA
Input Bias Current	I_B	V_{CC} = ±22V		0.2	2	uA
Input Offset Voltage	V_{OS}	V_{CC} = ±22V		2	20	mV
Input Offset Current	I_{OS}			20	200	nA
Output Power	P_O	THD = 0.5%, A_V = 26dB, f = 40Hz ~ 15kHz				W
		R_L = 4Ω	15	18		
		R_L = 8Ω	10	12		
		V_{CC} = ±19V, R_L = 8Ω	13	16		
Bandwidth	BW	P_O = 15W, R_L = 4Ω		100		kHz
Slew Rate	SR			8		V/uS
Open Loop Voltage Gain	A_{VO}	f= 1kHz		80		dB
Closed Loop Voltage Gain	A_V	f= 1kHz	25.5	26	26.5	dB
Total Harmonic Distortion	THD	f=40Hz~15kHz P_O=0.1~14W, R_L=4Ω		0.08		%
		f=1kHz		0.03		
		P_O=0.1~9W, R_L=8Ω f=40Hz~15kHz		0.5		
Second Order CCIF Intermodulation	THD_2	P_O = 4W, f_2-f_1 = 1kHz R_L= 4Ω		0.03		%
Third Order CCIF Intermodulation	THD_3	f_1 = 14kHz f_2 = 15kHz, $2f_1$-f_2 = 13kHz		0.08		%
Input Noise Voltage	V_{ino}	B = Curve A		2		uV
		B = 22Hz~22kHz		3	10	
Input Noise Current	I_{ino}	B = Curve A		50		pA
		B = 22Hz ~ 22kHz		80	200	
Signal to Noise Ratio	S/N	R_L= 4Ω, B = Curve A, R_g = 10 kΩ				dB
		Po = 15W		106		
		Po = 1W		94		
Input Resistance	R_I	f = 1kHz	0.5	5		MΩ
Supply Voltage Rejection	R.R	R_L= 4Ω, R_g = 22kΩ A_V = 26dB, f = 100Hz		54		dB
Thermal Shut-down Junction Temperature	T_j			145		℃

3. 3 Typical Performance of the Diver Circuit

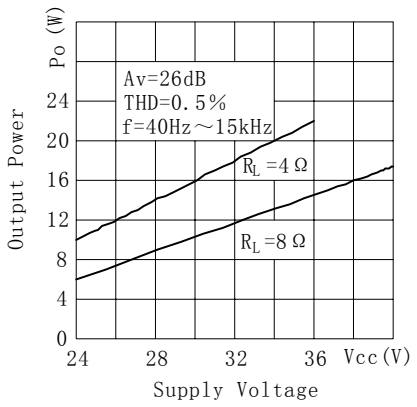
Parameter	Symbol	Test Conditions	Value			Unit
			Min	Typ	Max	
Supply Voltage	V_{CC}			36	44	V
Quiescent Current	I_{CCQ}	V_{CC} = 36V		50		mA
Output Power	P_O	THD = 0.5%, R_L= 4Ω, f = 40Hz ~ 15kHz				W
		V_{CC} = 39V		35		
		V_{CC} = 36V		28		
		THD =10%, R_L= 4Ω, f =1kHz				
		V_{CC} = 39V		44		
		V_{CC} = 36V		35		
Closed Loop Voltage Gain	A_V	f = 1kHz	19.5	20	20.5	dB
Slew Rate	SR			8		V/uS
Total Harmonic Distortion	THD	f = 1kHz, P_O = 20W		0.02		%
		f = 40Hz ~15kHz P_O = 20W		0.05		
Input Sensitivity	V_i	A_V = 20dB, f = 1kHz P_O = 20W, R_L= 4Ω		890		mV
Signal to Noise Ratio	S/N	R_L = 4Ω, R_g = 10kΩ, B = Curve A				dB
		P_O = 25W		108		
		P_O = 4W		100		

4.Test Circuit

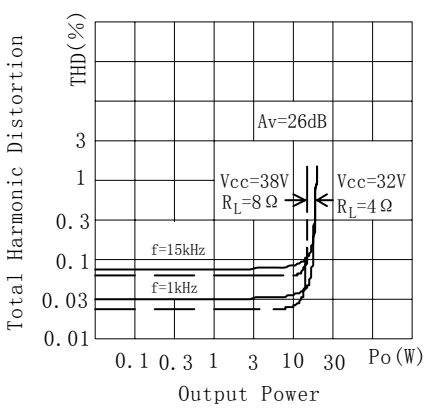


5.Characteristics Curve

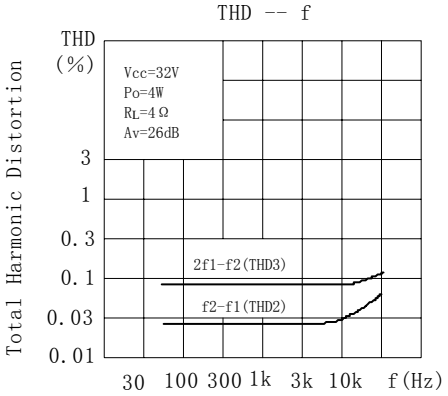
Po ---Vcc



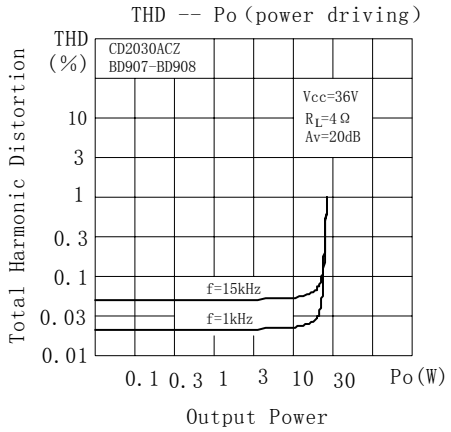
THD ---Po



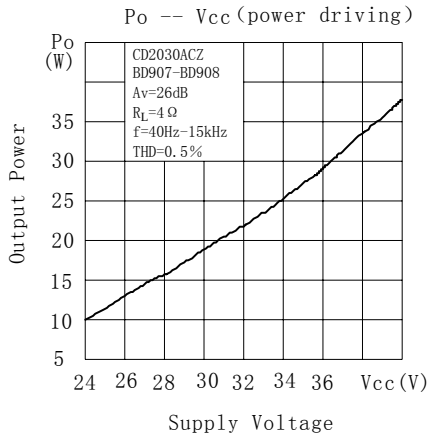
THD -- f



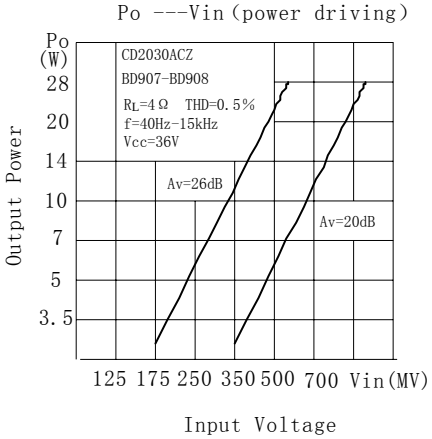
THD -- Po (power driving)



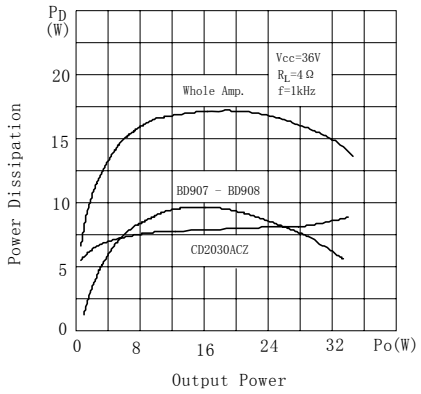
Po -- Vcc (power driving)



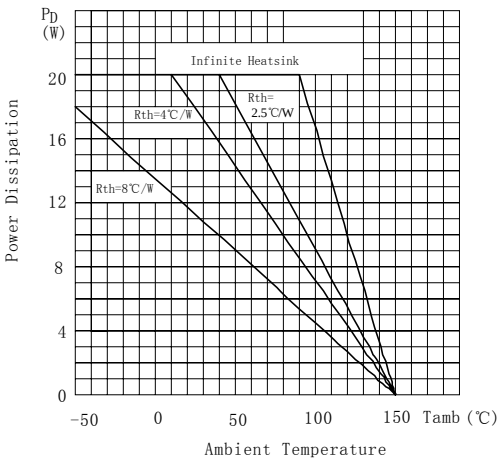
Po ---Vin (power driving)



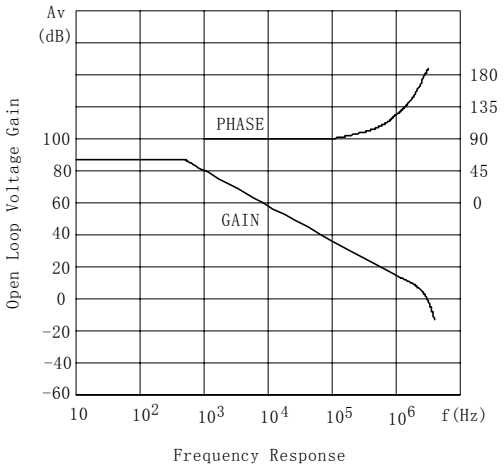
P_D---Po(W)



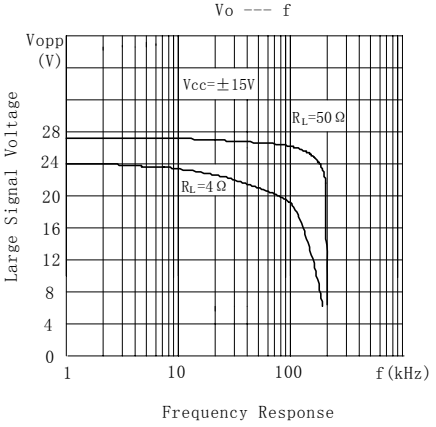
P_D --- Tamb



Avo --- f

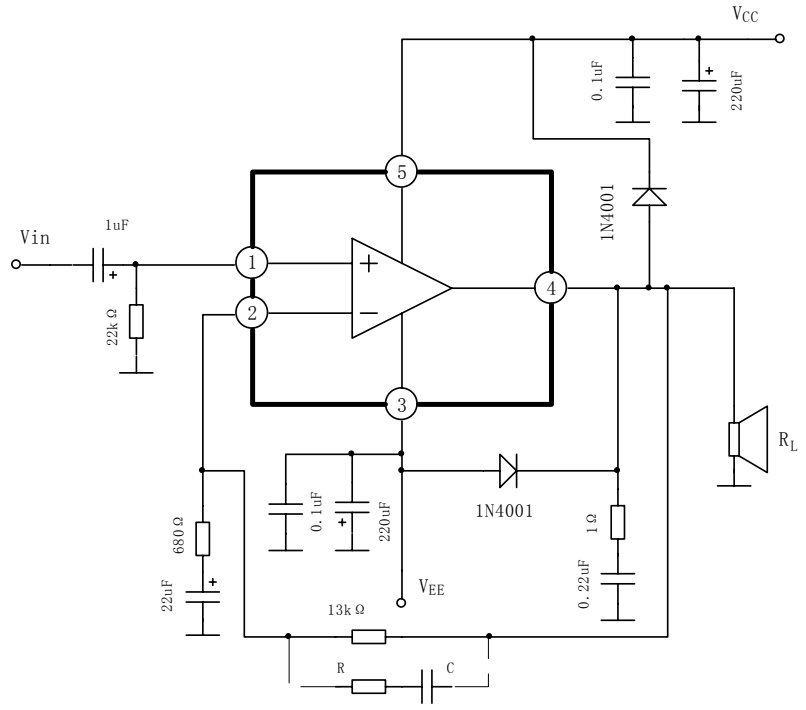


Vo --- f

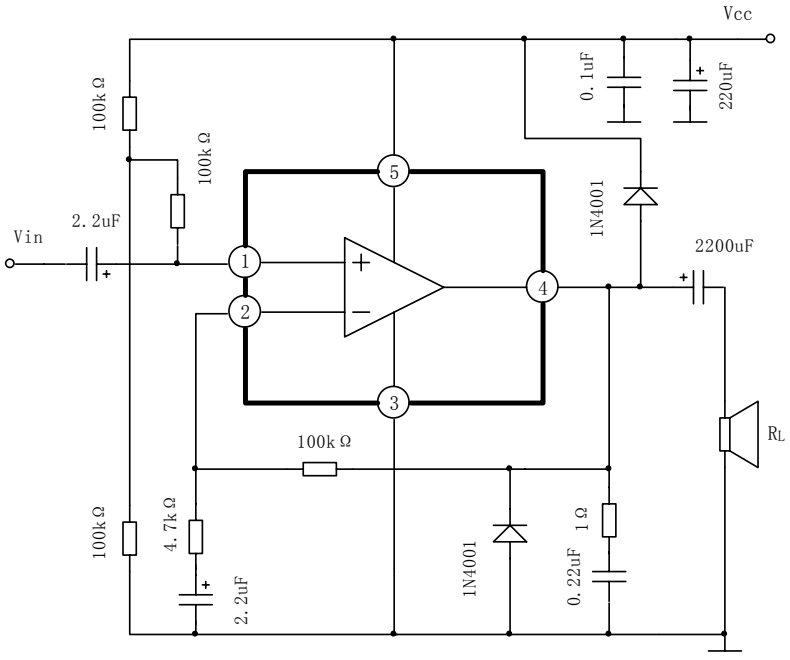


6.Application Circuit

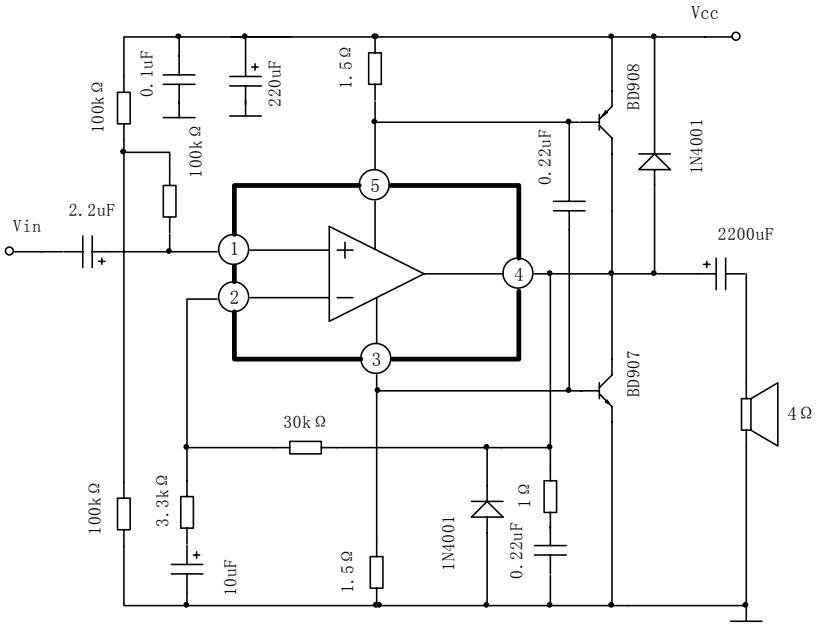
6. 1 Typical Application Circuit



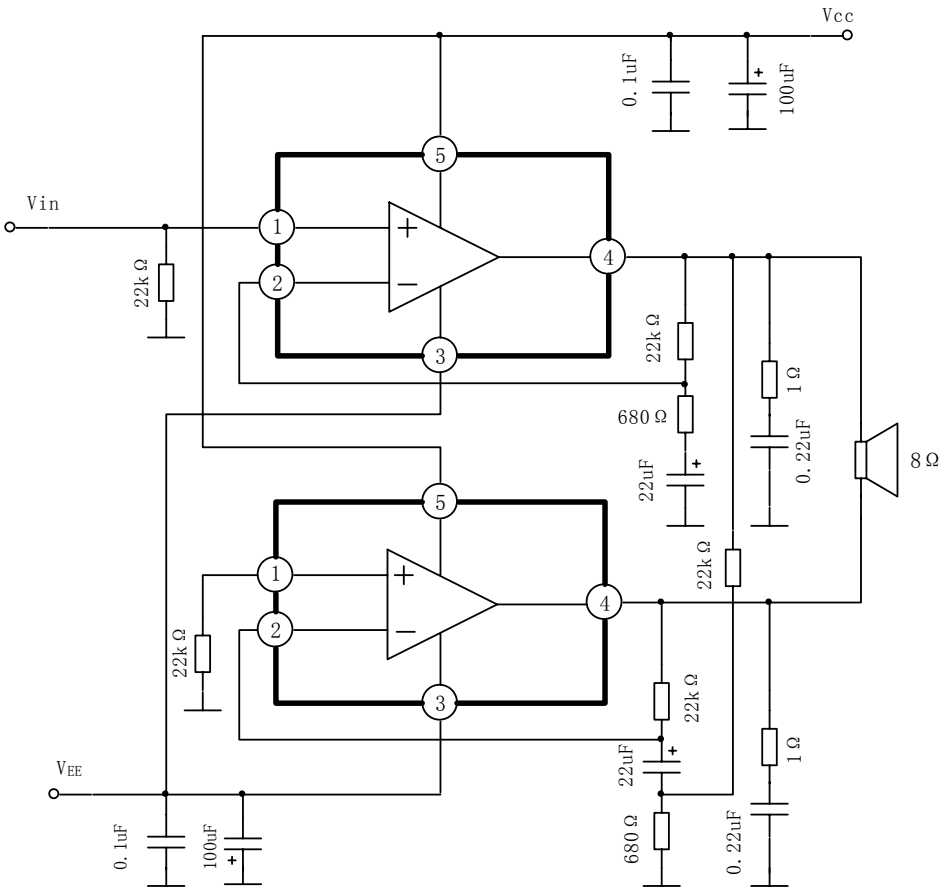
6. 2 Single Supply Application Circuit



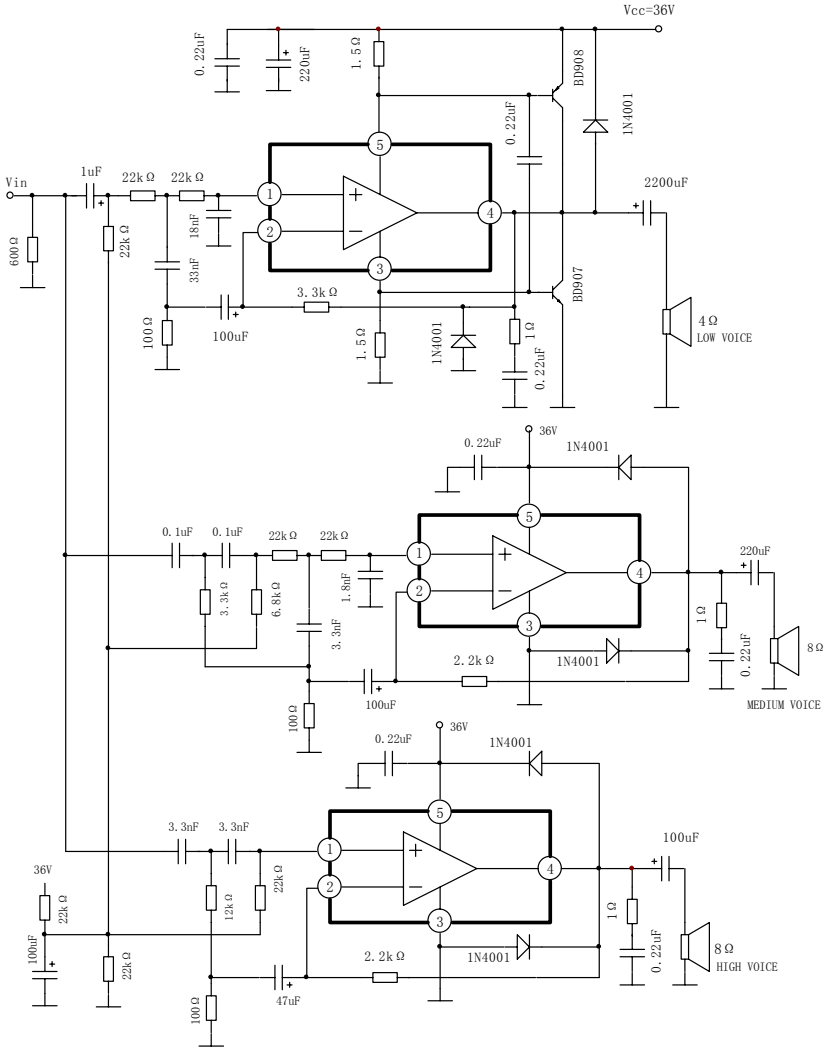
6. 3 Power Driver Application Circuit



6. 4 Bridge Amplifier with Split Power Supply（V_{CC} = +16V, V_{EE} = -16V, P_O＞34W）



6. 5 3×60W Active Loudspeaker System



6. 6 Note

(1) The recommended supply voltage should not be higher than 44V.

(2) Please refer to the power dissipation curve when making heat sink.

7.Package Dimensions