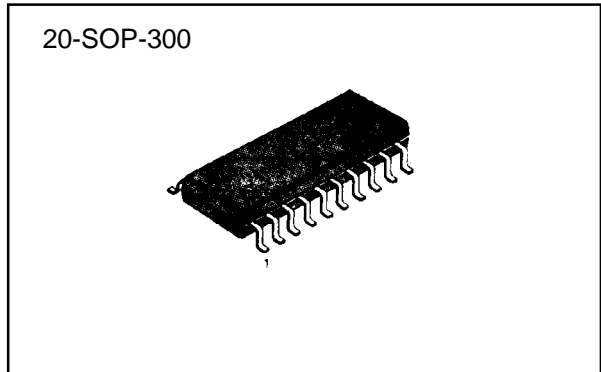


**STEPPING MOTOR DRIVER**

The KA2821D is a monolithic integrated circuit, and suitable for the two-phase stepping motor driver of 3.5" FDD system.



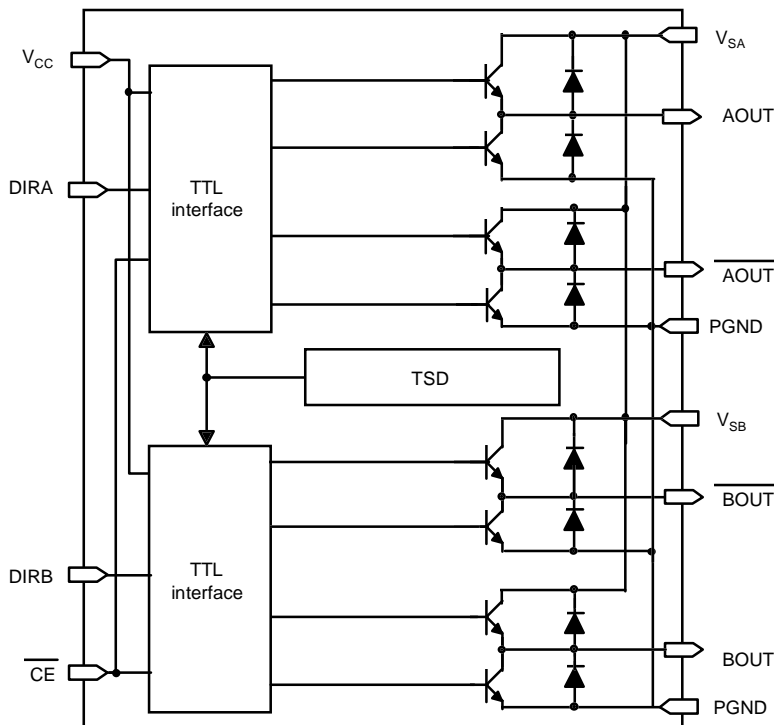
**FEATURES**

- Built-in chip enable function(active low)
- Low saturation voltage
- Low power dissipation
- Input level : TTL, LSTTL, 5V CMOS compatible
- Standard MPU direct interface
- Built-in TSD
- 2-CH H-bridge driver

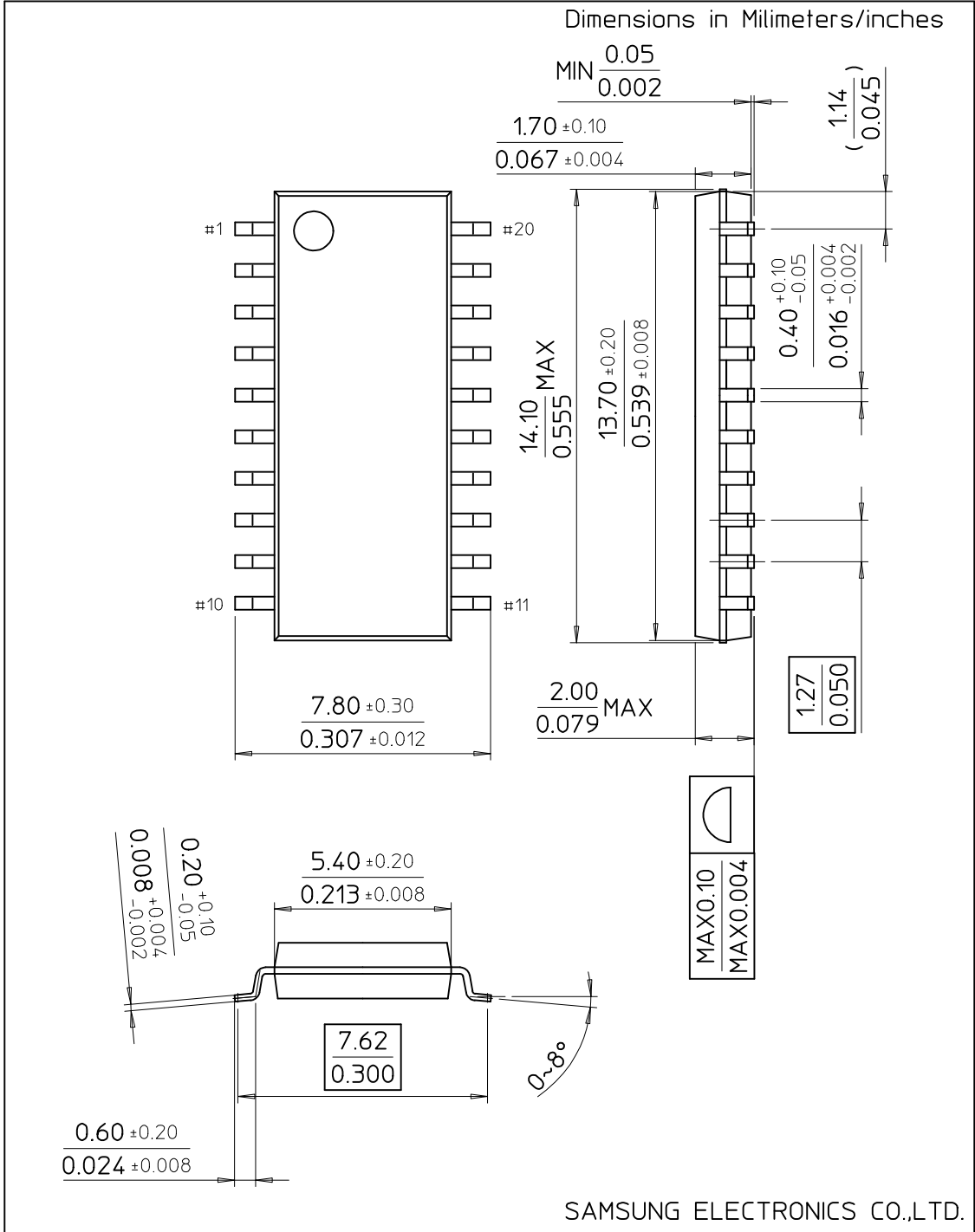
**ORDERING INFORMATION**

Device	Package	Operating Temperature
KA2821D	20-SOP-300	- 20°C ~ + 75°C

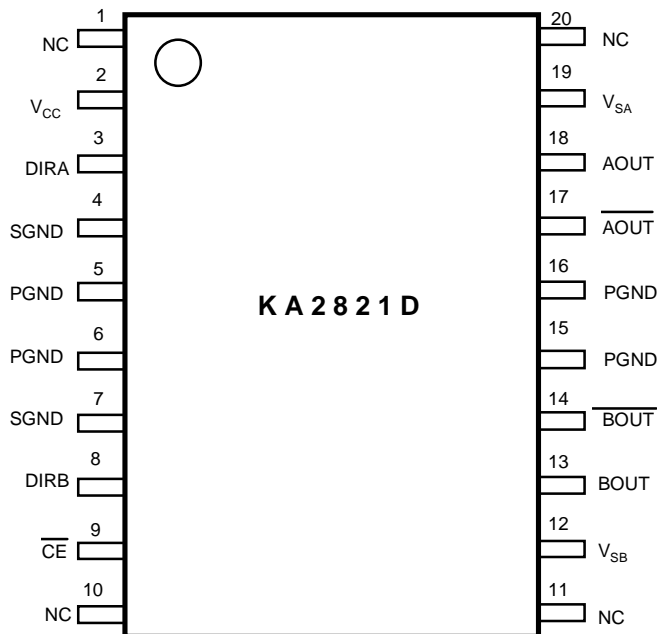
**BLOCK DIAGRAM**



# 20-SOP-300



## PIN CONFIGURATION



## PIN DESCRIPTION

Pin No.	Symbol	Function	Channel
1	NC	No connection	
2	V <sub>CC</sub>	Logic part supply voltage	A,B
3	DIRA	A-channel direction input	A
4	SGND	Signal ground	A,B
5	PGND	Power ground	A,B
6	PGND	Power ground	A,B
7	SGND	Signal ground	A,B
8	DIRB	B-channel direction input	B
9	CE	Chip Enable input	A,B
10	NC	No connection	
11	NC	No connection	
12	V <sub>SB</sub>	B-channel seeking supply voltage	B
13	BOUT	B-channel output	B
14	$\overline{\text{BOUT}}$	B-channel inverting output	B
15	P-GND	Power ground	A,B
16	P-GND	Power ground	A,B
17	$\overline{\text{AOUT}}$	A-channel inverting output	A
18	AOUT	A-channel output	A
19	V <sub>SA</sub>	A-channel seeking supply voltage	A
20	NC	No connection	

**ABSOLUTE MAXIMUM RATING** (Ta=25°C)

Characteristics	Symbol	Value	Unit
Logic part supply voltage	V <sub>CC</sub>	7.0	V
Seeking supply voltage	V <sub>SA,B</sub>	15.0	V
Input voltage	V <sub>IN</sub>	0~V <sub>CC</sub>	V
Seeking output current (continuous)	I <sub>OS</sub>	330	mA
Seeking output current (peak)	I <sub>OSPEAK</sub>	500	mA
Package power dissipation	P <sub>D</sub>	1.0	W
Operating temperature range	T <sub>OPR</sub>	-20 to 75	°C
Storage temperature range	T <sub>STG</sub>	-40 to 125	°C

**RECOMMEND OPERATING CONDITIONS**

Characteristics	Symbol	Min	Typ	Max	Unit
Logic part supply voltage	V <sub>CC</sub>	4.5	5.0	5.5	V
Seeking supply voltage	V <sub>SA,B</sub>	4.5	-	13.8	V

**ELECTRICAL CHARACTERISTICS**(Ta = 25°C, V<sub>CC</sub> = 5V, V<sub>SA</sub> = 12V, V<sub>SB</sub> = 12V, unless otherwise specified)

Characteristics	Symbol	Conditions	Min	Typ	Max	Unit
Digital input "L" voltage	V <sub>IL</sub>		-	-	0.8	V
Digital high level input voltage	V <sub>IH</sub>		2.0	-	-	V
Digital low input current	I <sub>IL</sub>	V <sub>IN</sub> =0.8V	-	0	10	uA
Digital high input current	I <sub>IH1</sub>	V <sub>IN</sub> =2.0V	-	1	10	uA
	I <sub>IH2</sub>	V <sub>IN</sub> =5V	-	0.3	1.0	mA
	I <sub>VCC1</sub>	CE=0.8V	-	25	3	mA
Supply current	I <sub>VSL</sub>	CE=0.8V	-	6	10	mA
	I <sub>VCC2</sub>	CE=0.8V	-	25	33	mA
	I <sub>VSH</sub>	CE=2.0V	-	1	2	mA
Output sustain voltage	V <sub>SUS</sub>	I <sub>O</sub> =10mA CE=0.8V	18	-	-	V
V <sub>SA,B</sub> output saturation voltage	V <sub>SAT1</sub>	I <sub>O</sub> =330mA CE=2.0V	-	1.5	2.0	V
Output clamp voltage	V <sub>FU</sub>	I <sub>O</sub> =130mA (Upper)	-	3.0	5.0	V
	V <sub>FL</sub>	I <sub>O</sub> =330mA (Lower)	-	1.5	2.0	V
Output delay time	T <sub>PLH</sub>	Input Pulse (2KHz)	-	1.0	5.0	us
	T <sub>PHL</sub>	Input Pulse (2KHz)	-	1.0	5.0	us
TSD operating temperature	TSD		125	150		°C
TSD hysteresis	△TSD		-	25		°C

**FUNCTION DESCRIPTION**

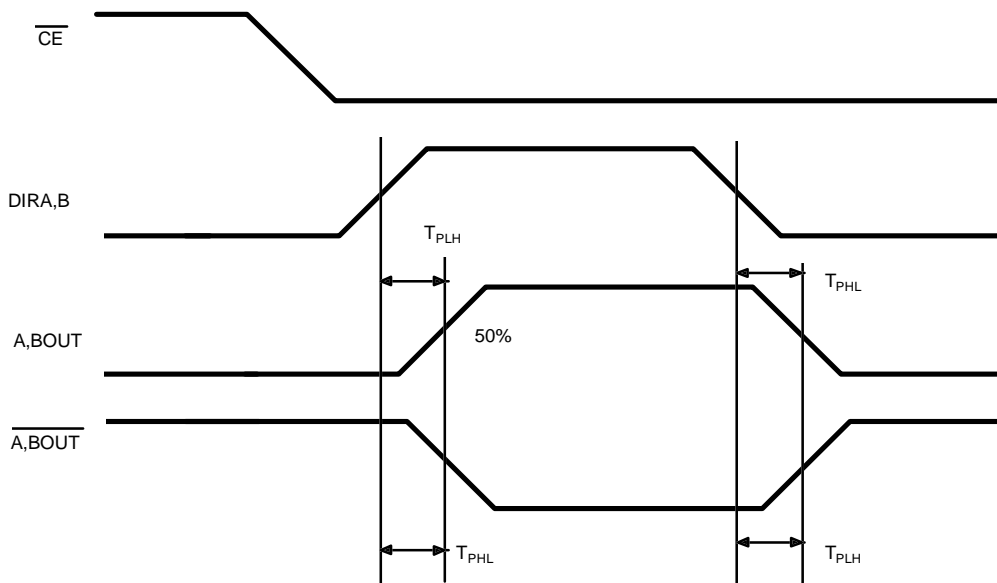
**1. MOTOR CONTROL LOGIC**

Mode Selection-Truth Table

Input		Output		Operating Mode
CE	DIRY	YOUT	$\overline{YOUT}$	
L	L	L	H	Seeking Mode
L	H	H	L	
H	L	X	X	Open Mode
H	H	X	X	

- DIRY : DIRA or DIRB (Direction Input)
- YOUT : AOUT or BOUT (Non-Inverting Output)
- $\overline{YOUT}$  :  $\overline{AOUT}$  or  $\overline{BOUT}$  (Inverting Output)
- Y : Indicate each channel (A and B)
- X : High Impedance

Timing Chart



**2. MAXIMUM DRIVE CURRENT CAPACITY as follows**

- Peak Seeking output current : 0.5A
- Continuous Seeking output current : 0.33A
- Holding output current : 0.2A

APPLICATION CIRCUIT

