

HSA51 Pulse Width Modulation Amplifier

1 Features

- Compatible with APEX SA51、MSK MSK4201
- Continuous output current 5A
- Peak current 7A
- TTL Width square wave signal input
- Input inhibit function
- TO-3 Package



R12.7×4×6.99mm³

Weight: 17g

Fig 1 HSA51 External view

2 Scope of application

DC motor drive control

Drive reactive load

3 Descriptions

HSA51 is a type of pulse width modulation amplifier. It can provide 5A continuous output current to the load; the whole bridge structure can work in a wide voltage range, all the high-end and low-end switching drive control circuit, PWM pulse width modulation circuit are integrated with the product. Complete input circuit drive and power amplification wide adjustable square wave signal by external PID loop speed and position control systems can be completed. Input signal to realize ban on internal H bridge switching off.

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 highest quality level of H-class.

4 Technical Specifications

Table 1: Rated conditions and Recommended operating conditions

| Absolute maximum rating | Recommended operating conditions |
|---|--|
| Supply voltage +V _S : 80V Supply voltage +V _{CC} : 16V internal power loss : 120W Storage temperature: -65~+150°C Enable input voltage (DIS) :0~V _{CC} | Supply voltage +V _S : 28V Supply voltage +V _{CC} : 12V Input voltage, +V _I : 0V~5V Enable input voltage (DIS) :0~5V operating temperature: -55~+125°C |

Table 2 electrical characteristics

| No | Character | Conditions VS=28V±1.4V VCC=12V±1V RL=1KΩ R _{SENSE A} 、R _{SENSE B} GND -55°C≤T _C ≤125°C | HSA51 | | Symbol |
|----|--------------------------|--|-------------------------|-----|--------|
| | | | min Typical value | max | |
| 1 | Static current | No signal, VCC=12V±1V Inhibite terminating | - | 18 | mA |
| 2 | Turn-on voltage | I _O =5A | - | 2.4 | V |
| 3 | Shut-off leakage current | output shutoff, Vs=70V no load | - | 250 | μ A |
| 4 | Operating current | TC=25°C FPWM=45KHZ TTL level | - | 60 | mA |
| 5 | Input threshold level | Increased input to A or B status changes | 0.8 | 2.7 | V |
| 6 | Inhibite function | TC=25°C INH add VINTH≥3.6V (inhibite voltage) FPWM=45KHZ | A or B output shutoff | | V |

5 Lead function descriptions

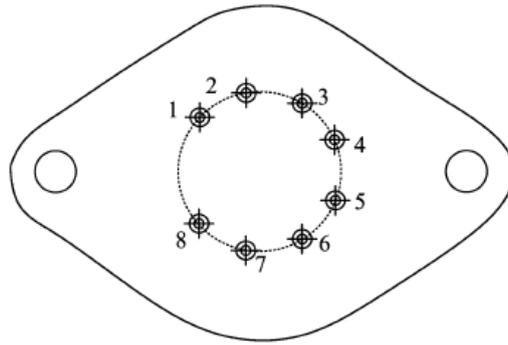


Fig 2 upward view

Table 3 Pin Designations

| No | symbol | Designation | No | symbol | Designation |
|----|------------------|-------------------|----|--------------------|-----------------------|
| 1 | +V _s | Power Supply | 5 | GND | Ground |
| 2 | B _{OUT} | Output B | 6 | Input | TTL square wave input |
| 3 | +V _{CC} | +12V Power | 7 | A _{OUT} | Output A |
| 4 | Disable | Forbidden voltage | 8 | R _{SENSE} | Inductor |

6 Circuit block diagram

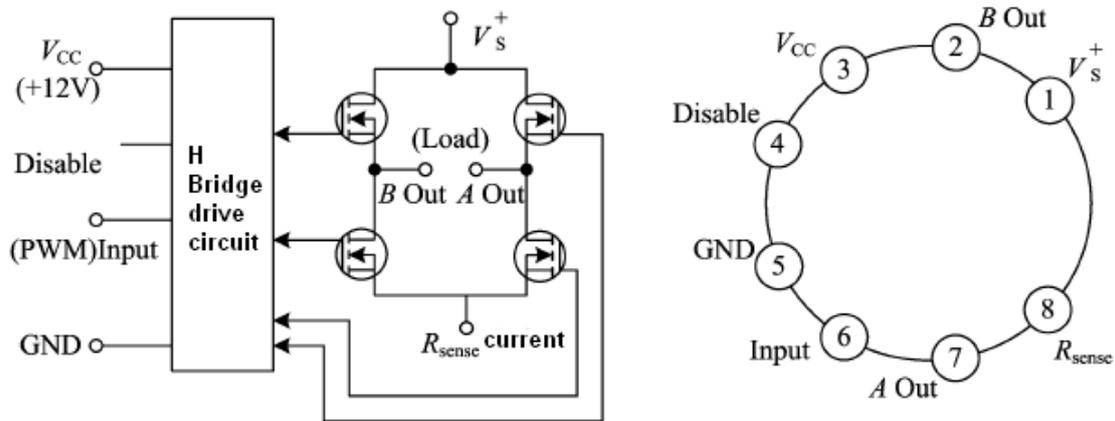


Fig 3 Circuit block diagram

7. Typical Connection Diagram

R1、R2 are sampling resistors, According to the current requirements can be

determined by the system.

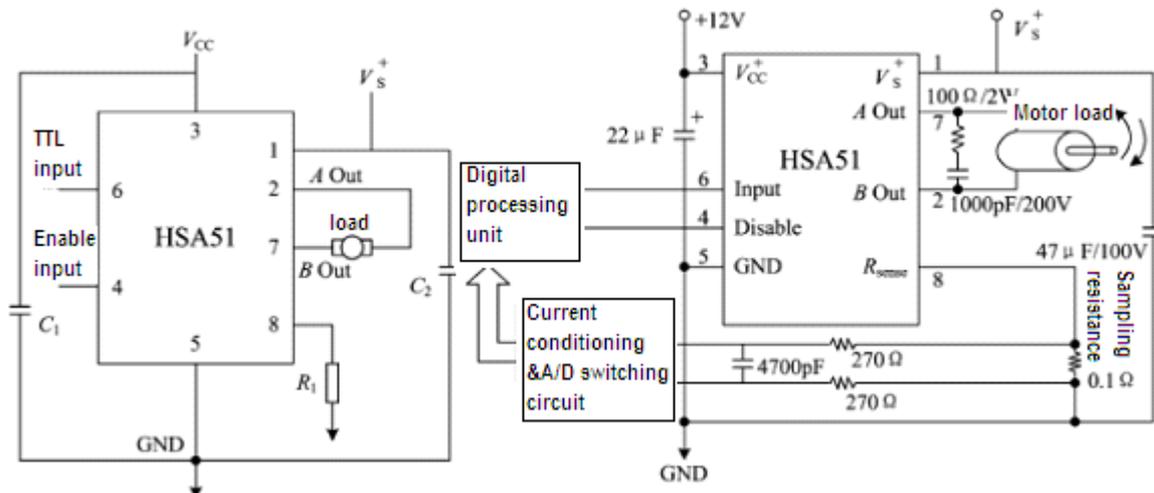


Fig 4 Typical connection diagram

7.1 Power supply bypass

HSA51 power supply should have plenty of bypass to ensure its correct operation, or it may be unstable, reduces efficiency and output maybe oscillations. The V_S power supply should add a $1\mu F$ ceramic capacitor and parallel a low ESR value of bypass capacitor , the size of at least selected $10\mu f / A$.The V_{CC} is the same need to parallel a $0.1\mu F$ ceramic capacitor and a low ESR value of $6.8\mu F$ - $10\mu F$ bypass capacitor . All bypass capacitors should be connected as close as possible to the corresponding power source.

8. Package Specifications

Package outline is shown as in fig 5.

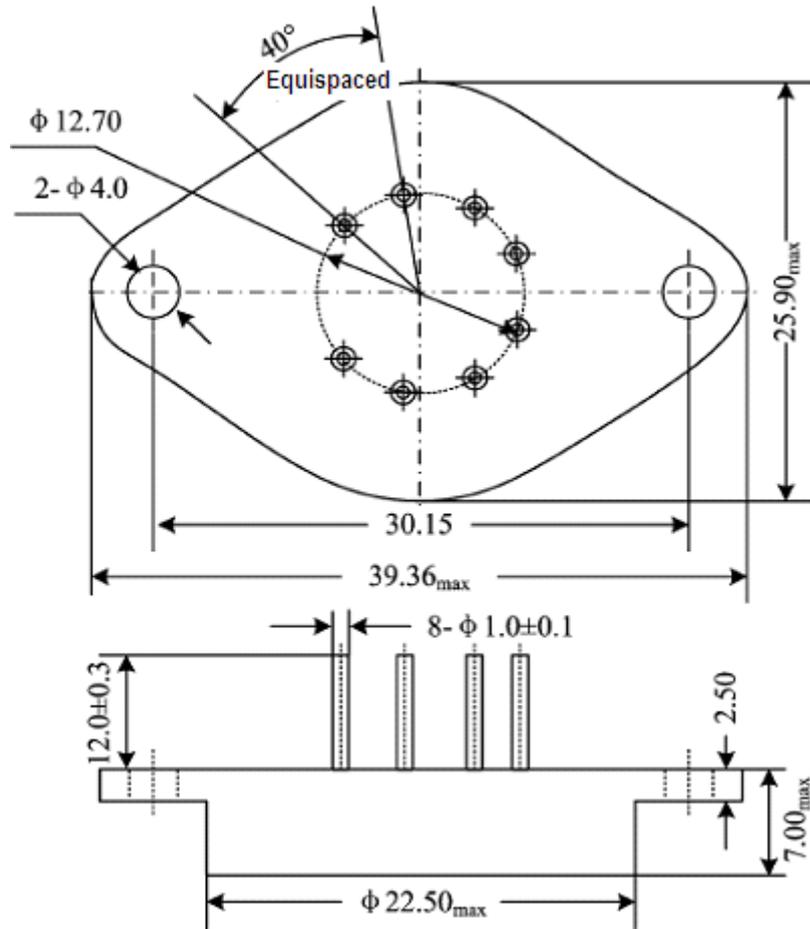


Fig5 package outline drawing

Form 4 Package Outline

| Symbol | Data/mm | | |
|------------|---------|---------|-------|
| | Min | Typical | Min |
| A | - | - | 6.35 |
| A_1 | - | - | 2.70 |
| ϕb | 0.90 | - | 1.10 |
| ϕD | - | - | 25.65 |
| ϕD_1 | - | - | 22.20 |
| α | - | 40° | - |
| $X1$ | 29.95 | - | 30.35 |
| X | - | - | 39.22 |
| L | 11.70 | - | - |
| ϕP | 3.80 | - | 4.20 |

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

In the group A lot-by-lot testing,only test ϕD 、 ϕD_1 、 X 、 $X1$ 、 A 、 L .

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

