

HSA01 Pulse Width Modulation Amplifier

1 Features

- Single power supply
- Widely input supply voltage range:16V~100V
- Continuous output current: 20A
- Current-limiting protection function



50.2×33.15×6.7mm³

Weight: 30g

Fig1 HSA01 External view

2 Scope of application

Motor controlling with brush

Drive reactive load

3 Descriptions

HSA01 is a working and switching mode pulse width modulation power amplifier, it can provide the load 2KW maximum output power. The product only need all the way 16V-100V power supply. Input control signal for the analog DC signal or motor feedback signal. It has 7.5V reference voltage output and can become a current limiting protection function.

The series of the products are made of thick film hybrid integrated process, metal sealed shell package. Product design and manufacture ring 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 +VS: 100V	Supply voltage +VS: 50V
Output peak current: 30A	Turn-off voltage: 0.18V~0.22V

Internal power loss: 185W Storage temperature: -65~+150°C Operating Temperature: -55~+125°C	Turn-off current: 100nA
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Table 2 electrical characteristics

No	Character	Conditions -55°C ≤ T _c ≤ 125°C	HSA01			Symbol
			min	Typical value	max	
1	Switching frequency	-	35.3	42	48.7	KHZ
2	Output efficiency	VS=100V, IO=10A	-	97	-	%
3	Continuous working current	package temperature below 60°C	-	20	-	A
4	Peak working current	-	-	30	-	A
5	Power supply+VS	-	16	50	100	V
6	Power supply current	IO=0	-	-	90	MA
7	Turn-off threshold voltage V _{limit}	-	0.18	-	0.22	V
8	Turn-off threshold current I _{limit}	-	-	-	100	MA
9	Range of working temperature (Package temperature TC)	-	-55	-	+125	°C

5 Lead function descriptions

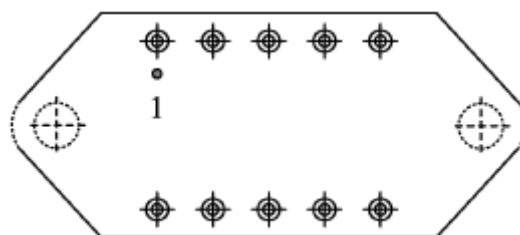


Diagram 2 upward view

Table 3 Pin Designations

No	symbol	Designation	No	symbol	Designation
1	-In	Opposed phrase input	6	A _{out}	Output A
2	+In	in phrase input	7	+Vs	Power supply +Vs
3	EAOUT	error amplifier output	8	I _{SENSE}	current induction terminal
4	GND	ground	9	B _{OUT}	Output B
5	V _{Ref}	reference voltage output	10	I _{limit}	Current limiter/Turn off
				/SHDN	

6 Circuit principle frame diagram

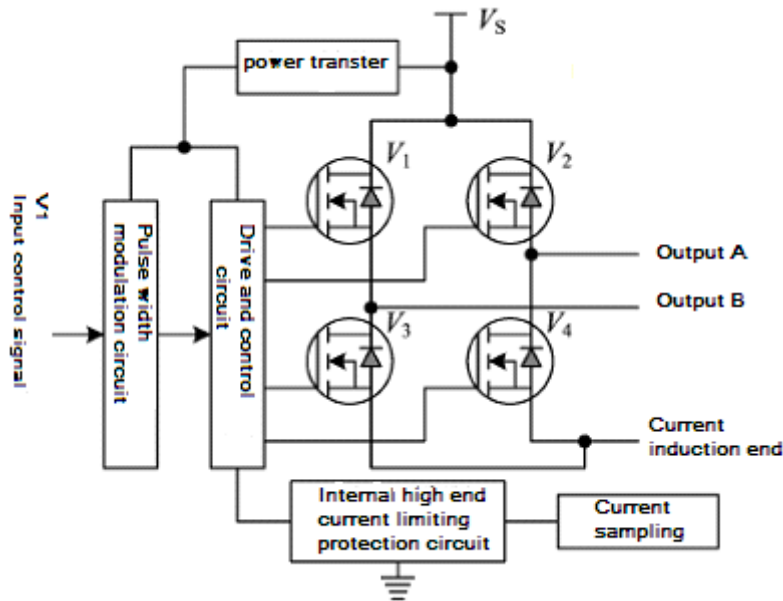


Fig 3 pin function diagram

7. Typical Connection Diagram

HSA01 built-in error amplifier can provide gain for brush motor control in applications such as speed ring the typical connection is shown in figure 4.

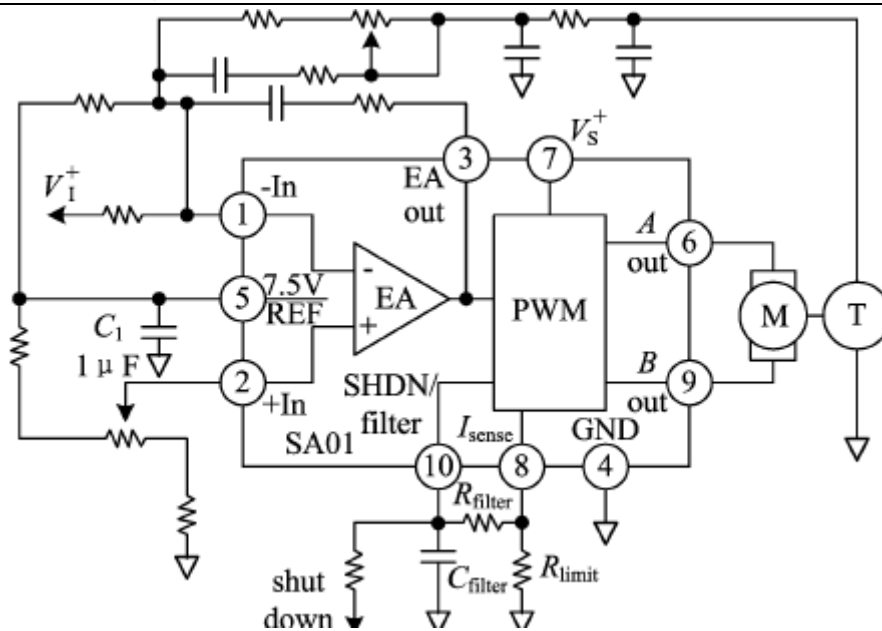


Figure 4 HSA01 Typical connection Diagram

7.1 Power supply bypass

Power supply V_S should have sufficient bypass capacitors to ensure proper operation, otherwise it may be unstable and reduce efficiency, and the output may be oscillated. V_S power supply should be connected with at least $1\mu F$ ceramic capacitor in parallel with a low ESR value of the bypass capacitor, the capacitance should be at least $10\mu f/A$; All bypass capacitors should be connected as close as possible to the corresponding power supply root.

7.2 Unprotected circuit is a typical connection diagram

If the system does not require current limiting protection circuit, then the pin 8 can be directly grounded, as shown in Figure 5.

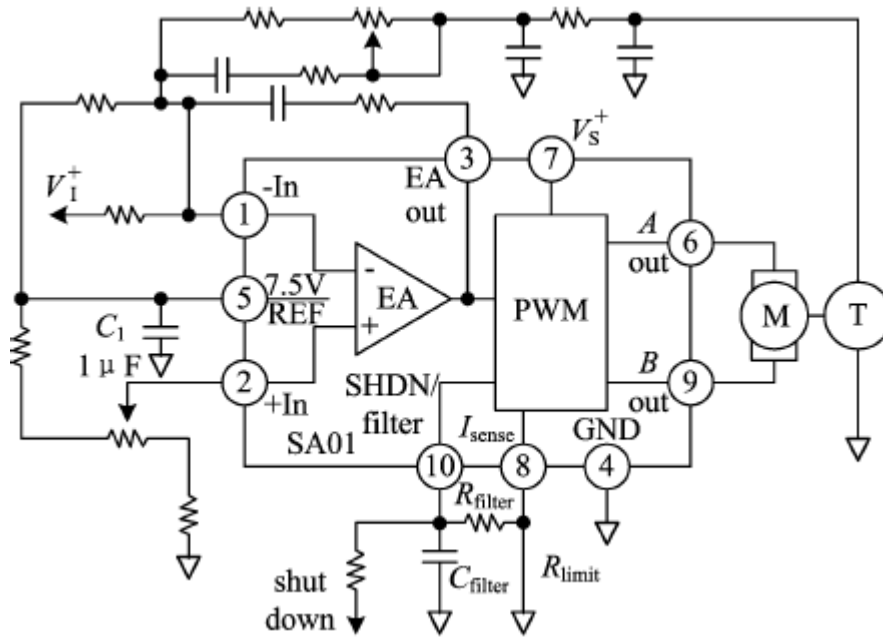


Figure 5 HSA01 Unprotected circuit is a typical connection diagram

8. Package Specifications

Circuit package outlines is shown as the Fig 6 .(请核实此图?)

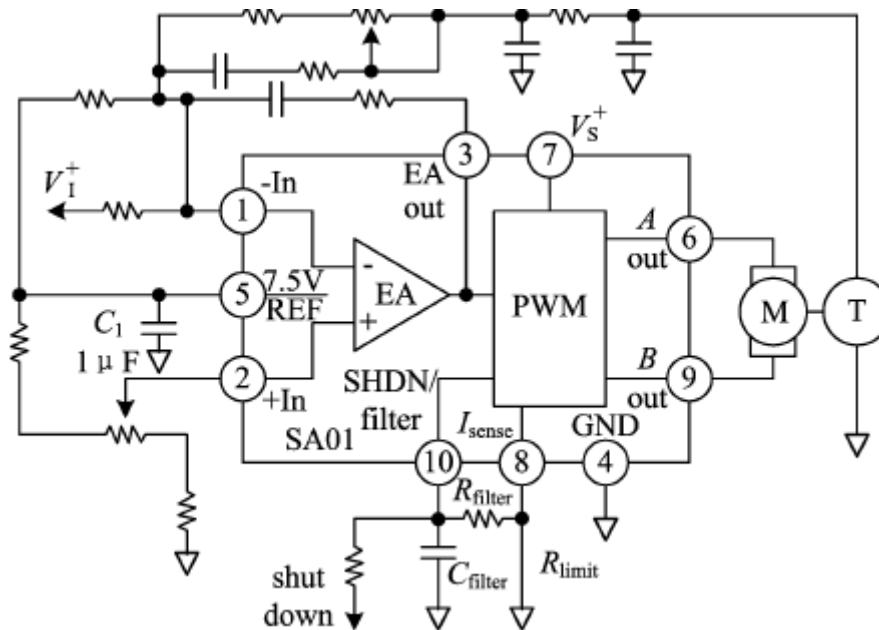


Fig 6 package outline drawing

Form 4 Package Outline

Symbol	Data/mm		
	Min	Typical	Min
A	6.5	-	6.7
A_t	-	2.4	-
Φb	1.4	1.5	1.6
D	31.3	-	31.5
E	-	-	33.15
e	-	5.08	-
e_t	22.61	22.86	23.11
L	11.7	12.0	12.3
X_t	-	41.5	-
X	49.9	50.2	50.5
ΦP	-	4.0	-

Note :Consistency in identification and quality Detection, should detect all sizes .

In the group A lot-by-lot testing,only test ΦD 、 $\Phi D1$ 、 X 、 $X1$ 、 A 、 L .

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