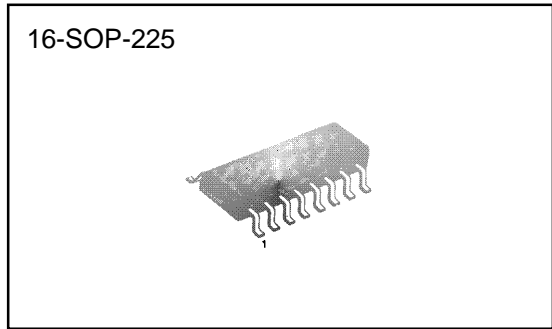


**STEPPING MOTOR DRIVER**

The KA3100D is a monolithic integrated circuit, and suitable for the two-phase stepping motor driver of FDD system.



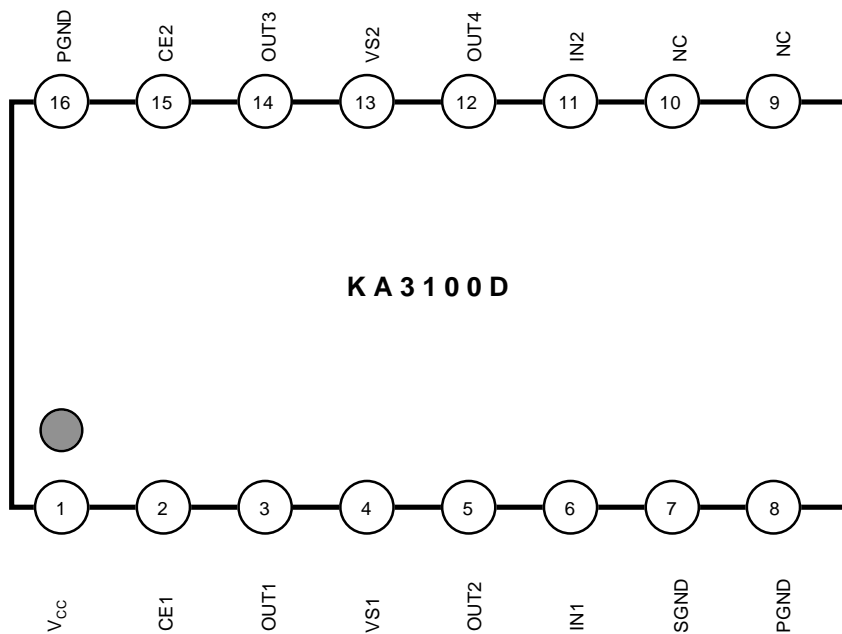
**ORDERING INFORMATION**

Device	Package	Operating Temperature
KA3100D	16-SOP-225	-20°C ~ +75°C

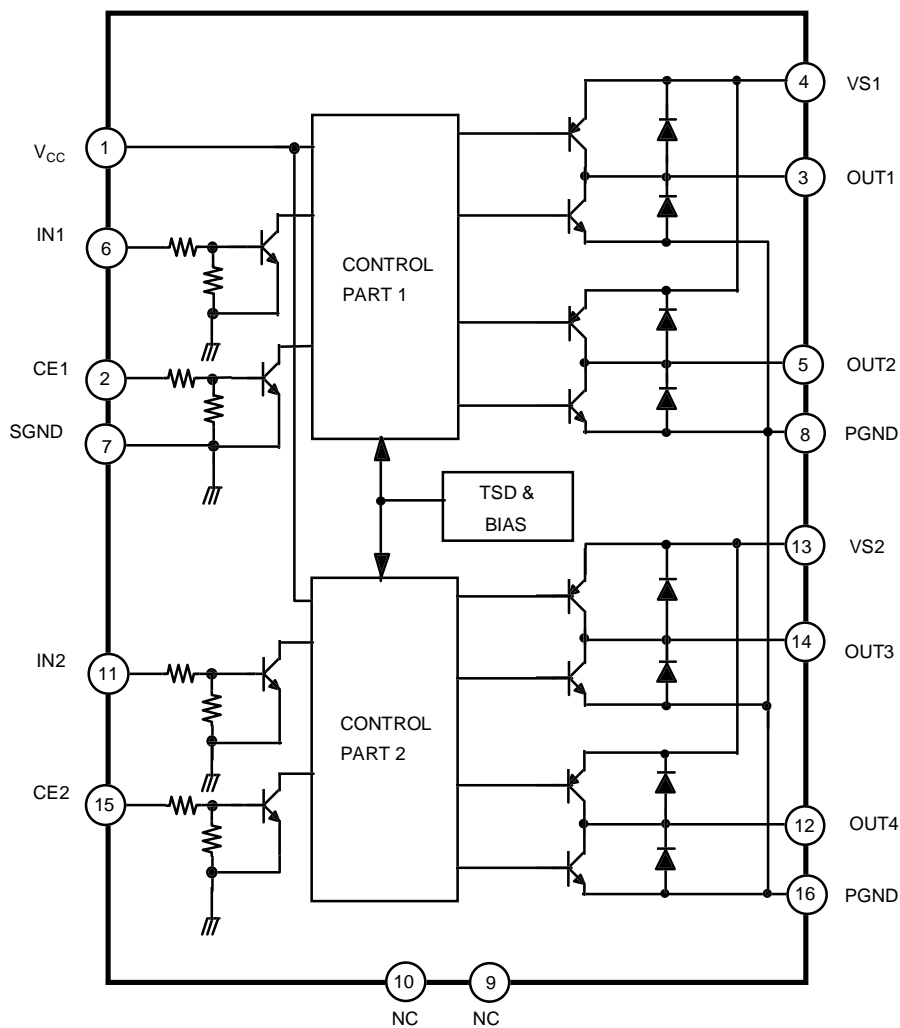
**FEATURES**

- Built-in vertical PNP power transistors
- Wide supply voltage ( $V_{CC}=2.5V\sim7.0V$ )
- Low saturation voltage (0.4@ 0.4A)
- Built-in chip enable function
- Built-in shoot-through current protector
- Built-in thermal shutdown function

**PIN CONFIGURATION**



BLOCK DIAGRAM



## PIN DESCRIPTION

Pin No.	Symbol	I/O	Function
1	V <sub>CC</sub>	-	Logic part supply voltage
2	CE1	I	Chip enable 1
3	OUT1	O	Output 1
4	VS1	-	Power supply 1
5	OUT2	O	Output 2
6	IN1	I	Input 1
7	SGND	-	Signal ground
8	PGND	-	Power ground
9	NC	-	No connection
10	NC	-	No connection
11	IN2	I	Input 2
12	OUT4	O	Output 4
13	VS2	-	Power supply 2
14	OUT3	O	Output 3
15	CE2	I	Chip enable 2
16	PGND	-	Power ground

ABSOLUTE MAXIMUM RATING (T<sub>a</sub>=25°C)

Characteristics	Symbol	Value	Unit
Supply voltage	V <sub>CC(MAX)</sub>	-0.3~9.0	V
Power supply voltage	V <sub>S(MAX)</sub>	-0.3~9.0	V
Output voltage	V <sub>OUT(MAX)</sub>	V <sub>s</sub> +V <sub>ef</sub>	V
Input voltage	V <sub>IN(MAX)</sub>	-0.3~7.0	V
Peak output current	I <sub>O(PEAK)</sub>	1	A
Continuous output current	I <sub>O</sub>	0.4	A
Power dissipation	P <sub>D</sub>	0.55	W
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>STG</sub>	-40~125	°C
Operating temperature	T <sub>A</sub>	-20~75	°C

## RECOMMAND OPERATING CONDITIONS

Characteristics	Symbol	Value			Unit
		Min	Typ	Max	
Logic part supply voltage	V <sub>CC</sub>	2.5	~	7.0	V
Power supply voltage	V <sub>S</sub>	2.5	~	7.0	V

**ELECTRICAL CHARACTERISTICS** ( $T_a=25^\circ\text{C}$ ,  $V_{CC}=3\text{V}$ ,  $V_{S1}=3\text{V}$ ,  $V_{S2}=3\text{V}$ , unless otherwise specified)

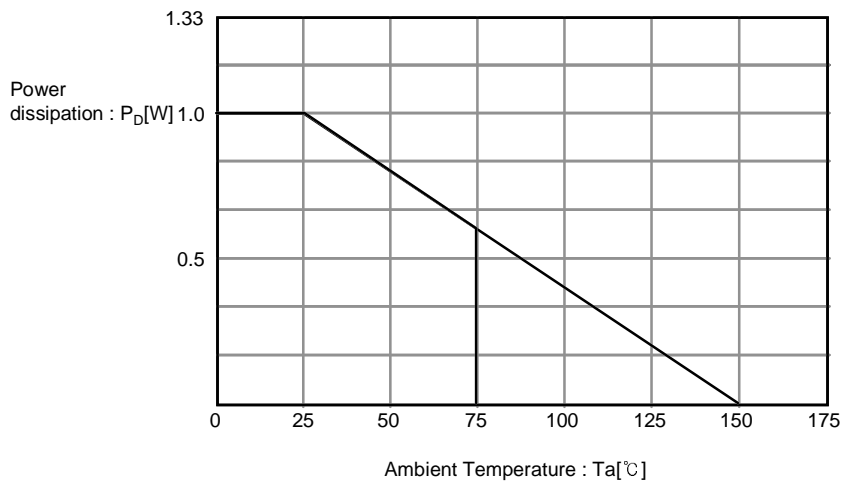
Characteristics	Symbol	Test Conditions	Spec			Unit
			Min	Typ	Max	
Supply current 1	$I_{CC1}$	CE1,2=0V, $V_{INL}=3\text{V}$ or 0V, Each CH.	-	0.1	10	mA
Supply current 2	$I_{CC2}$	CE1=3V, $V_{INL}=3\text{V}$ or 0V, Each CH.	-	12	18	mA
Saturation voltage 1	$V_{SAT1}$	CE1=3V, $V_{INL}=3\text{V}$ or 0V, $I_{OUT}=0.2\text{A}$	-	0.2	0.3	V
Saturation voltage 2	$V_{SAT2}$	CE1=3V, $V_{INL}=3\text{V}$ or 0V, $I_{OUT}=0.4\text{A}$	-	0.4	0.6	V
Input high level voltage	$V_{INH}$	-	1.8	-	$V_{CC}$	V
Input low level voltage	$V_{INL}$	-	-0.3	-	0.7	V
Input current	$I_{IN}$	$V_{IN}=3\text{V}$ , Each CH	-	100	200	mA
Chip enable current	$I_{CE}$	CE=0V, Each CH	-	100	200	mA
Clamp diode leakage current	$I_{LEAK}$	$V_{CC}=7\text{V}$ , $V_S=7\text{V}$	-	-	30	mA
Clamp diode voltage	$V_{EF}$	$I_{OUT}=0.4\text{A}$	-	-	1.7	V

**FUNCTION DESCRIPTION**

IN1 & IN2	CE1 & CE2	OUT1 & OUT3	OUT2 & OUT4	Motor Rotation
LOW	HIGH	HIGH	LOW	Forward
HIGH	HIGH	LOW	HIGH	Reverse
LOW	LOW	OFF	OFF	Stand-by
HIGH	LOW	OFF	OFF	Stand-by

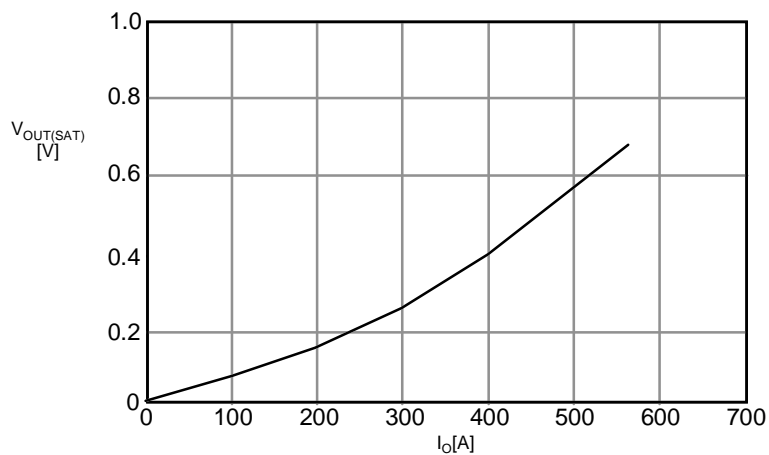
**GRAPHS**

**1) Power Dissipation Curve**

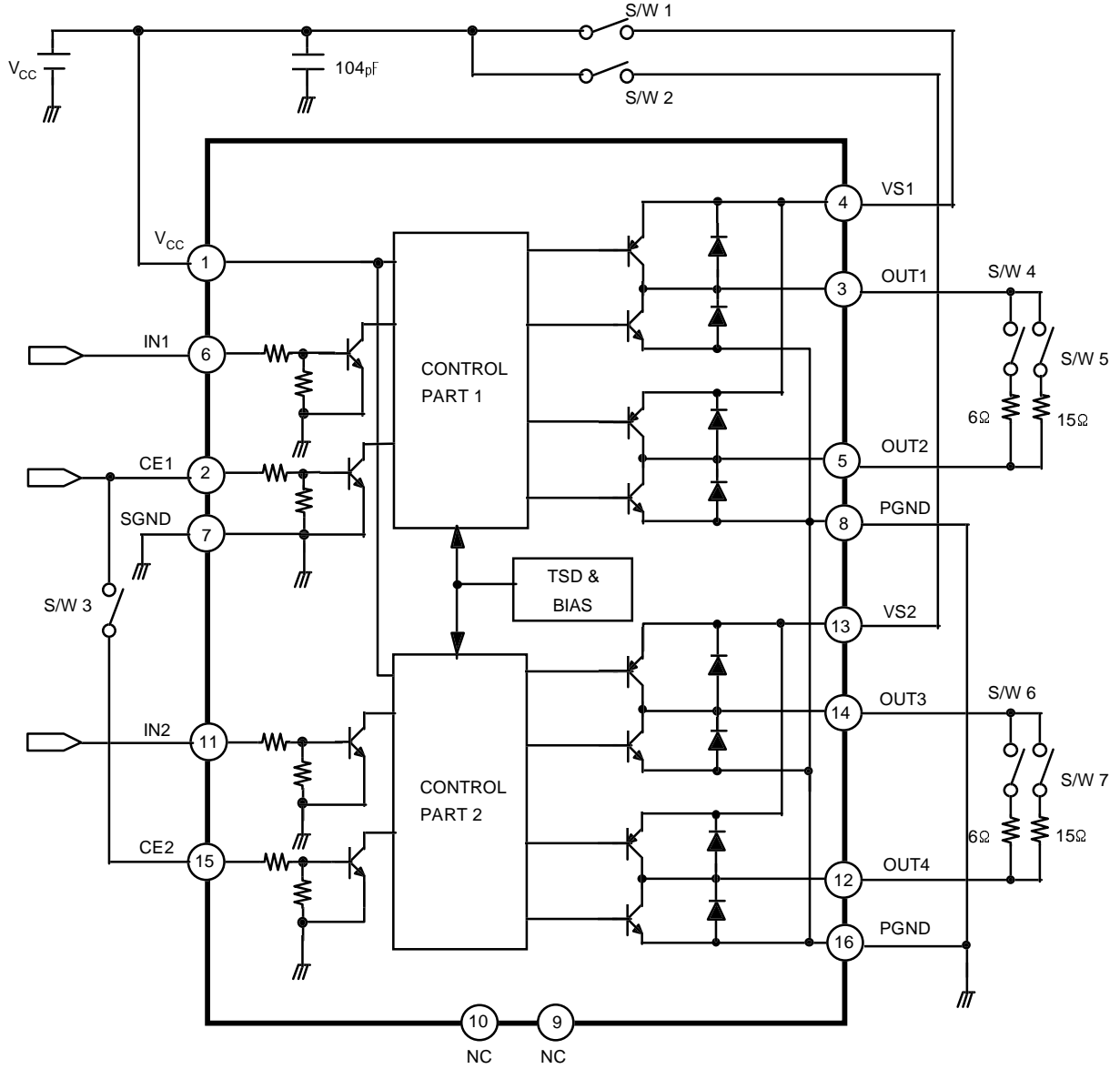


Power dissipation decreases in the rate of 13.6mW/°C when mounted on 30mm× 30mm× 1.5mm PCB(Phenolic resin material) and used above  $T_a=25^\circ\text{C}$

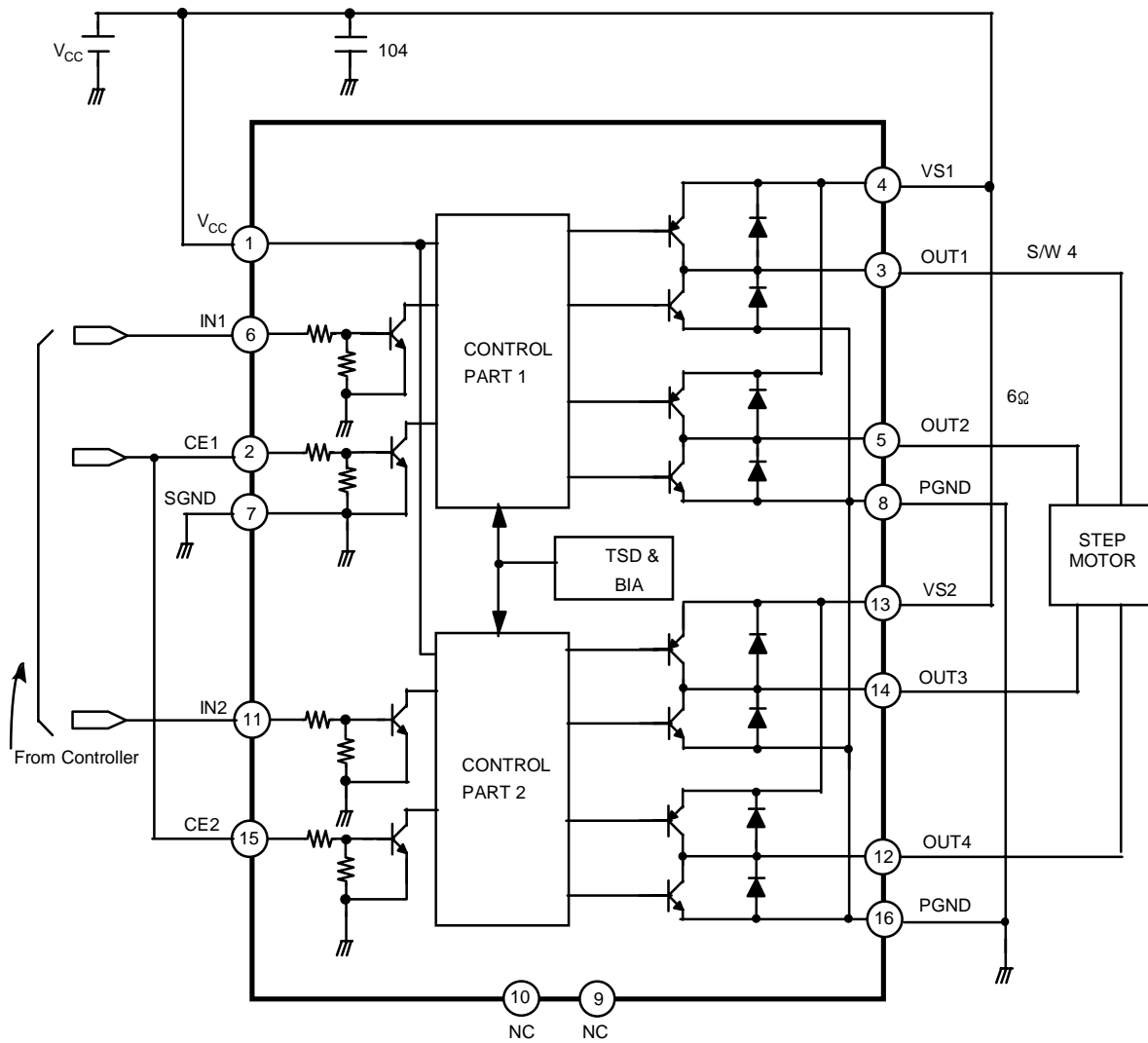
**2)  $V_{OUT(SAT)}$  vs  $I_o$  Characteristic Graph**



TEST CIRCUIT



APPLICATION CIRCUIT



PACKAGE DIMENSIONS (Unit : mm)

16-SOP-225

