

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.
- Built-in thermal shutdown circuit.

Description

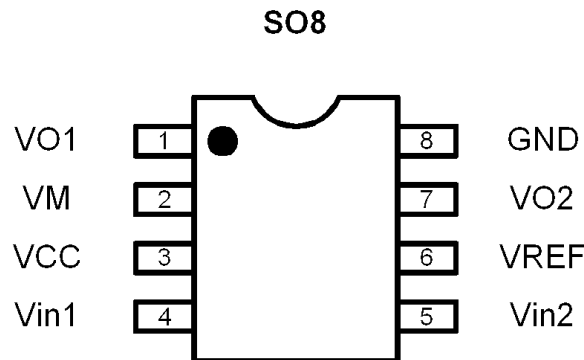
The AT5609 is a monolithic integrated circuit designed for driving bi-directional DC motor.

It has two pins of logic input for controlling the forward/reverse and braking, which can supply an output current of up to 1.0A (typical) according to the logic control. It also Built-in power saving circuit.

Applications

DVD and VCD player tray driver.

Pin Configuration

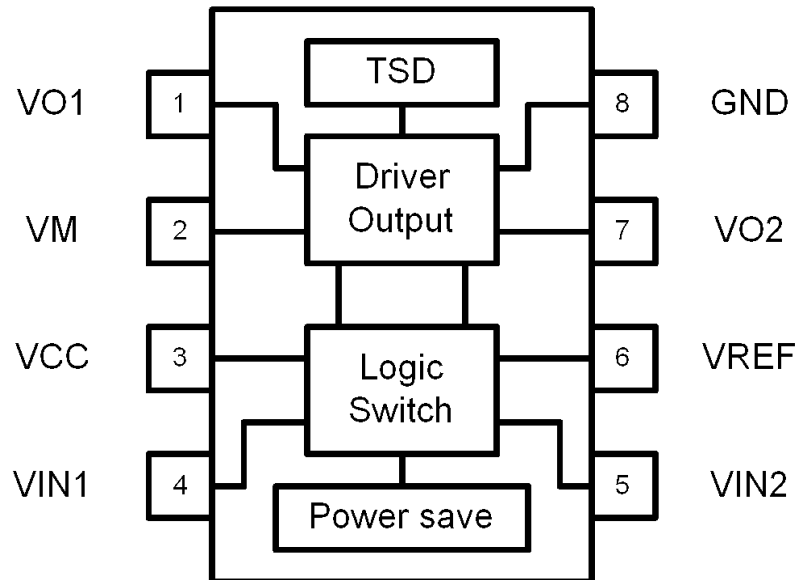


Ordering Information

| Part number | Package | Marking |
|-------------|-------------|---|
| AT5609S | SOP8 | AT5609S |
| AT5609S_GRE | SOP8, Green | AT5609S, date code with one bottom line |

Aimtron reserves the right without notice to change this circuitry and specifications.

Circuit Configuration



Pin Descriptions

| Pin No. | Pin name | Function |
|------------|----------|-----------------------------------|
| SO8 | | |
| 1 | VO1 | Motor output1 |
| 2 | VM | Driver Power supply |
| 3 | VCC | Logic Power supply |
| 4 | VIN1 | Logic input1 |
| 5 | VIN2 | Logic input2 |
| 6 | VREF | High level output voltage setting |
| 7 | VO2 | Motor output2 |
| 8 | GND | GND |

Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits | unit |
|------------------------|------------------|--------------------|------|
| Power supply voltage | V _{CC} | 13.5 | V |
| Power dissipation | P _d | 650* ¹ | mW |
| Operating temperature | T _{opr} | -20~+75 | °C |
| Storage temperature | T _{stg} | -55~+150 | °C |
| Maximum output current | I _{OUT} | 1000* ² | mA |

* 1 Reduce by 5.2 mW for each increase in T_a of 1°C over 25°C.

* 2 Should not exceed Pd or ASO values.

Recommended operating conditions (Ta = 25°C)

| Parameter | Symbol | Limits | unit |
|-----------------------------------|------------------|--------|------|
| Logic Power supply voltage | V _{CC} | 4.5~12 | V |
| Driver Power supply voltage | V _M | 4.5~12 | V |
| High level output voltage setting | V _{REF} | 4.5~12 | V |

Input truth table

| VIN1(4pin) | VIN2(5pin) | VO1(1pin) | VO2(7pin) | Mode |
|------------|------------|-----------|-----------|---------|
| H | L | H | L | Forward |
| L | H | L | H | Reverse |
| H | H | L | L | Brake |
| L | L | OPEN | OPEN | Standby |

*:HIGH level input is 2.0V or more

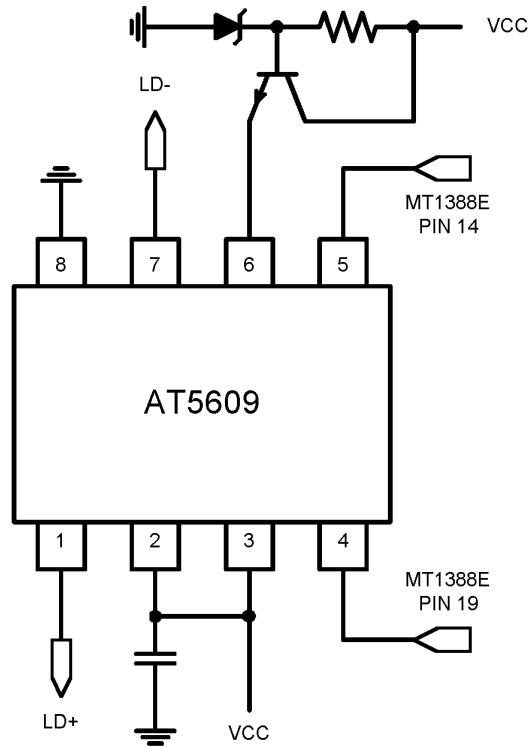
LOW level input is 0.8V or less.

Electrical characteristics (unless otherwise noted, Ta = 25°C, V_{CC} = 9V, V_M = 9V, V_{REF} = 9V)

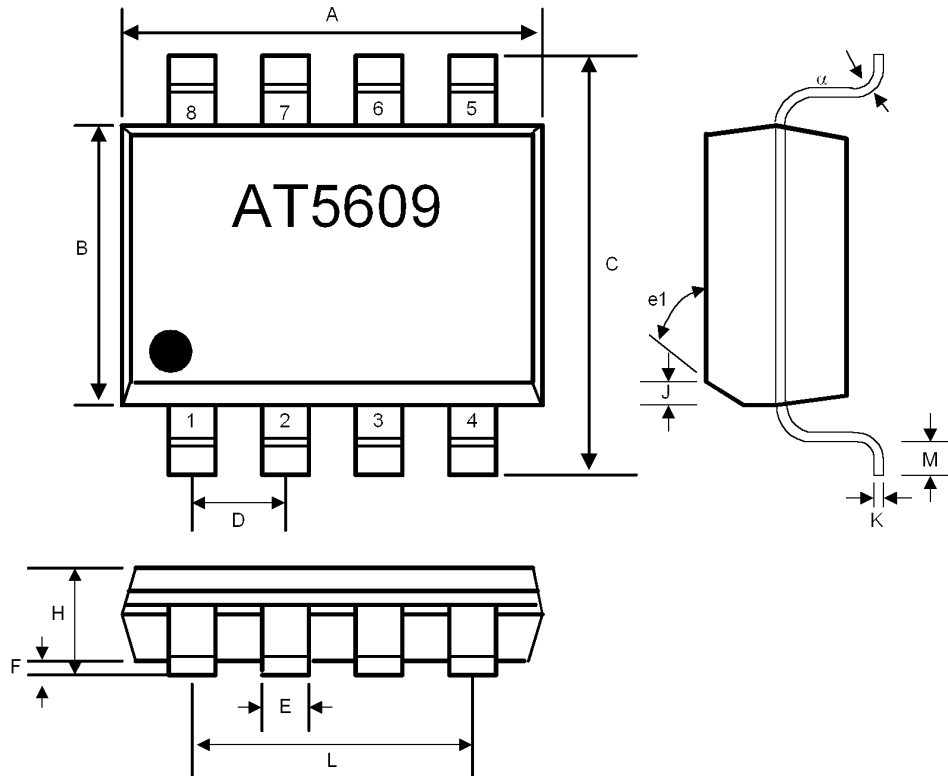
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------------------------|------------------|------|------|------|------|--|
| Standby supply current | I _{ST} | | | 15 | μA | Standby mode |
| Supply current 1 | I _{CC1} | 12 | 24 | 36 | mA | Forward or reverse mode |
| Supply current 2 | I _{CC2} | 29 | 48 | 67 | mA | Brake mode |
| V _{REF} pin sink current | I _{REF} | 6 | 12 | 18 | mA | Forward or reverse mode I _O = 200mA |
| Output saturation voltage | V _{CE} | - | 1.0 | 1.5 | V | I _O = 200mA Sum of output transistor high- and low-side voltage |
| Input high level voltage | V _{IH} | 2.0 | - | - | V | |
| Input high level voltage | V _{IL} | - | - | 0.8 | V | |
| Input high level current | I _{IH} | 45 | 90 | 135 | μA | V _{IH} = 2.0V |

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.

Application Circuit



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° | - |

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