

HSA12 Pulse Width Modulation Amplifiers

1 Features

- Widely motor input voltage range : 16V~200V
- Analog or digital signal input
- High switching frequency: 200KHZ
- Continuous output current: 15A
- Overheat and programmable Current-limiting protection



58.9×40.4×6.99mm³

Weight: 55g

Fig 1 HSA12 External view

2 Scope of application

Drive reactive load

Drive low frequency sonar

3 Descriptions

HSA12 is a pulse width modulation type power amplifier which operates in the switching mode, it can provide 3KW maximum transmission power for the load; the product needs two power supply; +15v for the small signal control circuit power supply; 16v-200v motor The power supply for the internal H bridge. The control signal of the input circuit is the analog signal circuit input or TTL square wave input . The internal output is 400KHZ TTL wave signal, The key input can turn off the four drive tubes of the H-bridge circuit. It has Overheat and Current-limiting protection function.

The series of the products are made of thick film hybrid integrated process, metal sealed shell package. Product design and manufacturing to meet the MIL-STD and detailed specifications of the product requirements, the quality level is H-class.

4 Technical Specifications

Table 1: Rated conditions and Recommended operating conditions

Absolute maximum rating	Recommended operating conditions
Supply voltage +V _S : 200V	Supply voltage +V _S : 120V
Supply voltage +V _{CC} : 16V	Supply voltage +V _{CC} : 15V
Input voltage , +PWM: 0~+11V	Input voltage , +PWM: +3~+7V
Internal power loss: 250W	Shut-off input voltage , I _{limit} /SHDN: 0.1V
Storage temperature : -55~+125°C	
operating temperature (T _c) : -40~+85°C	

table 2 electrical characteristics

No	Character	Conditions -55°C ≤ T _c ≤ 125°C	HSA12			Symbol
			Min	Typical value	Max	
1	Clock output high level	-	4.8	-	5.3	V
2	Clock output low level	-	0	-	0.4	V
3	Clock output frequency	-	392	400	408	kHZ
4	Triangular center voltage	-	-	5	-	V
5	Triangular wave peak -peak voltage	-	-	4	-	V
6	Continuous working current	-	-	15	-	A
7	Power +V _S	-	16	120	200	V
8	Power +V _{CC}	-	14	15	16	V
9	+V _{CC} static current	I _o =0	-	-	150	mA
10	I _{limit} /shutoff threshold	-	90	-	110	mV

5 Lead function descriptions

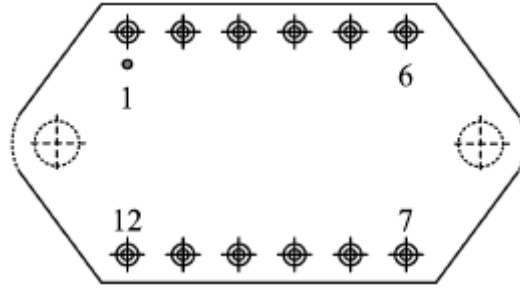


Fig 2 upward view

Table 3 Pin Designation

No	symbol	Designation	No	symbol	Designation
1	CLK In	Clock input	7	$I_{sense\ B}$	Current sensing output B
2	CLK Out	Clock output	8	B_{out}	Output B
3	+PWM	+PWM input signal	9	+V _s	+V _s input
4	-PWM/RAMP	Internal triangular output	10	+V _{CC}	+V _{CC} input
5	GND	System Ground	11	A_{out}	Output A
6	$I_{limit}/SHDN$	current limiter/shut off input	12	$I_{sense\ A}$	Current sensing output A

6 Circuit block diagram

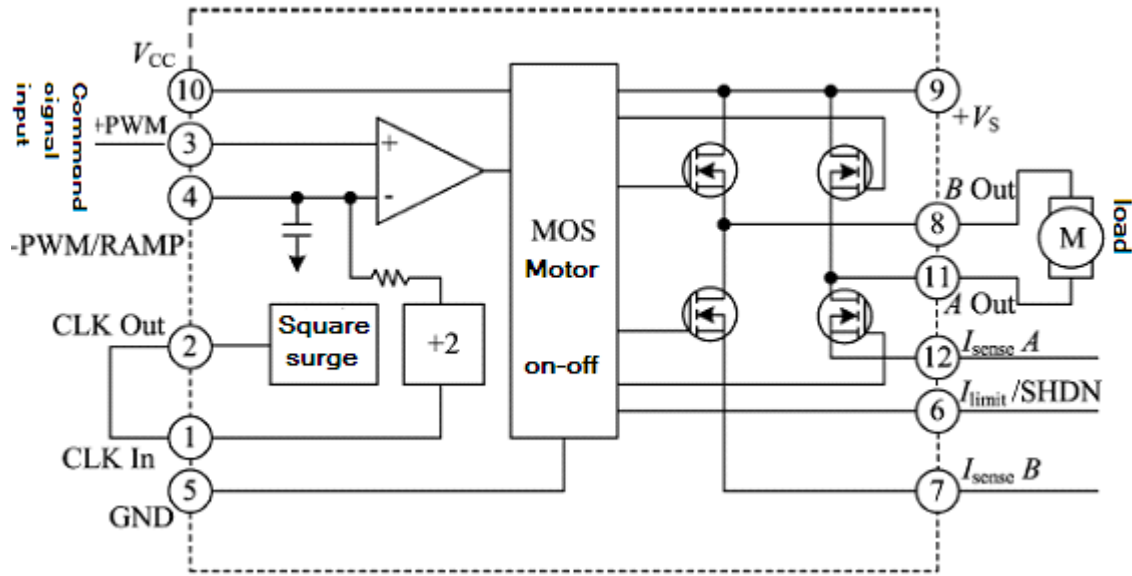


Fig 3 Circuit block diagram

7. Typical Connection Diagram

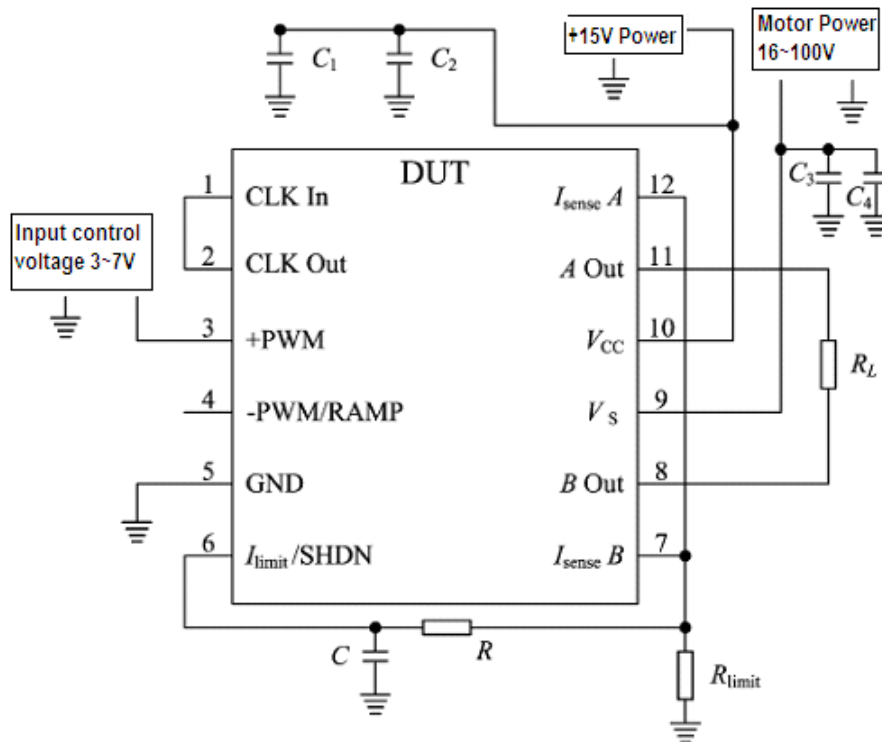


Fig 4 Typical connection diagram

7.1 Power supply bypass

HSA12 power supply should have plenty of bypass to ensure its correct operation, the motor

power supply should add a ceramic capacitor C_3 , and then in parallel with a low ESR value of the bypass capacitor C_4 , the capacitance should be at least $10\mu\text{F}/\text{A}$. for VCC the same, a $0.1\ \mu\text{F}$ $0.47\mu\text{F}/50\text{V}$ ceramic capacitor C_1 and a low ESR value of $6.8\mu\text{F}$ $10\mu\text{F}/50\text{V}$ bypass capacitor C_2 . All bypass capacitors should be connected as close as possible to the corresponding root of power port.

8. Package Specifications

Package outline is shown as in fig 5

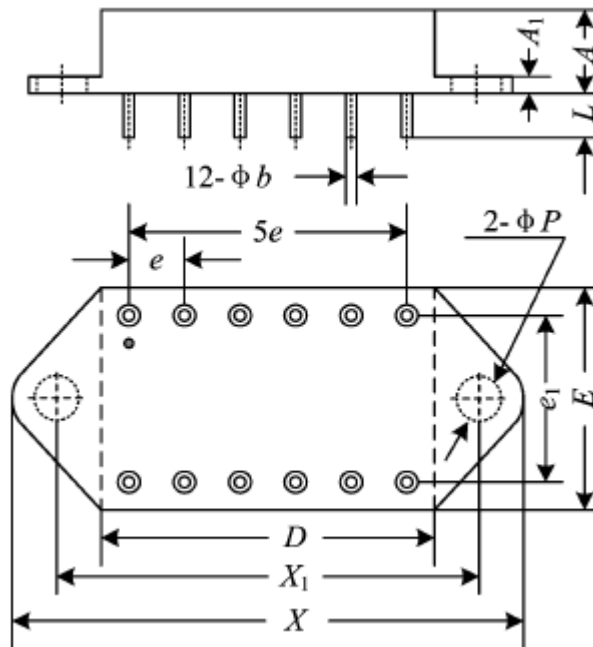


Fig5 package outline drawing

Form 4 Package Outline

Symbol	Data/mm		
	Min	Typical	Min
A	-	-	6.99
A_1	2.28	-	2.44
ϕb	1.47	-	1.57
D	-	-	40.40
E	-	-	40.40
e	-	5.08	-
e_1	-	30.48	-
L	11.43	-	12.70



XI	49.56	-	49.96
X	-	-	58.90
ΦP	3.80	-	4.20

Application Notes please refer to the appendix, must read it carefully