HISA01A Isolated High Efficiency Pulse Width Modulation Amplifier

1 Features of HISA01A Isolated High Efficiency Pulse Width Modulation Amplifier

- Input DC voltage：30V±2V
- Continuous output voltage：10A
- Peak output current 20A
- TTL Wide square wave signal input
- Direction control input signal
- Isolated between the input signal and output signal

58.9×40.4×6.99mm^3

Weight：55g

2 Scope of application of HISA01A Isolated High Efficiency Pulse Width Modulation Amplifier

DC motor drive control

Drive the reactive load

3 Descriptions of HISA01A Isolated High Efficiency Pulse Width Modulation Amplifier

HISA01A isolated pulse width modulation amplifier works in switching mode, it can provide 300W of transmission power for the load; Product needs two power supply: +5V for small control circuit power supply and 30V motor power supply power to the internal H-Bridge. There are two input control signals one is TTL level wide square wave input signal; the other is the DIR direction input signal that controls the direction of rotation of the power. The signal input is isolated from the power output

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

4 Technical Specifications of HISA01A Isolated High Efficie ncy Pulse Width Modulation Amplifier

Form 1: Rated conditions and Recommended operating conditions

Absolute maximum rating	Operating conditions
Supply voltage V_{CC}：7V Supply voltage V_S：40V Storage temperature：-60～+150℃ Lead welding temperature（10S）Th：300℃ Peak drive current: I_{OP}：10A Junction Temperature Tj：150℃	Supply voltage V_{CC}：5V±0.25V Supply voltage Vs：30V±2V Operating Temperature（Case） Tc：-55～+125℃

Form 2 electrical characteristics

No	Character	Conditions V_{CC}=5V±0.25V V_S=30V±0.3V -55℃≤T_c≤125℃ R_L=10Ω±2Ω	HISA01A		Symbol
			min	max	
1	Switching frequency	Input PWM square wave signal，DIR direction signal connect “0”or “1”	50	-	HZ
2	Continuous output current	Adjusting RL(load resistor) to input PWM square wave signal（The duty cycle is 100% high），DIR direction signal connect“0”or “1”	3	-	A
3	Output square wave voltage amplitude	Input PWM square wave signal ，DIR=0，Output positive unipolar square wave	26	30	V
		Input PWM square wave signal ，DIR=1，Output negative unipolar square wave	26	30	V
4	Efficiency	Input PWM square wave signal（The duty cycle is 100% high），DIR direction signal connect“0”or “1”	95	-	%

5	Static power consumption	VCC=5V±0.25V VS=30V± 0.3V，Without load RL	-	4	W

5 Lead function descriptions of HISA01A Isolated High Efficiency Pulse Width Modulation Amplifier

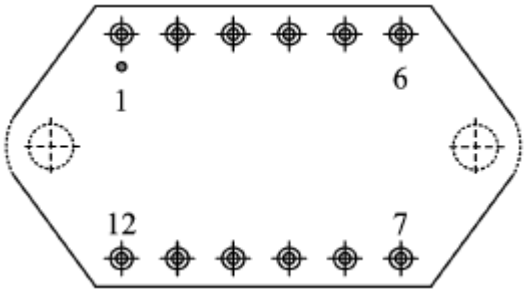

Fig 2 upward view

Form 3 Pin Designation

No	symbol	Designation	No	symbol	Designation
1	GND1	Input signal Ground	7	SENB	Load current sensing terminal B
2	PWM	Input PWM signal	8	OUTB	Output B
3	VCC	+5V power supply	9	VS	Power Supply
4	DIR	Input direction control signal	10	NC	NC
5	GND	Output Ground	11	OUTA	Output A
6	NC	NC	12	SENA	Load current sensing terminal A

6 Circuit principle frame diagram of HISA01A Isolated High Efficiency Pulse Width Modulation Amplifier

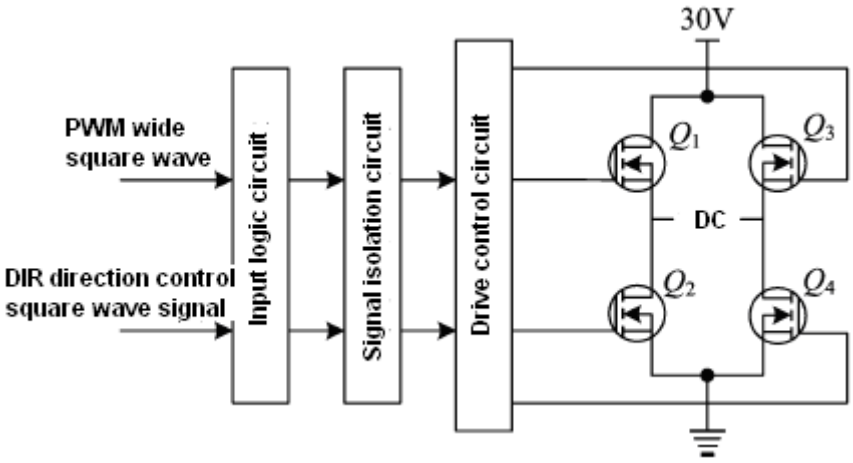

Fig 3 pin function diagram

7. Typical Connection Diagram of HISA01A Isolated High Efficiency Pulse Width Modulation Amplifier

HISA01A built-in error amplifier can provide gain for brush motor control in applications such as speed ring, the typical connection is shown as below figure.

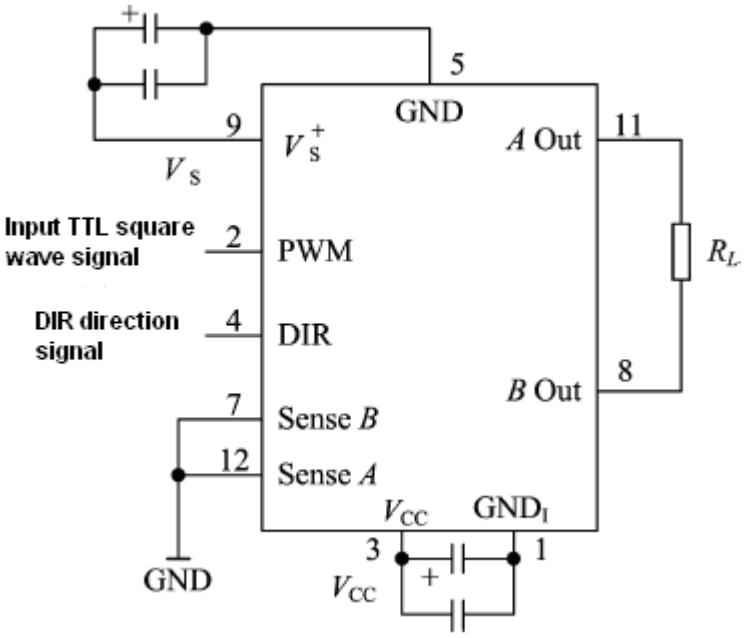

Fig 4 HISA01 Typical connection Diagram

7.1 Power supply bypass：

Power supply should have sufficient bypass capacitors to ensure proper operation, otherwise it may be unstable and reduce efficiency, and the output may be oscillated. Vs power supply should connect an at least 1uF ceramic capacitor paralleled with a low value ESR capacitor, , the capacitance should be at least 10uF/A ; for VCC also requires a 0.1

μ F ～0.47μ F ceramic capacitors paralleled with a low ESR value of 6.8μ F ～10μ F bypass capacitor, All bypass capacitors should be connected as close as possible to the corresponding power supply root.

7.2 The signal input is isolated from the power output

Input PWM(Pulse Width Modulation) square wave signal ground and DIR direction control signal ground and small signal power supply Vcc power supply ground GND1 connection；Separate form the GND of the Vs to ensure that the signal input is isolated from the power output and that the output is stable and reliable.

7.3 DIR direction control signal input

DIR direction control signal is TTL level signal，to control the direction of the current between the OutA and OutB of the output，thereby controlling the direction of rotation of the motor. The working status of the motor is shown in the form below.

Form 4 working value

PWM wide square wave signal（TTL level）	DIR direction control signal （TTL level）	Out_A	Out_B	DC motor working condition
1	0	1	0	Forward
1	1	0	1	Reversal
0	0	0	0	Stop
0	1	0	0	Stop

8. Package Specifications of HISA01A Isolated High Efficiency Pulse Width Modulation Amplifier

Circuit package outlines is shown in Fig 5 .

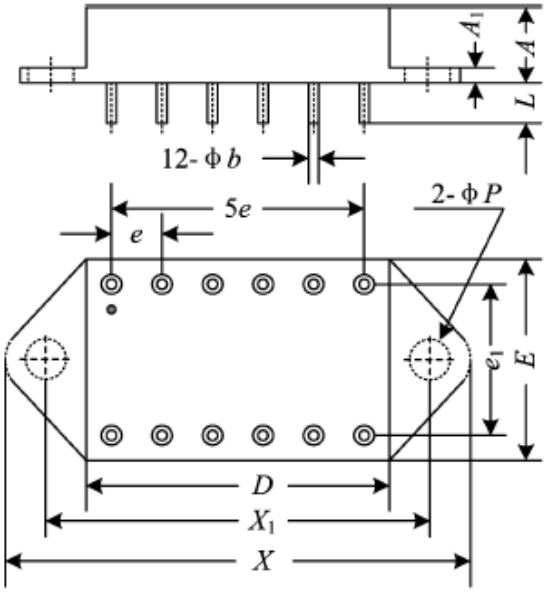

Fig 5 upward view

Form 4 Package Outline

Symbol	Data /mm		
	Min	Typical	Min
A	–	–	7.9
A1	1.9	–	2.7
Φb	0.87	–	1.13
D	–	–	38.80
E	–	–	41.90
e	–	5.08	–
e_1	–	30.48	–
L	11.0	–	–
X_1	49.26	–	50.26
X	–	–	59.15
ΦP	3.70	–	*4.30*