

### Features

- Built-in brake function.
- Built-in diode to absorb surge currents.
- Low standby circuit current .
- Wide range of operating supply voltage (4.5~13.5V).
- Interfaces with the TTL logic.

### Description

The AT5608 is a monolithic integrated circuit designed for driving bi-directional DC motor.

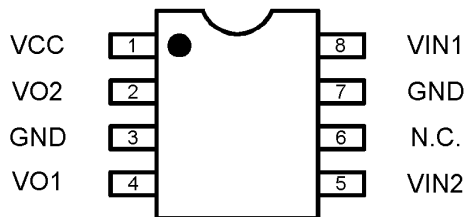
It has two pins of logic input for controlling the forward/reverse and braking, which can supply an output current of up to 100mA (typical) according to the logic control.

### Applications

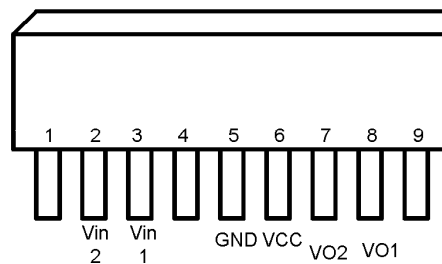
DVD and VCD player tray driver.

### Pin Configuration

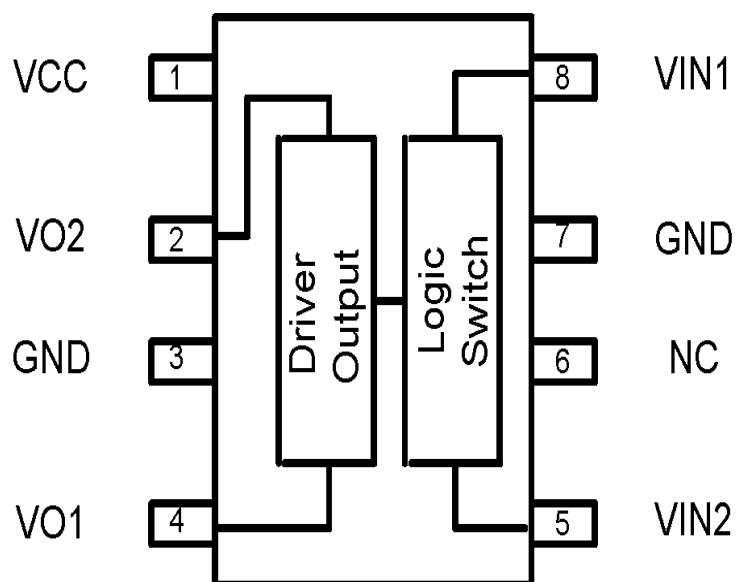
**SO8**



**SIP9**



### Circuit Configuration



### Pin Descriptions

| Pin No. |       | Pin name | Function      |
|---------|-------|----------|---------------|
| SO8     | SIP9  |          |               |
| 1       | 6     | VCC      | Power supply  |
| 2       | 7     | VO2      | Motor output2 |
| 3       | 5     | GND      | GND           |
| 4       | 8     | VO1      | Motor output1 |
| 5       | 2     | VIN2     | Logic input2  |
| 6       | 1,4,9 | N.C.     | N.C.          |
| 7       | 5     | GND      | GND           |
| 8       | 3     | VIN1     | Logic input1  |

**Absolute maximum ratings (Ta = 25°C)**

| Parameter              | Symbol           | Limits   | unit |
|------------------------|------------------|----------|------|
| Power supply voltage   | V <sub>CC</sub>  | 13.5     | V    |
| Power dissipation      | P <sub>d</sub>   | 450*     | mW   |
| Operating temperature  | T <sub>opr</sub> | -20~+60  | °C   |
| Storage temperature    | T <sub>stg</sub> | -55~+125 | °C   |
| Maximum output current | I <sub>OUT</sub> | 500      | mA   |

\* Reduce by 13.5 mW for each increase in T<sub>a</sub> of 1°C over 25°C.

**Recommended operating conditions (Ta = 25°C)**

| Parameter            | Symbol          | Limits | unit |
|----------------------|-----------------|--------|------|
| Power supply voltage | V <sub>CC</sub> | 4.5~12 | V    |

**Input truth table**

| VIN1(8pin) | VIN2(5pin) | VO1(4pin) | VO2(2pin) |
|------------|------------|-----------|-----------|
| H          | L          | H         | L         |
| L          | H          | L         | H         |
| H          | H          | L         | L         |
| L          | L          | OPEN      | OPEN      |

\*:HIGH level input is 2.0V or more

LOW level input is 0.8V or less.

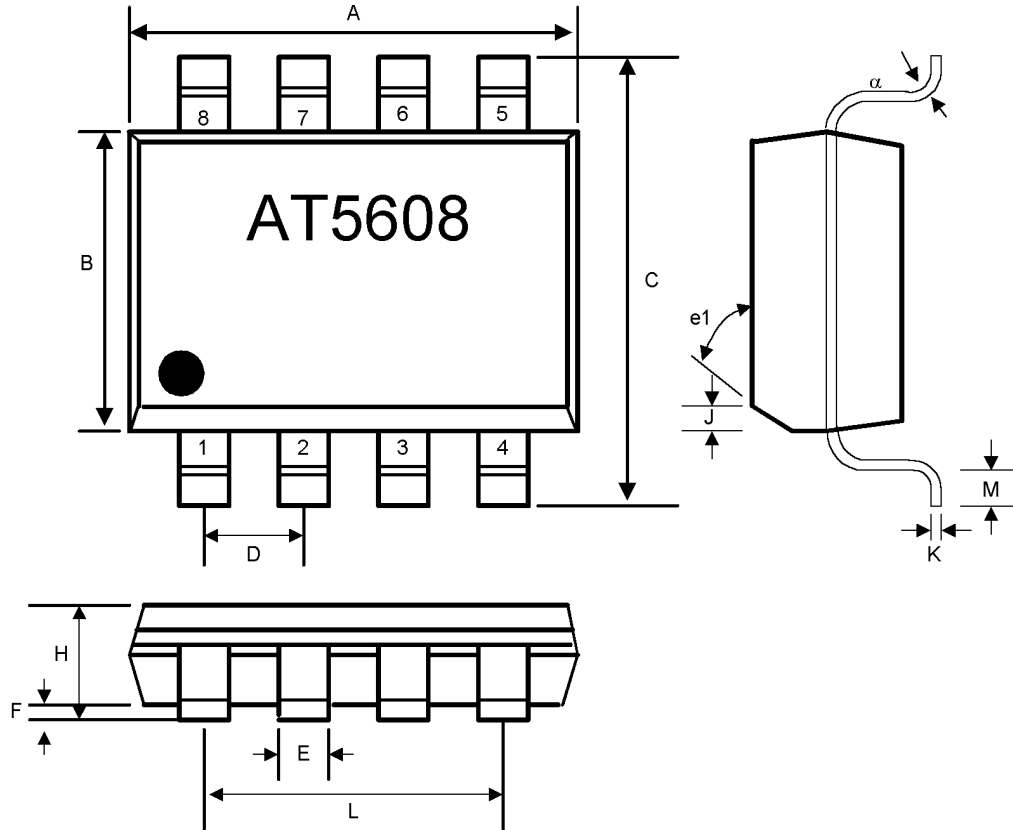
**Electrical characteristics (unless otherwise noted, Ta = 25°C and V<sub>CC</sub> = 9V)**

| Parameter                 | Symbol          | Min. | Typ. | Max. | Unit | Conditions                                   |
|---------------------------|-----------------|------|------|------|------|----------------------------------------------|
| Standby supply current    | I <sub>ST</sub> | -    | -    | 0.4  | mA   | When inputs VIN1 and VIN2 are both "L" level |
| Output current            | I <sub>O</sub>  | 200  | -    | -    | mA   |                                              |
| Output saturation voltage | V <sub>CE</sub> | -    | -    | 1.7  | V    | I <sub>O</sub> =100mA                        |
| Input high level voltage  | V <sub>IH</sub> | 2.0  | -    | -    | V    |                                              |
| Input high level voltage  | V <sub>IL</sub> | -    | -    | 0.8  | V    |                                              |
| Input high level current  | I <sub>IH</sub> | -    | -    | 400  | μA   | V <sub>IH</sub> =4.5V                        |

A diode that absorbs at least 500 mA is built in to give protection against surge currents with a pulse width of 10 ms and a duty ratio of 10% or less.

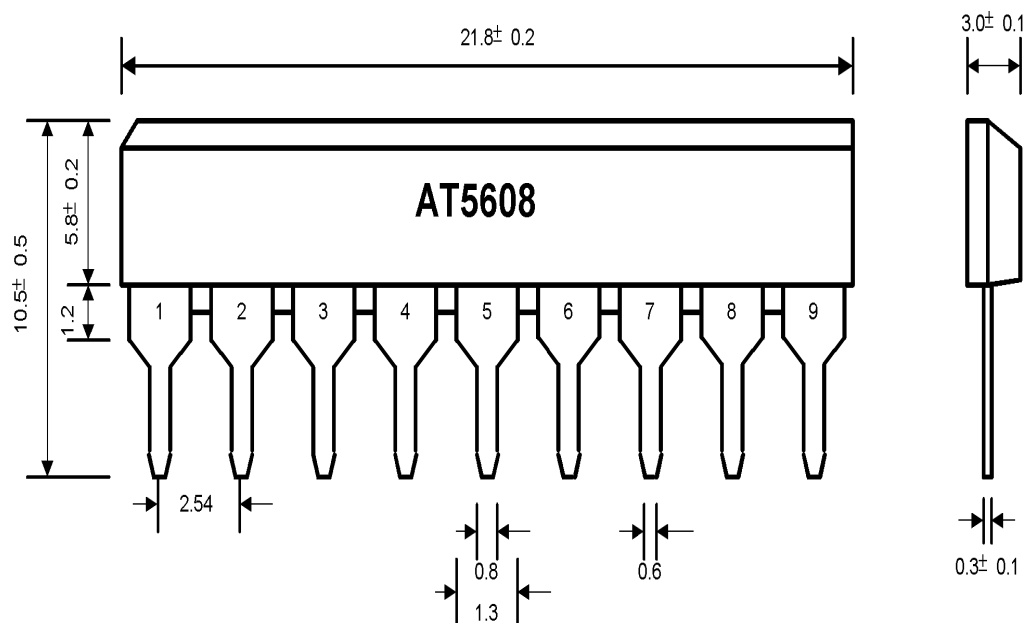


**Package Outline SOP-8**



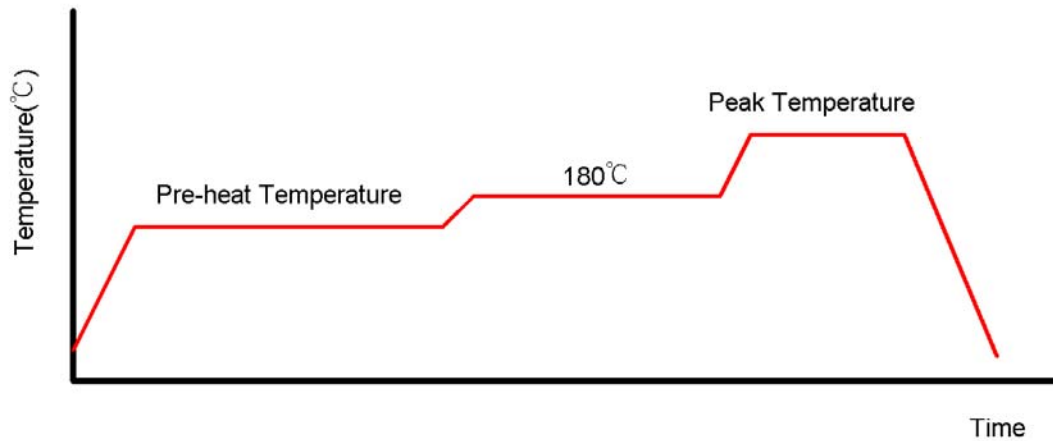
| SYMBOL | INCHES    |       | MILLIMETERS |      | NOTES |
|--------|-----------|-------|-------------|------|-------|
|        | MIN       | MAX   | MIN         | MAX  |       |
| A      | 0.188     | 0.197 | 4.80        | 5.00 | -     |
| B      | 0.149     | 0.158 | 3.80        | 4.00 | -     |
| C      | 0.228     | 0.244 | 5.80        | 6.20 | -     |
| D      | 0.050 BSC |       | 1.27 BSC    |      | -     |
| E      | 0.013     | 0.020 | 0.33        | 0.51 | -     |
| F      | 0.004     | 0.010 | 0.10        | 0.25 | -     |
| H      | 0.053     | 0.069 | 1.35        | 1.75 | -     |
| J      | 0.011     | 0.019 | 0.28        | 0.48 | -     |
| K      | 0.007     | 0.010 | 0.19        | 0.25 | -     |
| M      | 0.016     | 0.050 | 0.40        | 1.27 | -     |
| L      | 0.150 REF |       | 3.81 REF    |      | -     |
| e1     | 45°       |       | 45°         |      | -     |
| α      | 0°        | 8°    | 0°          | 8°   | -     |

Package Outline SIP-9



## Reflow Condition (IR/Convection or VPR Reflow)

Reference JEDEC Standard J-STD-020A



## Classification Reflow Profiles

|                                            | Convection or IR/Convection | VPR                    |
|--------------------------------------------|-----------------------------|------------------------|
| Average Heating Rate(180°C to peak)        | 5°C/second max.             | 10°C/second max.       |
| Preheat Temperature(125±20°C)              | 120 seconds max.            |                        |
| Temperature maintained above 180°C         | 10~150 seconds              |                        |
| Time within 5°C of actual Peak Temperature | 10~20 seconds               | 60 seconds             |
| Peak Temperature Range(Note 1)             | 219~225°C or 235~240°C      | 219~225°C or 235~240°C |
| Cooling Rate                               | 6°C /second max.            | 10°C/second max.       |
| Time 25°C to Peak Temperature              | 6 minutes max.              |                        |

\*1 The maximum peak temperatures for IR and VP reflow are depending on package dimensions.

## Package Reflow Conditions

| Pkg. Thickness ≥2.5mm and all bags | Pkg. Thickness <2.5mm and Pkg. Volume ≥350 mm <sup>3</sup> | Pkg. Thickness <2.5mm and Pkg. Volume <350 mm <sup>3</sup> |
|------------------------------------|------------------------------------------------------------|------------------------------------------------------------|
| Convection 219~225°C               |                                                            | Convection 235~240°C                                       |
| VPR 219~225°C                      |                                                            | VPR 235~240°C                                              |
| IR/Convection 219~225°C            |                                                            | IR/Convection 235~240°C                                    |