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

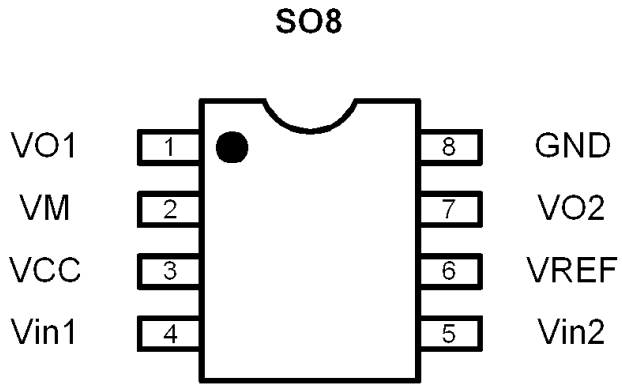
The AT5609 is a monolithic integrated circuit designed for driving bi-directional DC motor.

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

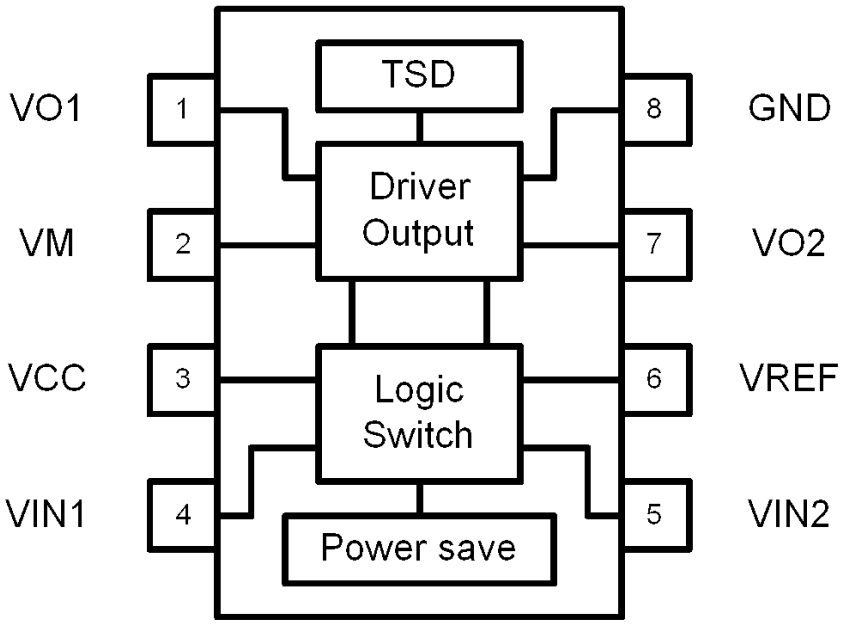


Ordering Information

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. SO8	Pin name	Function
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	Vcc	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

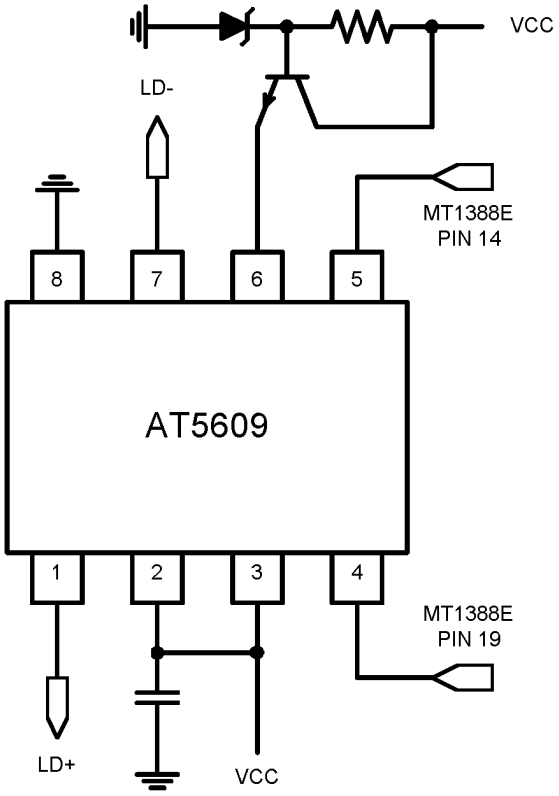
LOW level input is 0.8V or less.

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

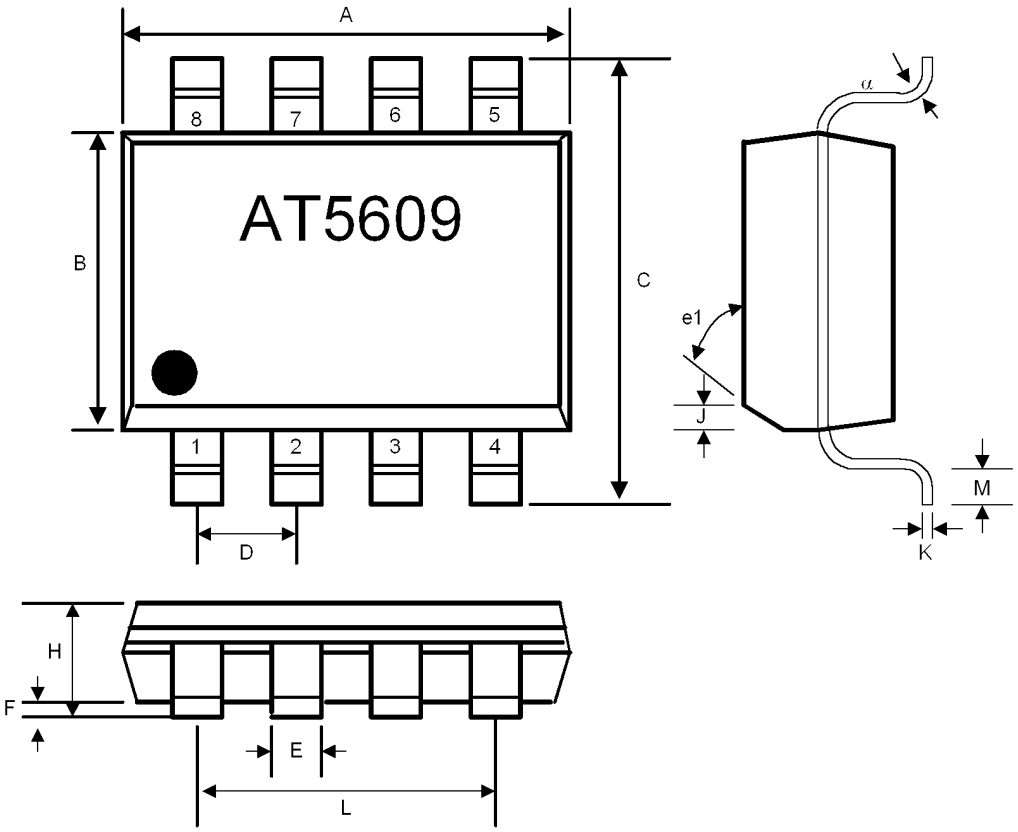
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Standby supply current	I_{ST}			15	μA	Standby mode
Supply current 1	I_{CC1}	12	24	36	mA	Forward or reverse mode
Supply current 2	I_{CC2}	29	48	67	mA	Brake mode
V_{REF} pin sink current	I_{REF}	6	12	18	mA	Forward or reverse mode I_O = 200mA
Output saturation 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	45^0		45^0		-
α	0^0	8^0	0^0	8^0	-