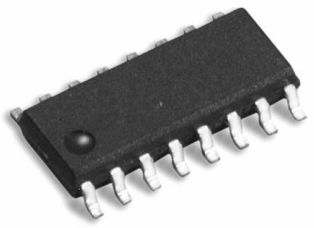
STEPPING MOTOR DRIVER

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

16-SOP-225



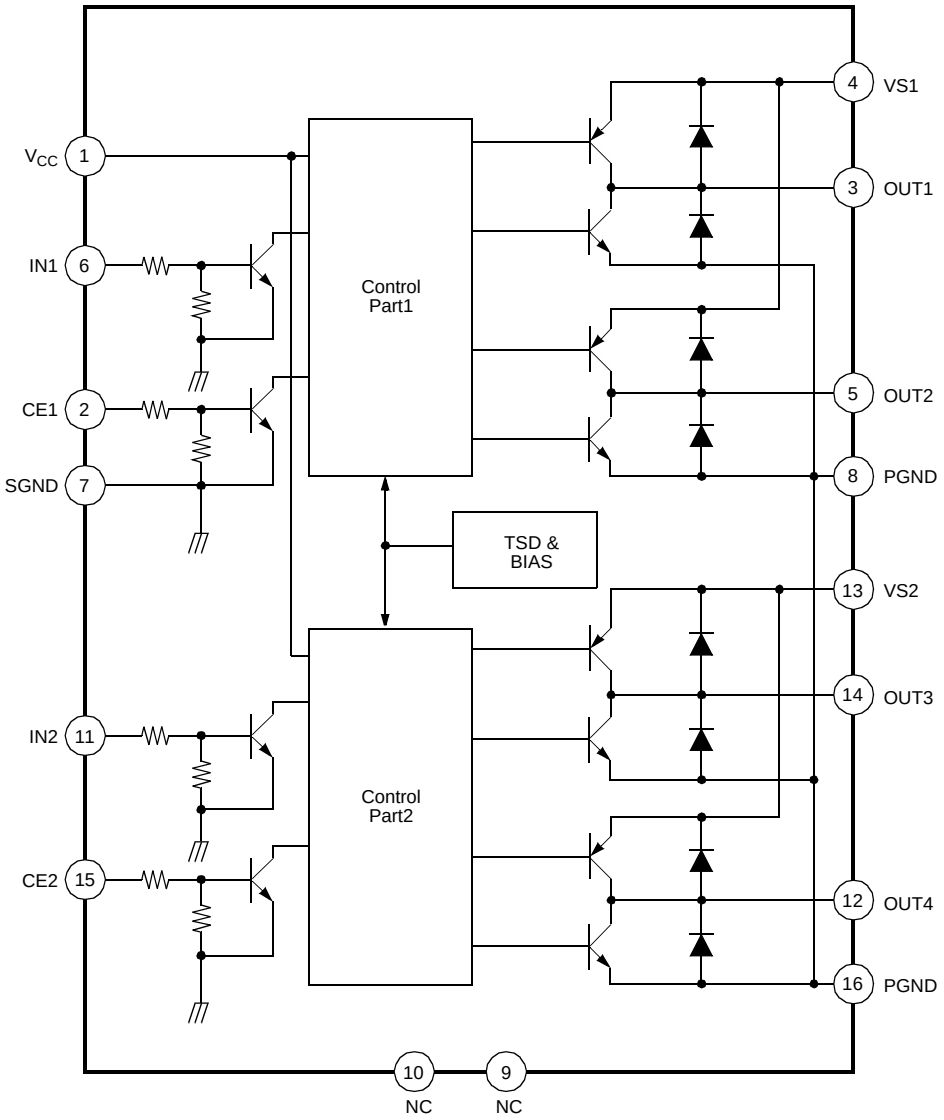
FEATURES

- Built-in vertical PNP power transistors
- Wide supply voltage (V_{CC} = 2.5V ~ 7.0V)
- Low saturation voltage (0.4@ 0.4A)
- Built-in chip enable function
- Built-in shoot-through current protector
- Built-in thermal shutdown function
- Built-in current-mode control circuit (I_{PEAK}: 1A)

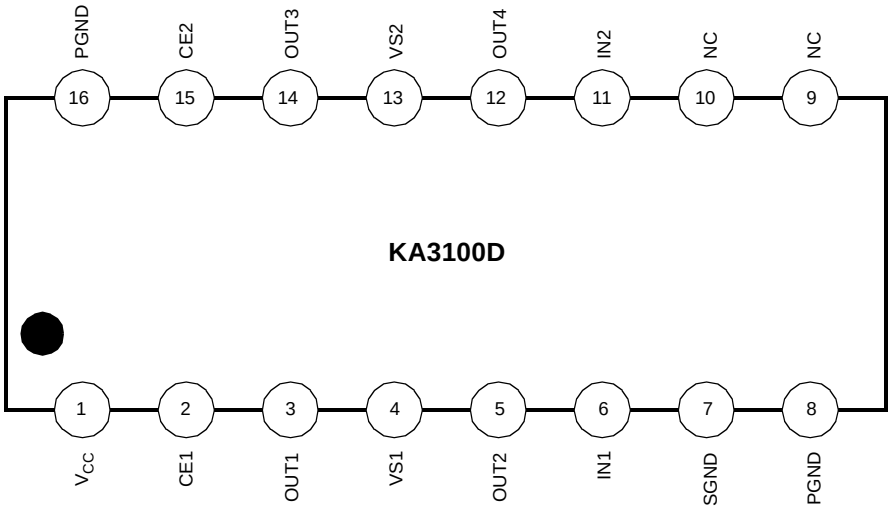
ORDERING INFORMATION

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

BLOCK DIAGRAM



PIN CONFIGURATION

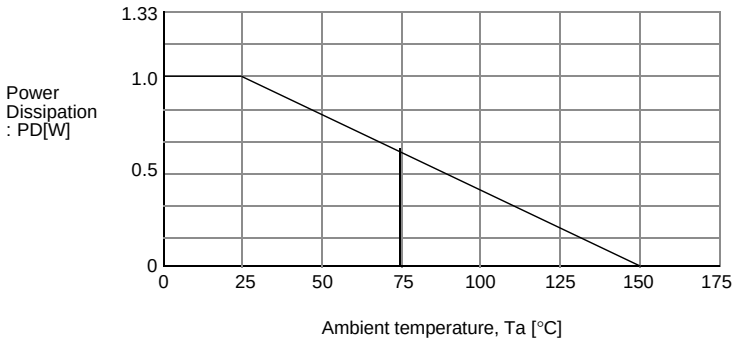


PIN DESCRIPION

Pin No.	Symbol	I/O	Description
1	V_{CC}	–	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 (Ta=25°C)

Characteristics	Symbol	Value	Unit
Supply voltage	$V_{CC(MAX)}$	–0.3 ~ 9.0	V
Power supply voltage	$V_{S(MAX)}$	–0.3 ~ 9.0	V
Output voltage	$V_{OUT(MAX)}$	V_S + Vef	V
Input voltage	$V_{IN(MAX)}$	–0.3 ~ 7.0	V
Peak output current	$I_{O(PEAK)}$	1	A
Continuous output current	I_O	0.4	A
Power dissipation	P_D	0.55	W
Junction temperture	T_J	150	°C
Storage temperature	T_{STG}	–40 ~ 125	°C
Operating temperature	T_A	–20 ~ 75	°C



Power dissipation decreases in the rate of 13.6mV / °C when mounted on 30mm × 30mm × 1.5mm PCB (Phenolic resin material) and used above Ta=25°C.

RECOMMENDED OPERATING CONDITIONS

Characteristics	Symbol	Min.	Typ.	Max.	Unit
Logic part supply voltage	V_{CC}	2.5	–	7.0	V
Power supply voltage	V_S	2.5	–	7.0	V

ELECTRICAL CHARACTERISTICS

(Ta=25°C, V_{CC}=5V, V_{S1}=3V, V_{S2}=3V, unless specified otherwise)

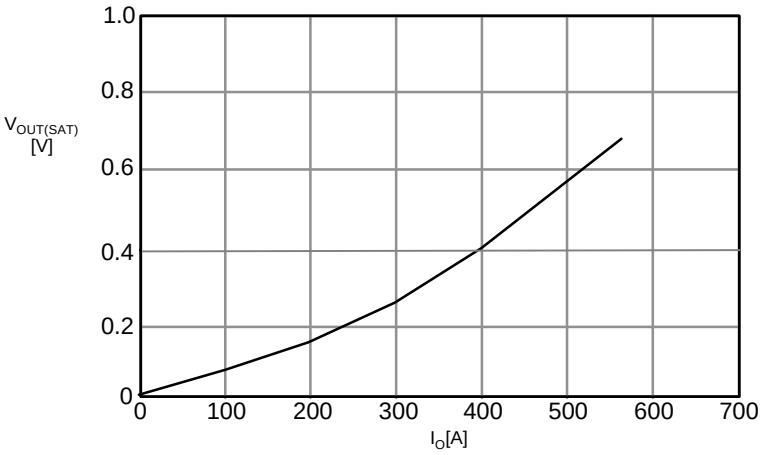
Characteristic	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Supply current 1	I_{CC1}	CE1, 2=0V, V_{INL}=3V or 0V, Each CH.	–	0.1	10	mA
Supply current 2	I_{CC2}	CE1=3V, V_{INL}=3V or 0V, Each CH.	–	12	18	mA
Saturation voltage 1	V_{SAT1}	CE1=3V, V_{INL}=3V or 0V, I_{OUT}=0.2A	–	0.2	0.3	V
Saturation voltage 2	V_{SAT2}	CE1=3V, V_{INL}=3V or 0V, I_{OUT}=0.4A	–	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}=3V, Each CH	–	100	200	mA
Chip enable current	I_{CE}	CE=0V, Each CH	–	100	200	mA
Clamp diode leakge current	I_{LEAK}	V_{CC}=7V, V_S=7V	–	–	30	mA
Clamp diode voltage	V_{EF}	I_{OUT}=0.4A	–	–	1.7	V

FUNCTION DESCRIPTION

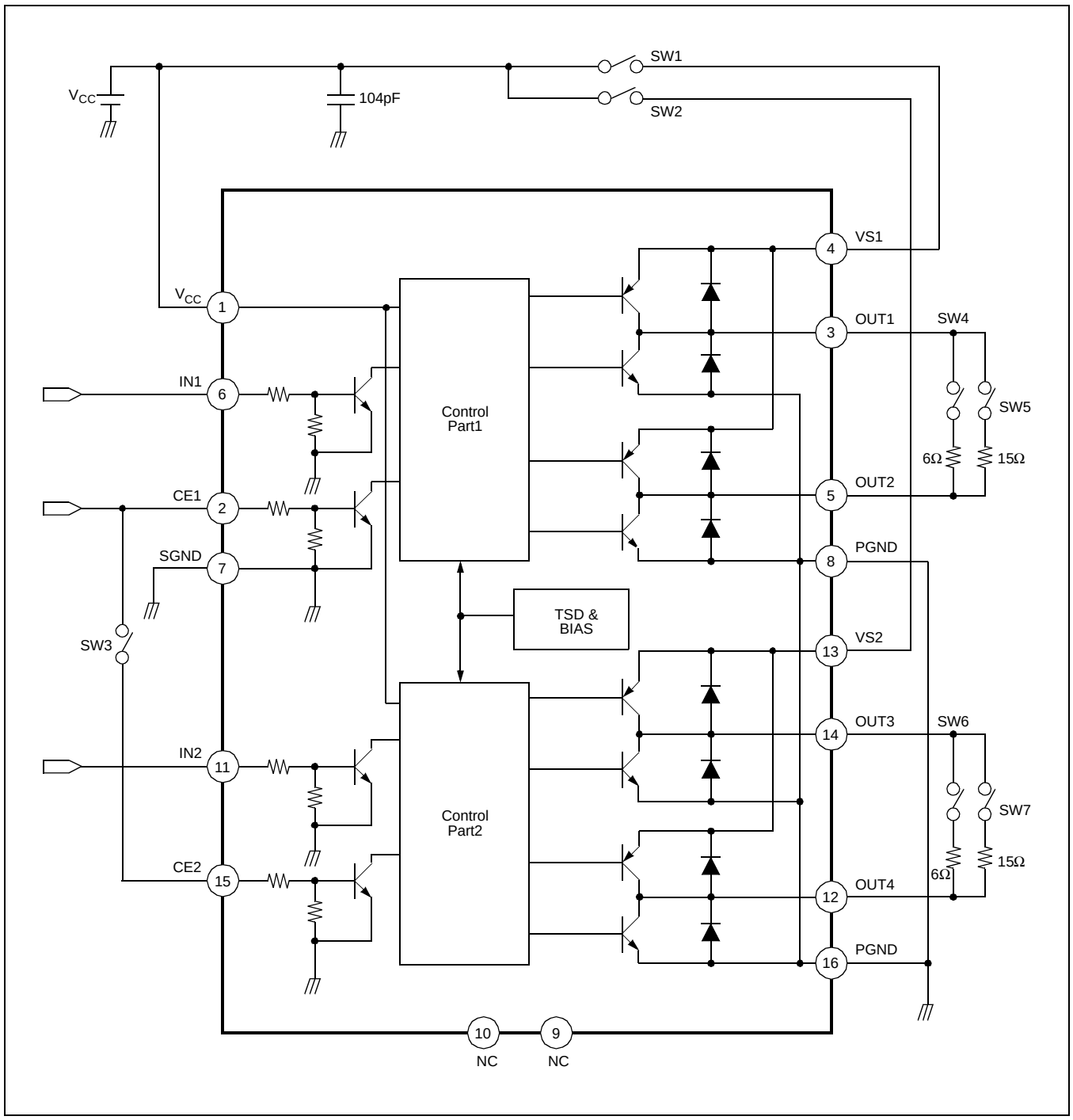
IN1 & IN2	CE1 & CE2	OUT1 & OUT3	OUT2 & OUT4	Motor rotation
Low	High	High	Low	Forward
High	High	Low	High	Reverse
Low	Low	Off	Off	Stand-by
High	Low	Off	Off	Stand-by

GRAPHS

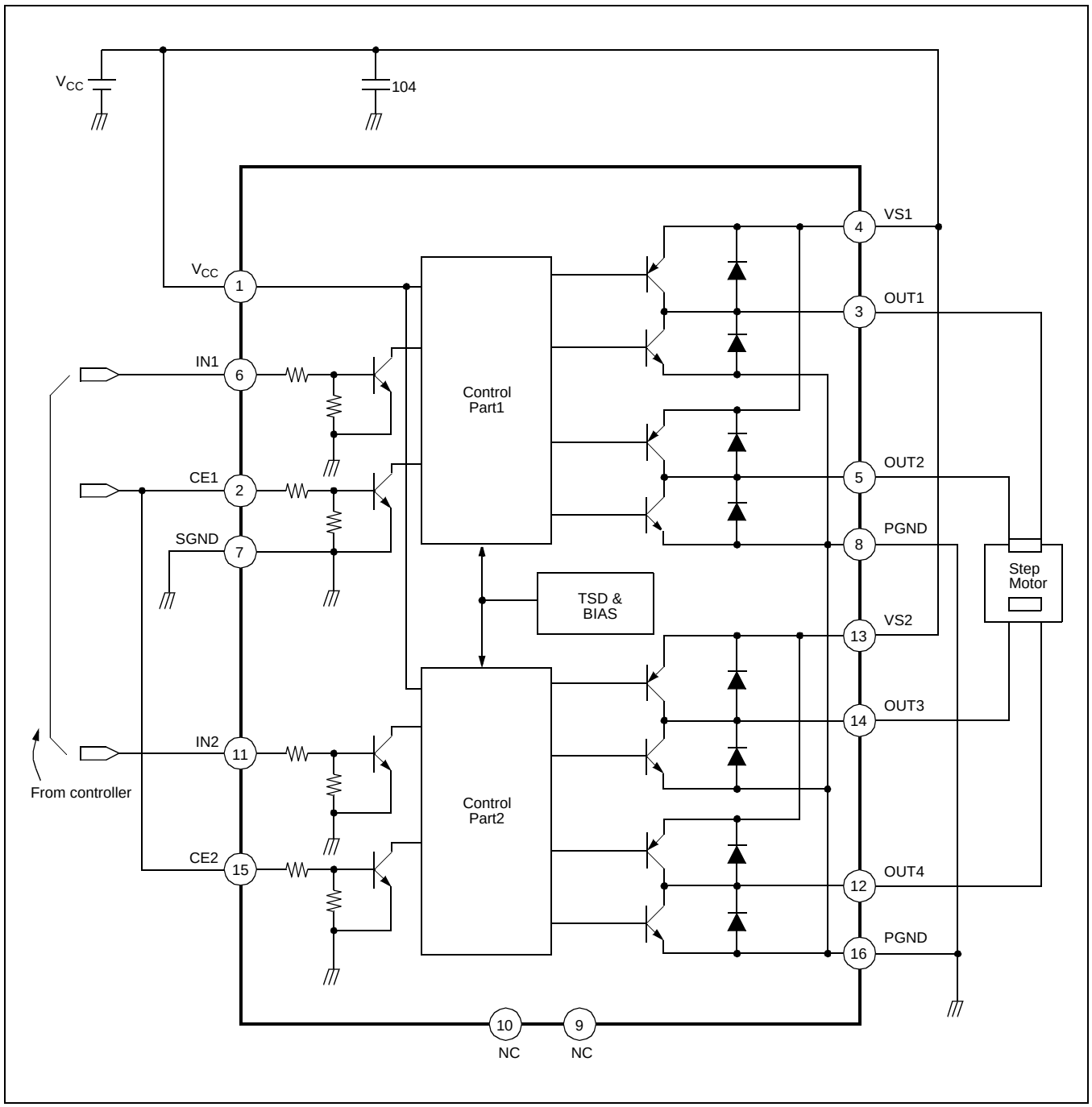
1. $V_{OUT(SAT)}$ VS I_O CHARACTERISTIC GRAPH



TEST CIRCUIT

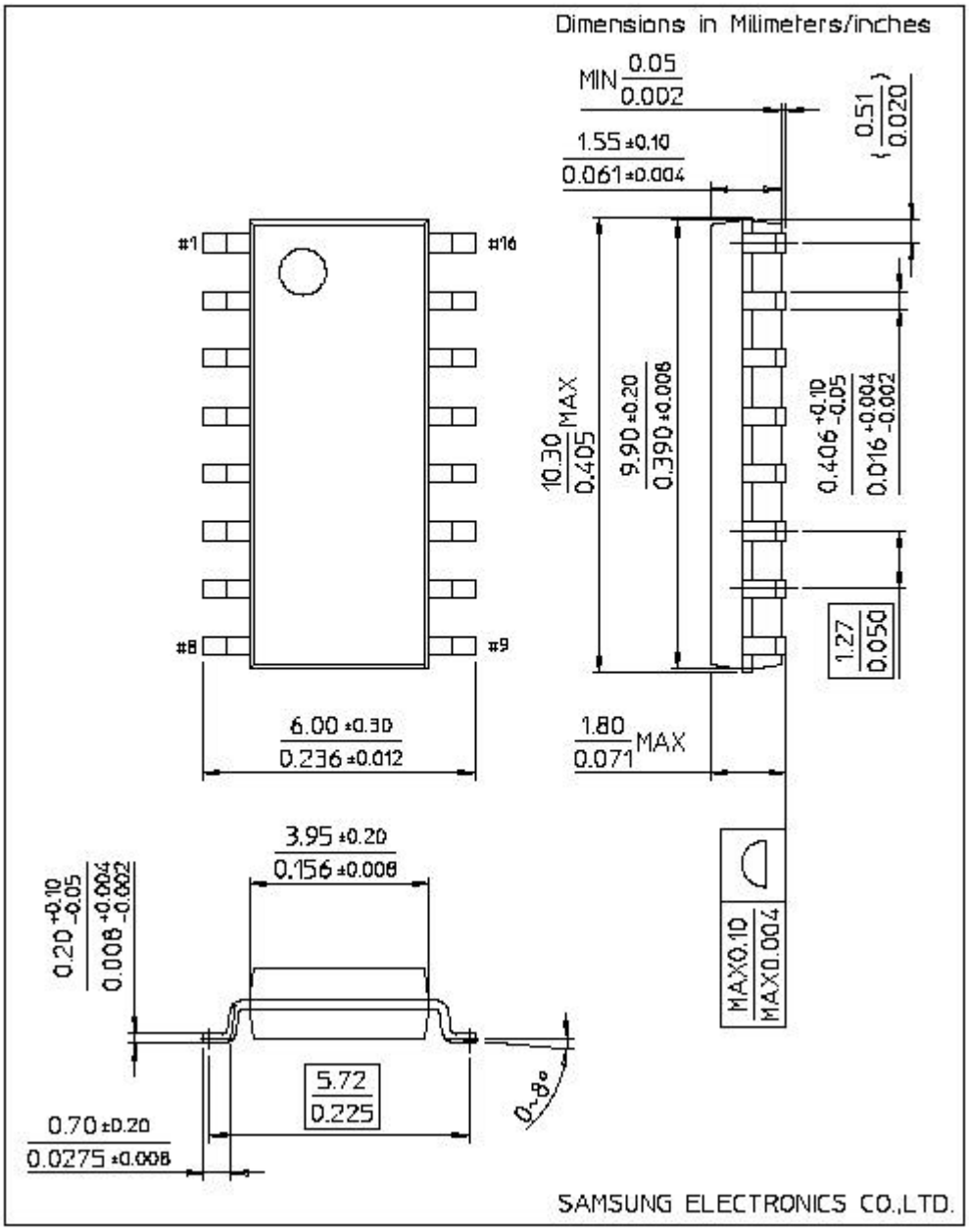


APPLICATION CIRCUIT



PACKAGE DIMENSION

16-SOP-225



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