# AN8208S

FDD Stepping Motor Drive IC

■ Overview

The AN8208S is a driver IC for excitation of 1/2 phase coil in FDD stepping motor.

■ Features

- Operating supply voltage range : $V_{CC} = 4.4V$ to $6V$
- Stepping motor 1/2 phase coil excitation
- Stand-by mode function incorporated
- PNP,NPN complementary full-bridge output, realizing low power dissipation
- Miniaturized surface mounting package

Unit : mm

18-pin SOP Package (SOP018-P-0300)
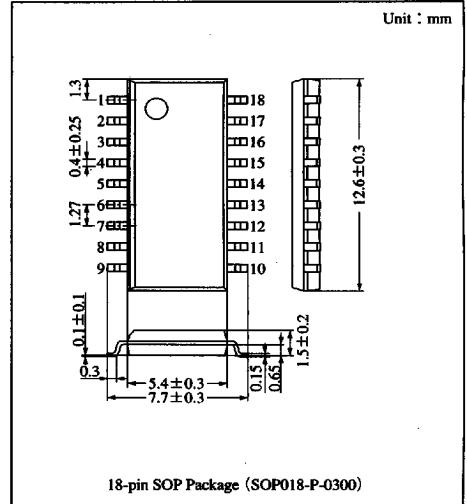
■ Block Diagram
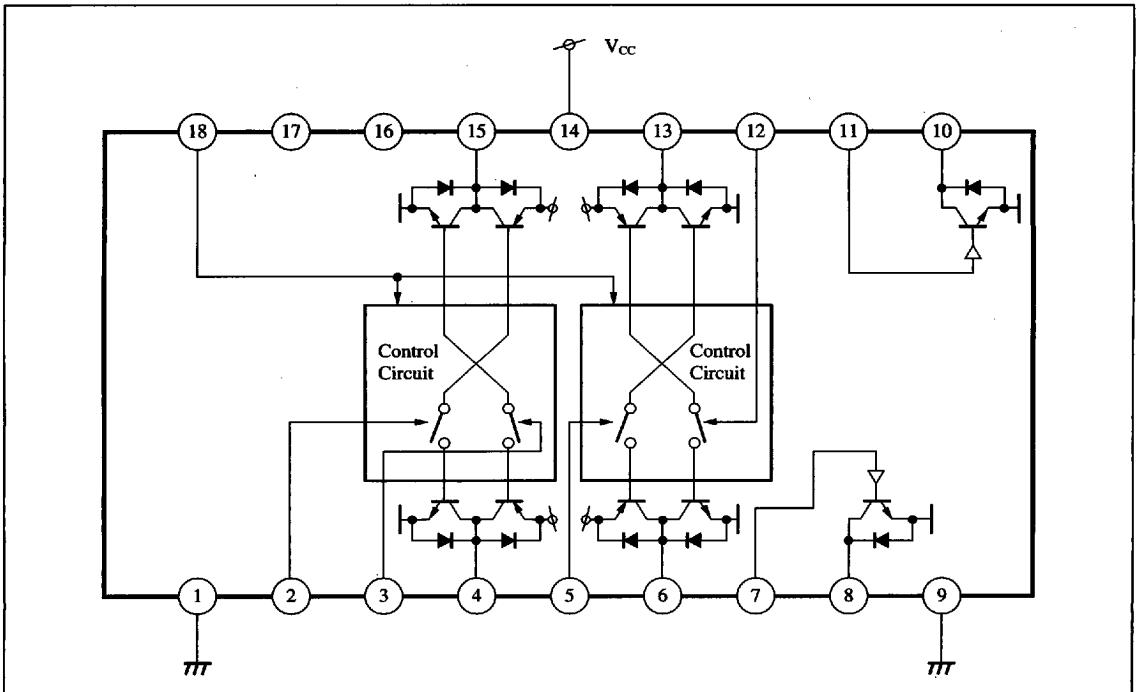
■ Pin Descriptions

Pin No.	Pin name	Pin No.	Pin name
1	GND1	10	Fout (invertor output)
2	Ain (ϕ 1 input)	11	Fin (invertor input)
3	Bin ($\overline{\phi}$ 1 input)	12	Din ($\overline{\phi}$ 2 input)
4	Bout (to S-motor winding 1)	13	Dout (to S-motor winding 2)
5	Cin (ϕ 2 input)	14	V_{CC}
6	Cout (to S-motor winding 2)	15	Aout (to S-motor winding 1)
7	Ein (invertor input)	16	NC
8	Eout (invertor output)	17	NC
9	GND2	18	STB (H for stand-by mode)

■ Absolute Maximum Rating (Ta = 25 ℃)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	6.5	V
Supply current	I_{CC}	800	A
Power dissipation Note)	P_D	185	mW
Operating ambient temperature	T_{opr}	−20 to +75	℃
Storage temperature	T_{stg}	−55 to +125	℃

Note) Package power dissipation under free air and operating ambient temperature Ta of 75℃.

■ Recommended Operating Range (Ta=25℃)

Parameter	Symbol	Range
Operating supply voltage	V_{CC}	4.4V to 6.0V

■ Electrical Characteristics (V_{CC}=5V, Ta=25±2℃)

Parameter	Symbol	Condition	min	typ	max	Unit
Input Terminal (Ain, Bin, Cin, Din, Ein, Fin)						
(L) input level	V_{inL}		−0.3	—	0.8	V
(L) level input current	I_{inL}	V_{in}=0V	−2	—	2	μA
(H) input level	V_{inH}		2.8	—	5.3	V
(H) level input current	I_{inH}	V_{in}=5V	—	—	1	mA
Input Terminal (STB)						
(L) input level	V_{STBL}		−0.3	—	2.8	V
(L) level input current	I_{STBL}	V_{STBL}=0V	−1	—	—	mA
(H) input level	V_{STBH}		4	—	5.3	V
(H) level input current	I_{STBH}	V_{STBL}=5V	−300	—	300	μA
Output Terminals (Aout, Bout, Cout, Dout)						
(L) output voltage	V_{OL}	I_L=300mA Vin=2.8V	—	0.3	0.4	V
(H) output voltage	V_{OH}	I_L=300mA V_{in}=2.8V	4.6	4.7	—	V
Others						
EoutL output voltage	V_{OLE}	I_L=50mA	—	0.35	0.5	V
FoutL output voltage	I_{OLF}	I_L=30mA	—	0.35	0.5	V
Stand-by current	I_{OS}	Total V_{in}=0V	—	—	10	μA

■ Pin Descriptions

| Pin No.	Pin name	Function description
1	GND1	GND terminal
2	AIN	Terminal inputting the signal of phase 1. For (H) input of this signal, (H) (source drive) is outputted to AOUT and (L) (sink drive) to BOUT.
3	BIN	Terminal inputting the signal of phase 1. For (H) input of this signal, (H) (source drive) is outputted to BOUT and (L) (sink drive) to AOUT.
4	BOUT	It is connected to one end of the stepping motor winding 1.
5	CIN	Terminal inputting the signal of phase 1. For (H) input of this signal, (H) (source drive) is outputted to COUT and (L) (sink drive) to DOUT.
6	COUT	It is connected to one end of the stepping motor winding 2.
7 8	EIN EOUT	It constructs the invertor of 50 mA open collector.
9	GND2	GND terminal
10 11	FOUT FIN	It constructs the invertor of 30 mA open collector.
12	DIN	Input terminal for phase 2 negative logic. For (H) input of this signal, (H) (source drive) is outputted to DOUT and (L) (sink drive) to COUT.
13	DOUT	It is connected to one end of the stepping motor winding 2.
14	V_{CC}	V_{CC} terminal
15	AOUT	It is connected to one end of the stepping motor winding 1.
16 17	NC NC	NC terminal
18	STB	For (H) input, the IC enters the stand-by mode (non-excitation). It means AOUT, BOUT, COUT and DOUT enter in the open condition.

■ Package Power Dissipation

$$P_D - Ta$$

Glass epoxy board (45mm × 45mm × 1.2t mm)
$R_{thj-a} = 217°C/W$
$P_D = 461mW (25°C)$

without fin
$R_{thj-a} = 270°C/W$
$P_D = 370mW (25°C)$

Power Dissipation P_D (mW) vs Ambient Temperature Ta (°C)

554
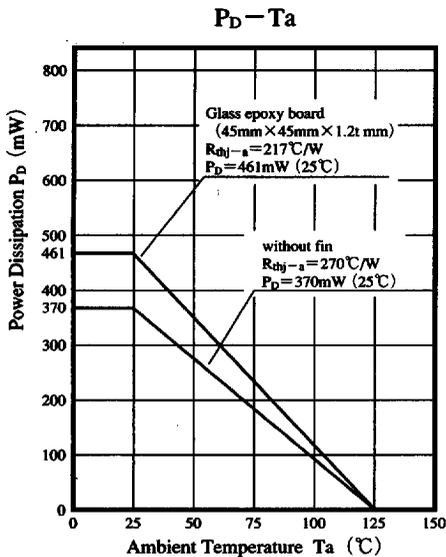
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■ Operation Logic

	AIN (Pin②)	BIN (Pin③)	CIN (Pin⑤)	DIN (Pin⑫)	STB (Pin⑱)		AOUT (Pin⑮)	BOUT (Pin④)	COUT (Pin⑥)	DOUT (Pin⑬)
OFF	0	0	0	0	*		F	F	F	F
Stand-by	*	*	*	*	1		F	F	F	F
Rest	0	0	*	*	0		F	F	U	U
Normal direction	1	0	*	*	0		H	L	U	U
Reverse direction	0	1	*	*	0		L	H	U	U
Not used	1	1	*	*	0		H	H	U	U
Rest	*	*	0	0	0		U	U	F	F
Normal direction	*	*	1	0	0		U	U	H	L
Reverse direction	*	*	0	1	0		U	U	L	H
Not used	*	*	1	1	0		U	U.	H	H

For each input of AIN, BIN, CIN, DIN, EIN
AND FIN, use the source type.

AN8208S

Mechanical control side
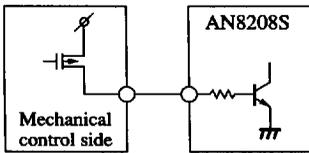
For STB input, use the open collector or open drain.

Mechanical control side

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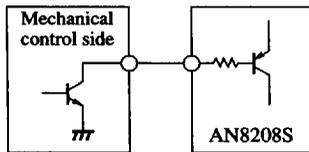
Symbol Description	1	"H" input
	0	"L" input
	*	Uncertain input (not specified)
	H	"H" level output
	L	"H" level output
	F	Release output
	U	Not specified

ICs for
Motor