

Stepping motor driver

BA6845FS

The BA6845FS is a stepping motor driver with a maximum output current of 1.0A. The logic input allows three output modes : forward, reverse, and power save. The IC has a low output saturation voltage and is capable of driving motors at low supply voltage.

●Applications

Stepping motors for floppy disk drives

●Features

- 1) Low output saturation voltage.
- 2) Power save circuit.
- 3) Thermal shutdown circuit.

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Applied voltage	Vcc	12	V
Power dissipation	Pd	800*1	mW
Operating temperature	Topr	-25~75	°C
Storage temperature	Tstg	-55~150	°C
Allowable output current	IOMax.	1000*2	mA

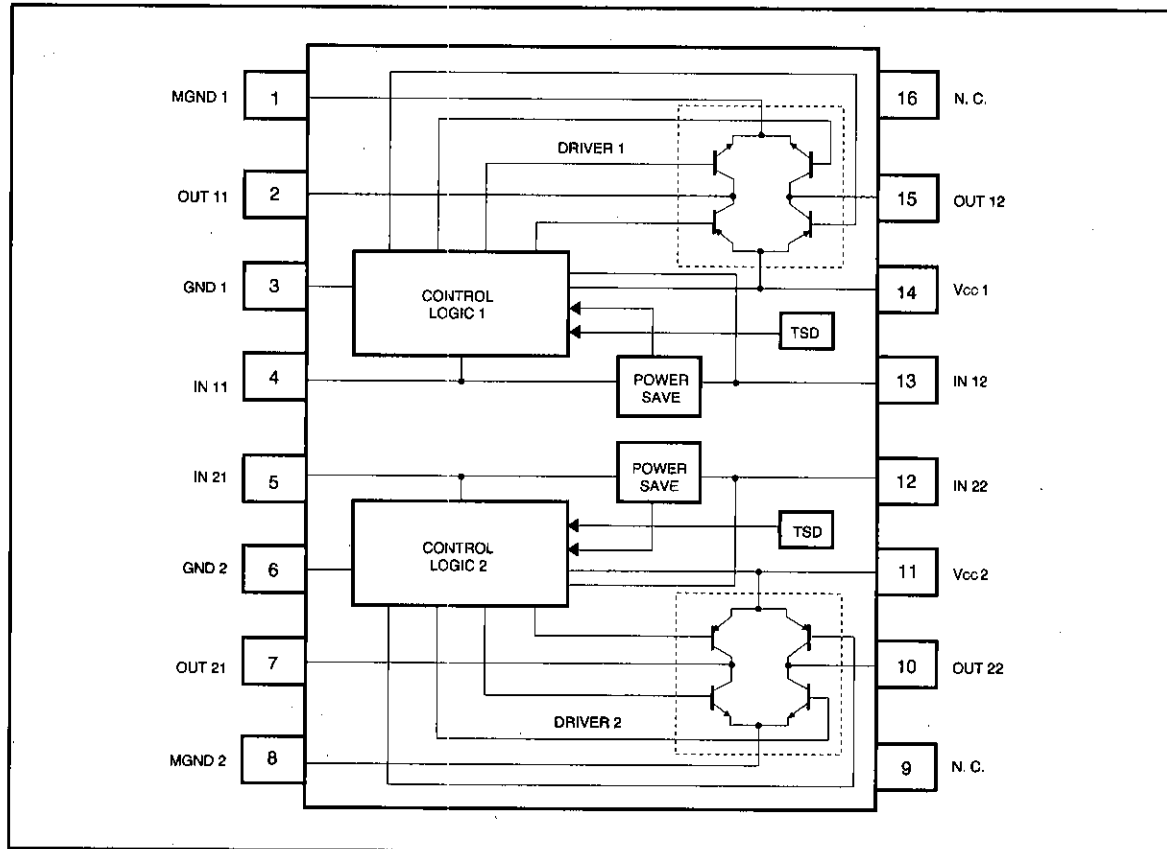
*1 Mounted on a glass epoxy PCB (90 X 50 X 1.6 mm).
Reduce power by 6.4 mW for each degree above 25°C

*2 Should not exceed Pd- or ASO-value.

●Recommended operating conditions (Ta=25°C)

Parameter	Symbol	Range	Unit
Power supply voltage	Vcc	2.7~9.0	V

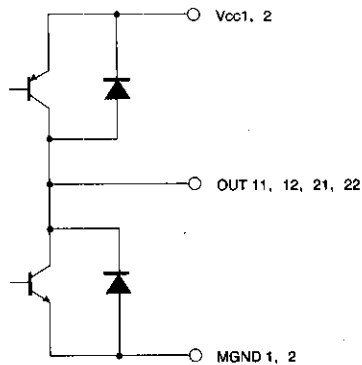
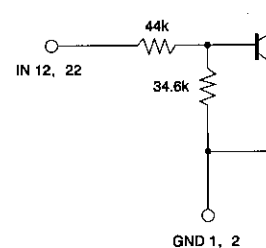
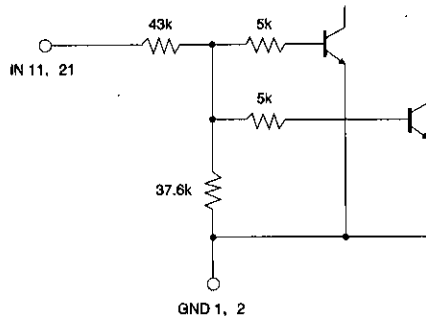
●Block diagram



●Pin descriptions

Pin No.	Pin name	Function
1	MGND 1	Motor ground pin
2	OUT 11	Motor output pin
3	GND 1	Ground pin
4	IN 11	Logic input pin
5	IN 21	Logic input pin
6	GND 2	Ground pin
7	OUT 21	Motor output pin
8	MGND 2	Motor ground pin
9	N. C.	N. C.
10	OUT 22	Motor output pin
11	V _{CC} 2	Power supply pin
12	IN 22	Logic input pin
13	IN 12	Logic input pin
14	V _{CC} 1	Power supply pin
15	OUT 12	Motor output pin
16	N. C.	N. C.

●Input/output circuits (all resistances are typical values)



●Electrical characteristics (Unless otherwise noted, Ta=25°C, Vcc=5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current 1	I _{cc1}	—	55	80	mA	IN12=IN22=5V
Circuit current 2	I _{cc2}	—	—	10	μA	IN12=IN22=0V
Output saturation voltage	V _{sat}	—	0.5	0.7	V	I _{OUT} =400mA, sum of the high-and low-side voltage
Input threshold voltage	V _{IN}	1.0	1.5	2.1	V	
Input current	I _{IN}	—	100	150	μA	IN11, 12, 21, 22=5V

◎ Not designed for radiation resistance.

●Truth table

IN11 / 21	IN12 / 22	OUT11 / 21	OUT12 / 22	Mode
L	H	H	L	Forward
H	H	L	H	Reverse
L	L	OPEN	OPEN	Stop
H	L	OPEN	OPEN	Stop

●Application example

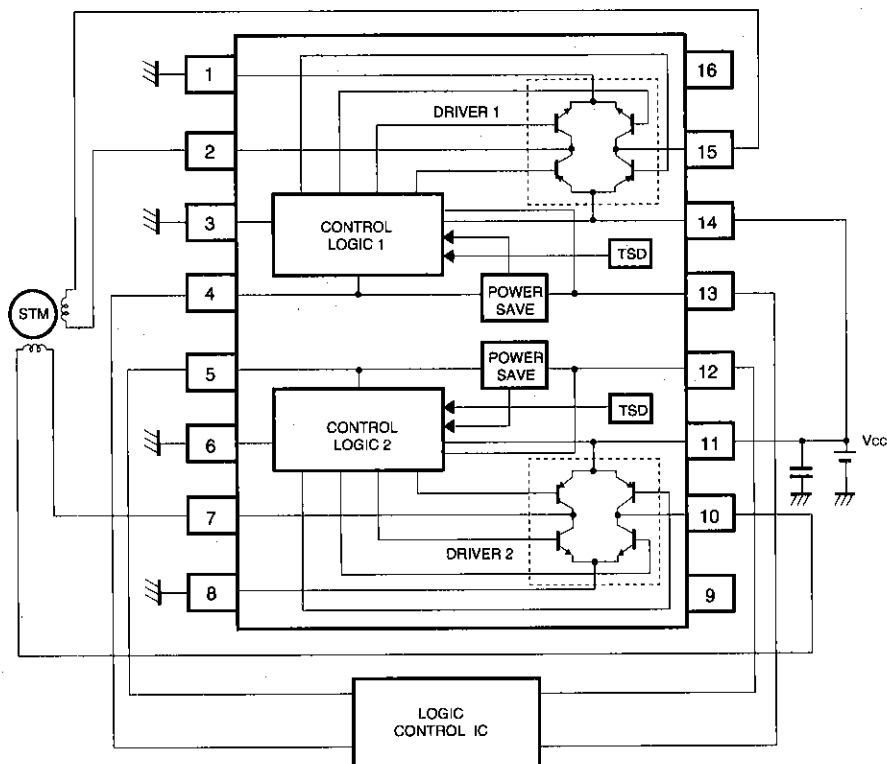


Fig.1

●Operation notes

(1) Control logic pins

Do not apply voltage to control logic pins (pins 4, 5, 12, and 13) when the V_{CC} voltage is not applied to the IC. The voltage of each pin should be less than V_{CC} , if applied, and should be more than the ground voltage.

(2) PCB arrangement

When changing the rotational direction of a motor, a large current of up to a few hundred milliamperes can flow between the motor power supply (pins 11 and 14) and MGND (pins 1 and 8). Depending on the application, this large output current may flow back to input pins, resulting in output oscillation or other malfunctions. Make sure that your design does not allow a common impedance between the large current output lines and the input section. Suppress the power supply impedance to low levels, otherwise output oscillation may occur.

(3) Package power dissipation

The power dissipated by the IC varies widely with the supply voltage and the output current. Give full consideration to the package power dissipation rating when setting the supply voltage and the output current.

(4) Ground pins

Pins 1, 3, 6, and 8 should have the lowest potential (ground potential) in the IC.

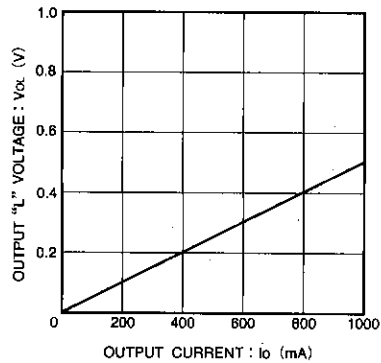
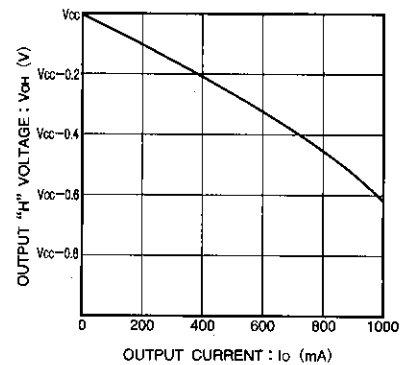
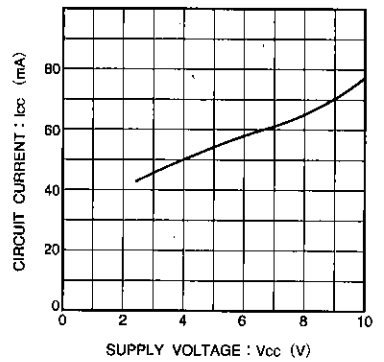
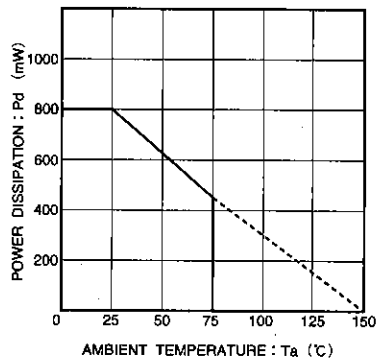
(5) Thermal shutdown circuit

This circuit shuts down all the driver outputs when the chip junction temperature is increased to about 175°C (typical). The thermal shutdown circuit is deactivated when the temperature drops to about 20°C (typical).

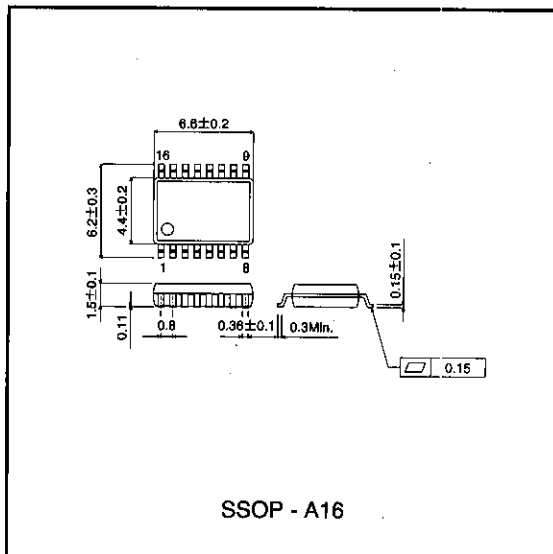
(6) Input pins (pins 4, 5, 12, and 13)

These pins have characteristics negatively correlated to temperature. Give full consideration to the temperature effect when using the IC.

●Electrical characteristic curves



●External dimensions (Units: mm)



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