

**Features**

- Optimal for 2 phase excitation drive for 2-phase stepping motors
- “Soft off” function that reduces power supply line noise when switching from drive to standby modes. (Requires the use of one external capacitor.)
- No limitations on the magnitude relationship between the power supply voltage ( $V_{CC}$ ) and the input voltage ( $V_{IN}$ )
- Low saturation voltage.  $V_{O(sat)} = 0.55\text{ V}$  typical at  $I_O = 300\text{ mA}$
- Standby current: zero
- Thermal shutdown circuit
- Through-current prevention circuit
- SOP14 Package

**Applications**

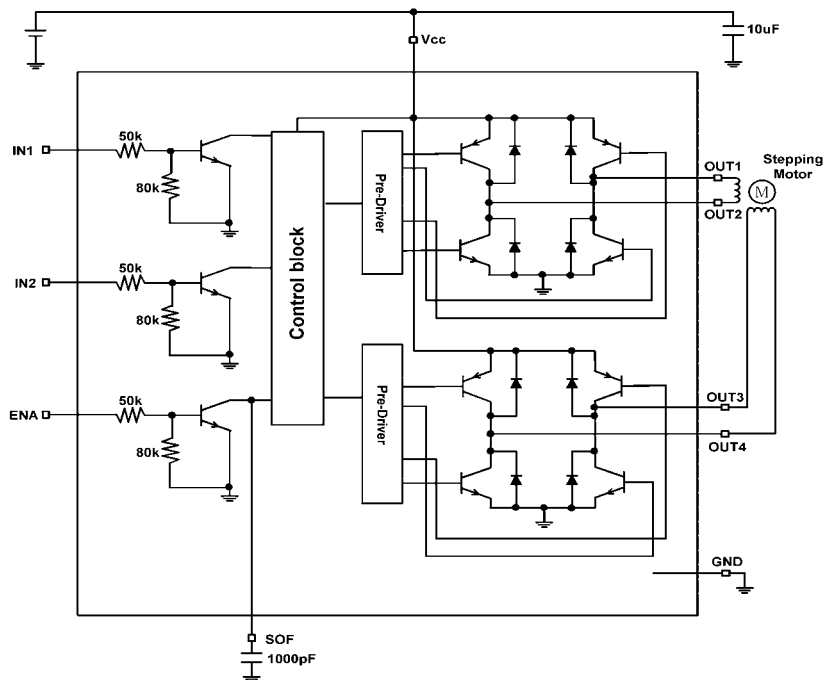
- Camera
- Printer
- Other portable equipment

**General Description**

The AT5548 is 2-channel low-voltage/low saturation voltage type bidirectional motor driver IC that are optimal for use as 2-phase stepping motor drivers in cameras, printers, and other portable equipment. The output circuits are of the bipolar type, with PNP transistors in the upper side and NPN transistors in the lower side, and they achieve low saturation output and low power characteristics despite being provided in a miniature package.

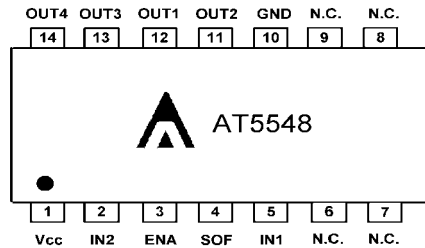
The IC product can directly control a motor from signals from a microcontroller. The AT5548 is optimal for 2-phase excitation drive for 2-phase stepping motors using 3-input logic (ENA, IN1, IN2).

**Block Diagram**



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

### Pin Configuration



### Ordering Information

Part number	Package	Marking
AT5548S	SOP14	AT5548S
AT5548S GRE	SOP14,Green	AT5548S, date code with one bottom line

### Absolute Maximum Rating

$T_a = +25^\circ\text{C}$

Parameter	Symbol	Condition	Ratings	Units
Maximum Supply Voltage	VCC		-0.3 to +8.0	V
Output Voltage	VOUT		VCC + VSF	V
Input Voltage	VIN		-0.3 to +8.0	V
Ground pin Outflow Current	IGND	Per Channel	800	mA
Power Dissipation	PD1	Independent IC	500	mW
	PD2	Mounted PCB*Note	870	mW
Operating Temperature	$T_a$		-20 to +75	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-40 to +150	$^\circ\text{C}$

Note: On the 114.3x76.2x1.5-mm glass-epoxy printed circuit board

### Recommand Operating Rating

$T_a = +25^\circ\text{C}$

Parameter	Symbol	Condition	Ratings	Units
Supply Voltage	VCC		2.5 to 7.5	V
Input High-Level Voltage	V <sub>IH</sub>		2.0 to 7.5	V
Input Low-Level Voltage	V <sub>IL</sub>		-0.3 to 0.7	V

### Electrical Characteristics

(VCC=5V, Ta=+25°C)

Parameter	Symbol	Condition	Rating			Unit
			Min.	Typ.	Max.	
Current Drain	ICC0	ENA=0V, VIN=3V or 0V	-	0.1	10	μA
	ICC1	ENA=3V, VIN=3V or 0V	-	25	35	mA
Output Saturation Voltage	VOUT1	ENA=3V, VIN=3V or 0V VCC=3 to 7.5V, IOUT=200mA	-	0.3	0.4	V
	VOUT2	ENA=3V, VIN=3V or 0V VCC=4 to 7.5V, IOUT=300mA	-	0.55	0.8	V
Input Current 1	IIN1	VIN=5V	-	75	100	μA
Input Current 2	IINA	ENA=5V	-	85	110	μA
<b>Spark Killer Diode</b>						
Reverse Current	IS	VIN=5V	-	-	30	μA
Forward Voltage	VSF	IOUT=300mA	-	-	1.7	V

### Truth Tables

ENA	IN1	IN2	OUT1	OUT2	OUT3	OUT4	Notes
L	x	x	OFF	OFF	OFF	OFF	Standby
H	L	L	H	L	H	L	2-phase excitation
	L	H	H	L	L	H	
	H	H	L	H	L	H	
	H	L	L	H	H	L	

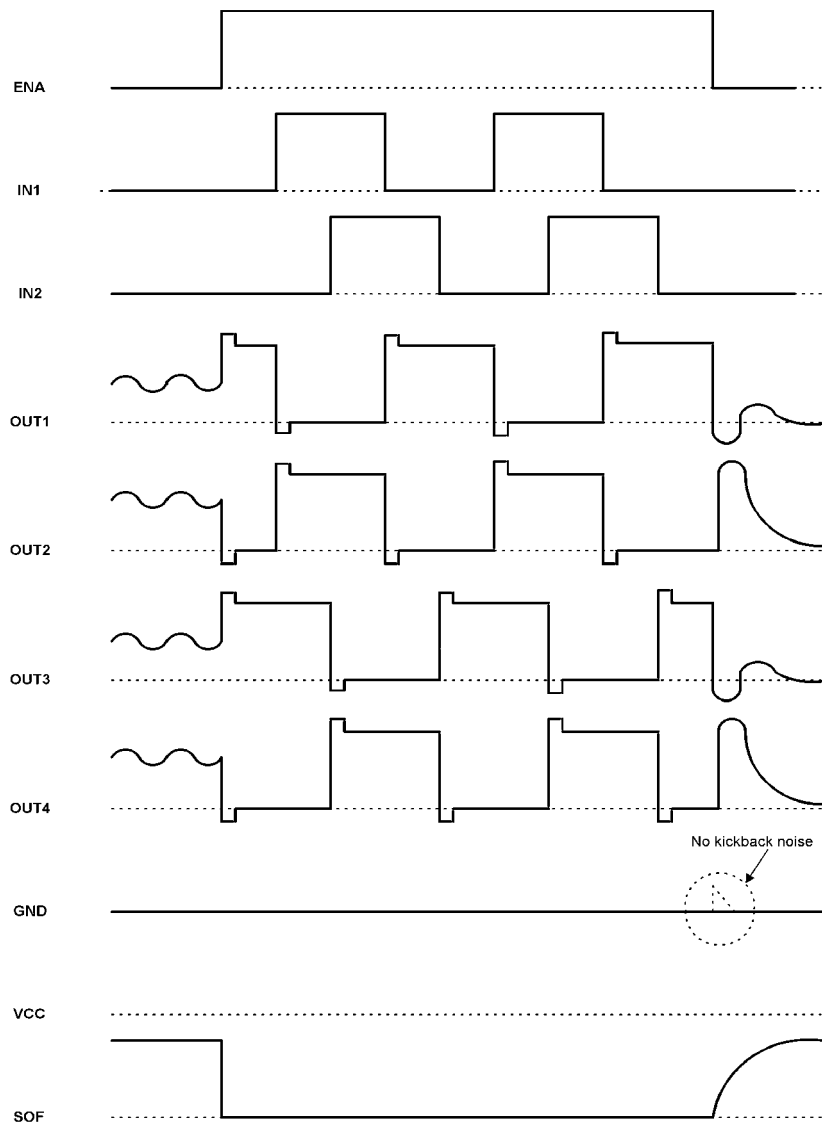
x indicates "don't care"

### Pin Description

Pin No.	Symbol	I/O	Description
1	VCC	P	Power Supply
2	IN2	I	Control for CH2
3	ENA	I	Enable input
4	SOF	I	Soft-Off input terminal
5	IN1	I	Control for CH1
6,7,8,9			NC
10	GND	P	Ground
11,12	OUT1,OUT2	O	CH1 Output
13,14	OUT3,OUT4	O	CH2 Output

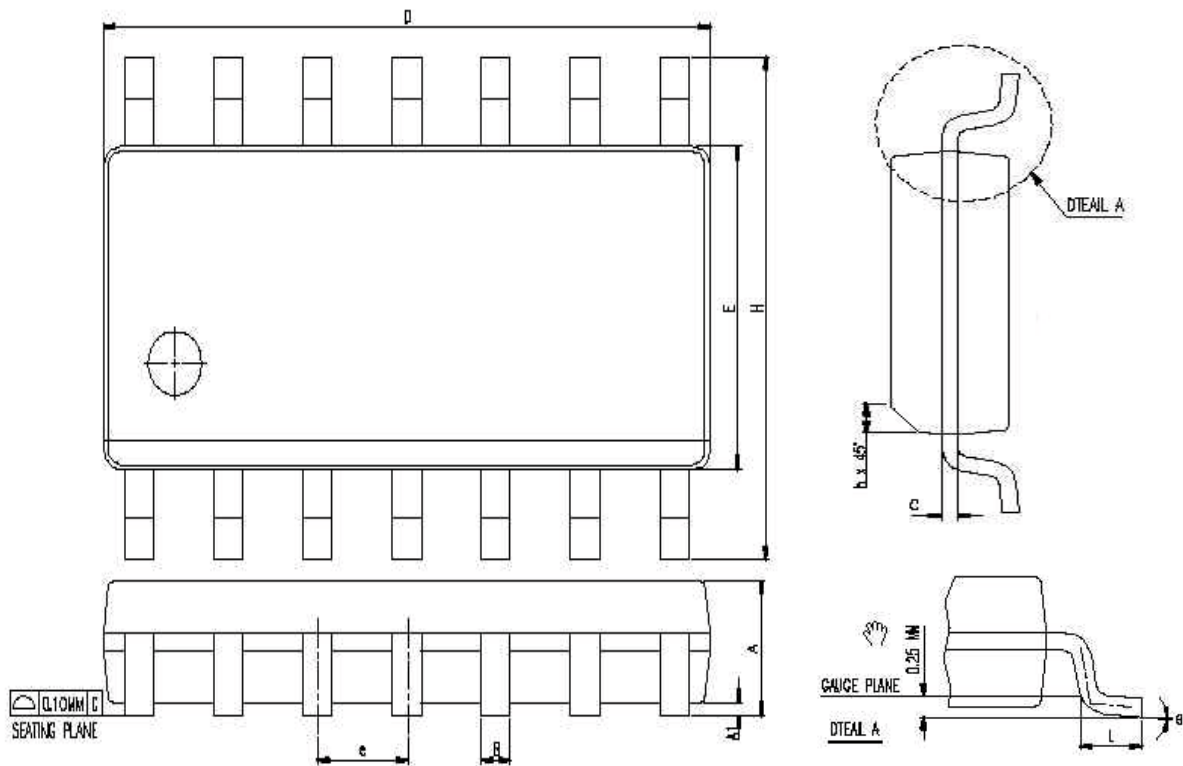
**SOF Pin (“Soft Off” Function) Operation**

The soft off function reduces power supply line noise due to the kickback current generated when the stepping motor drive mode is switched from drive to standby. The “Soft Off” function provided by this IC operates when a capacitor (0.001 to 0.01 $\mu$ F) is connected between SOF pin and Ground. Leave the SOF pin open to disable the soft off function.



**Timing Chart Stepping Motor 2-Phase Excitation**

**Package Outline:SOP14**



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.0532	0.0688	1.35	1.75	-
A1	0.0040	0.0098	0.10	0.25	-
B	0.013	0.020	0.33	0.51	-
C	0.0075	0.0098	0.19	0.25	-
D	0.3367	0.3444	8.55	8.75	-
H	0.2284	0.2440	5.80	6.20	-
E	0.1497	0.1574	3.80	4.00	-
L	0.016	0.050	0.40	1.27	-
h	0.0099	0.0196	0.25	0.50	-
e	0.050 BSC		1.27 BSC		-
θ	0°	8°	0°	8°	-