

STRUCTURE Silicon Monolithic Integrated Circuit

PRODUCT SERIES STEPPING MOTOR DRIVER

TYPE BA6846FV

PACKAGE OUTLINES Fig.1 (Plastic Mold)

BLOCK DIAGRAM Fig.3

FUNCTION

- There are three output mode (forward, reverse and stop(open)) which are selected by the input logic.
- Output voltage is low saturation.
- Thermal shut-down circuit detects the junction temperature and makes all circuit off at high temperature.

ABSOLUTE MAXIMUM RATING (Ta=25°C)

Parameter	Symbol	Limit	Unit
Supply voltage	V <sub>CC</sub>	18	V
Power dissipation	P <sub>d</sub>	* 500	mW
Operating temperature	T <sub>OPR</sub>	-25~+75	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C
Output current	I <sub>omax</sub>	** 500	mA

\*To use at temperature above Ta=25°C reduce 4.0mW/°C.

50mm×50mm×1.6mm on glass epoxy board.

\*\*Please don't exceed Pd and A.S.O., however.

OPERATING VOLTAGE RANGE (Ta=25°C)

Parameter	Symbol	Limit	Unit
Supply voltage range	V <sub>CC</sub>	2.7 ~ 9.0	V

●The product described in this specification is a strategic product (and/or service) subject to COCOM regulations. It should not exported without authorization from the appropriate government authorities.

ROHM assumes no responsibility for the use of any circuits described herein, conveys no license under any patent or other right, and makes no representations that the circuits are free from patent infringement.

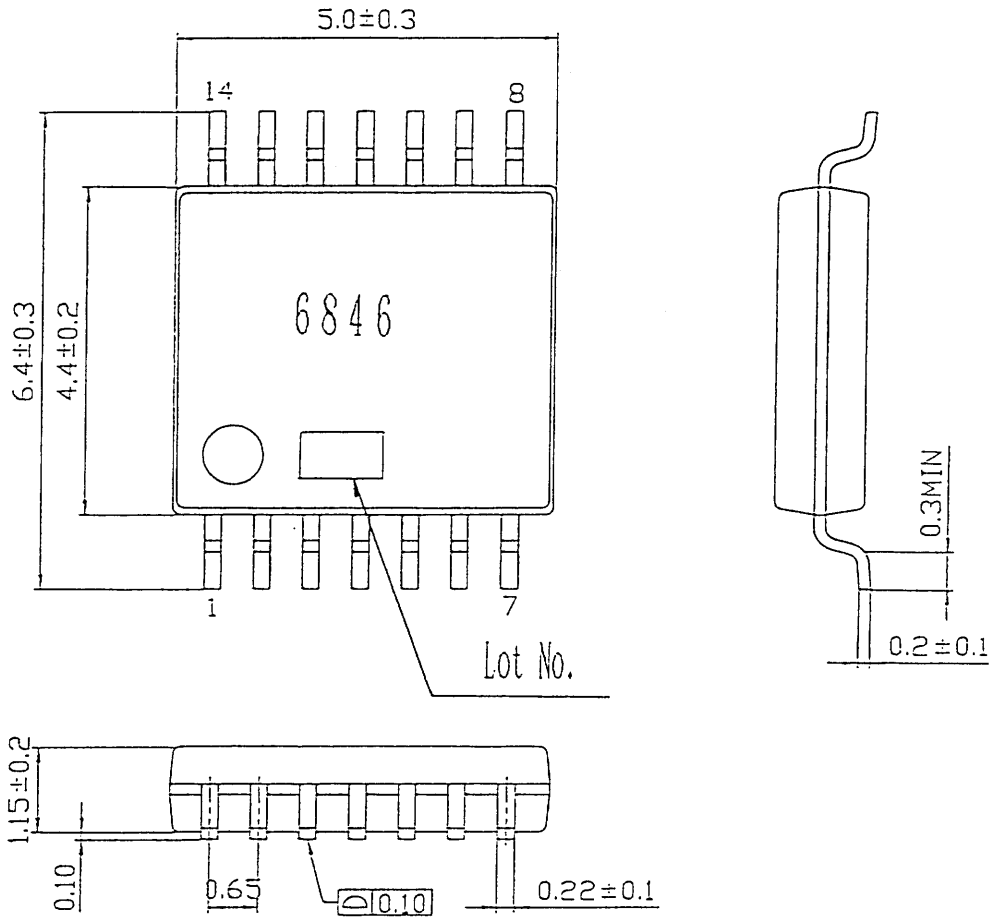
Design	Check	Approval	Date	Specification
H. Shimada	Kino Mizuhara	Jun. 8 '95 H. Kawabata	JUN/7/1995	Rev. A
ROHM CO., LTD.			Specification No.	TSZ02201-BA6846FV-1-2

ELECTRICAL CHARACTERISTICS ( Ta=25°C Vcc=5V VM1,2=5V )

Parameter	Symbol	Limit			Unit	Conditions	Test circuit
		Min.	Typ.	Max.			
Supply current 1	I <sub>cc1</sub>	—	7	13.5	m A	IN1=IN2=IN3=5V	Fig.4
Supply current 2	I <sub>cc2</sub>	—	—	10	μ A	IN1=IN2=IN3=0V	Fig.4
Input current	I <sub>IN</sub>	—	30	54	μ A	IN1=IN2=IN3=2V	Fig.4
Input voltage L	V <sub>IL</sub>	—	—	0.8	V		Fig.4
Input voltage H	V <sub>IH</sub>	2.0	—	—	V		Fig.4
Output saturation voltage	V <sub>sat</sub>	—	0.8	1.2	V	I <sub>out</sub> =400mA Total V <sub>sat</sub> voltage of output transistor.	Fig.5

\*This product is not designed for protection against radioactive rays.

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OUTLINE (UNIT:mm)  
 Plastic Mold  
 Fig.1 PACKAGE OUTLINES

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POWER DISSIPATION CURVE

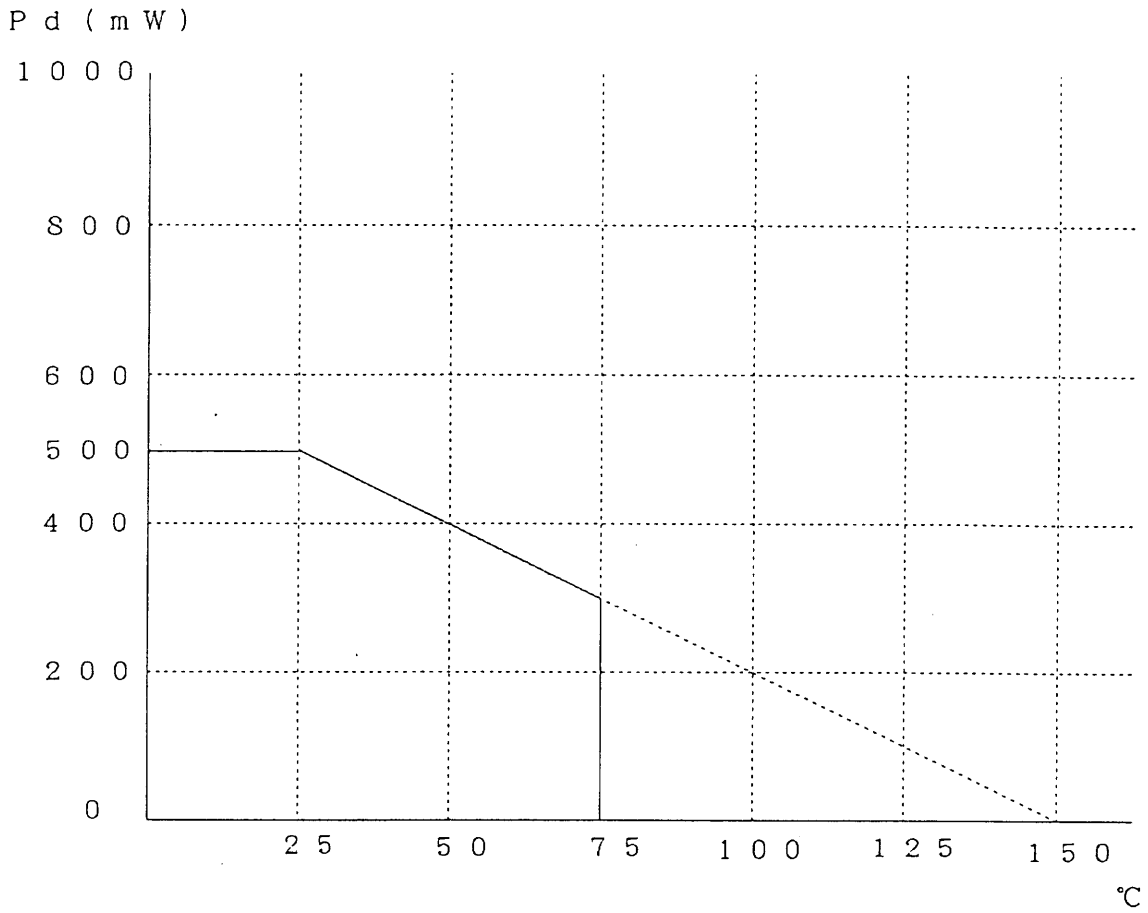


Fig. 2

50mm×50mm×1.6mm on glass epoxy board.

To use at temperature above Ta=25°C reduce 4.0mW/°C

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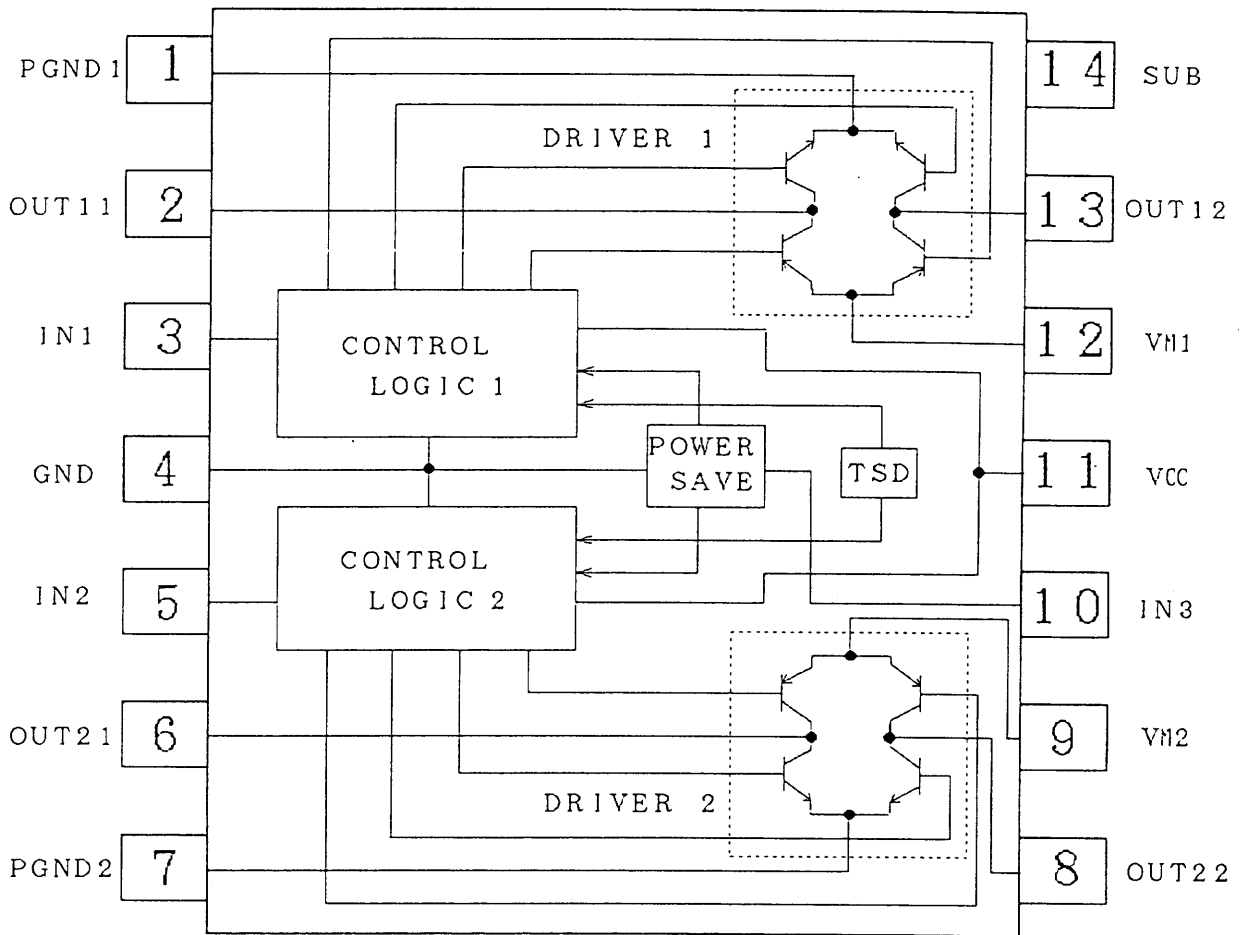


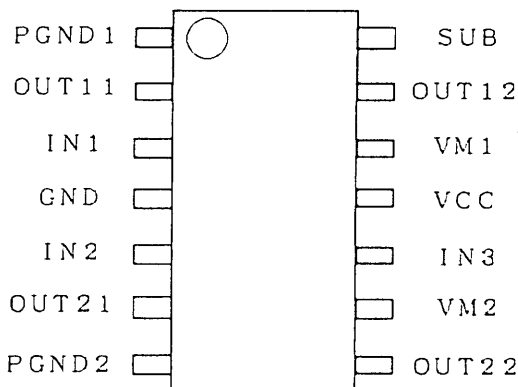
Fig. 3 BLOCK DIAGRAM

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### TERMINAL FUNCTION TABLE

Pin No.	Terminal name	Function
1	P G N D 1	Ground for driver division
2	O U T 1 1	Output for motor
3	I N 1	Input for control logic
4	G N D	Ground for signal division
5	I N 2	Input for control logic
6	O U T 2 1	Output for motor
7	P G N D 2	Ground for driver division
8	O U T 2 2	Output for motor
9	V M 2	Power supply for driver division
1 0	I N 3	Input for control logic
1 1	V C C	Power supply for signal division
1 2	V M 1	Power supply for driver division
1 3	O U T 1 2	Output for motor
1 4	S U B	Ground for subst.

Please keep up the voltage of PIN14 less than the voltage of another terminal surely.

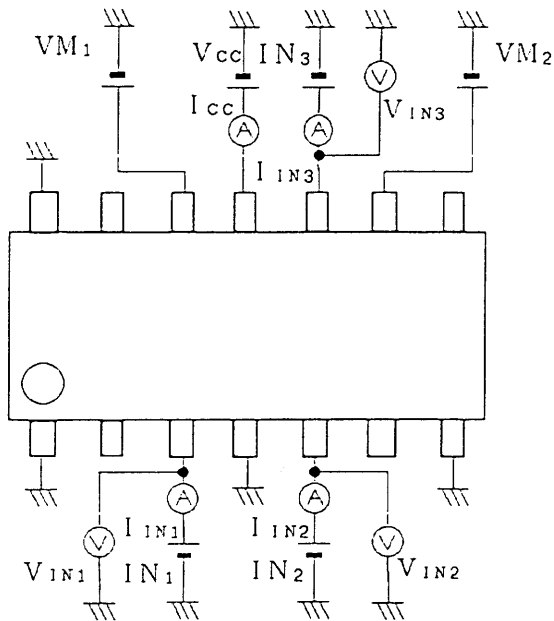


### INPUT-OUTPUT TRUTH VALUE TABLE

IN1/IN2	IN3	OUT11/21	OUT12/22	MODE
L	H	H	L	Forward rotation mode
H	H	L	H	Reverse rotation mode
L	L	OPEN	OPEN	Stand-by mode
H	L	OPEN	OPEN	Stand-by mode

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## Test Circuit



○Supply current  
Value of  $I_{CC}$ .

○Input current  
Value of  $I_{IN}$  when  $V_{IN}=2.0V$ .

○Input voltage L , Input voltage H  
Value of  $V_{IN}$  when the outputs change.  
\*Refer to input-output truth value table about the output mode.

Fig. 4

IN 1	IN 2	IN 3	OUT 11	OUT 12	OUT 21	OUT 22
L	-	H	H	L	-	-
H	-	H	L	H	-	-
-	L	H	-	-	H	L
-	H	H	-	-	L	H
L	L	L	I <sub>CC</sub> is less than 10μA.			
L	L	H	H	L	H	L

$V_{IN}$  : L<0.8V  
: H>2.0V

$V_{OUT}$  : L<VM×1/3  
: H>VM×2/3

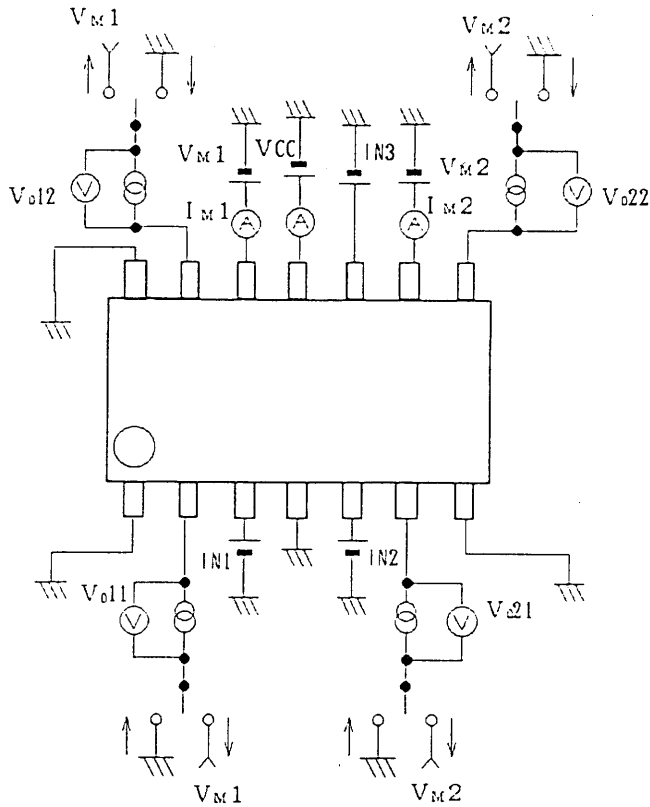
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○ Output saturation voltage  
Total of Vsath and Vsatl

Vsath

Voltage of Vo11~Vo22 when I<sub>OUT</sub> flows out of the output "H" terminal.

Vsatl

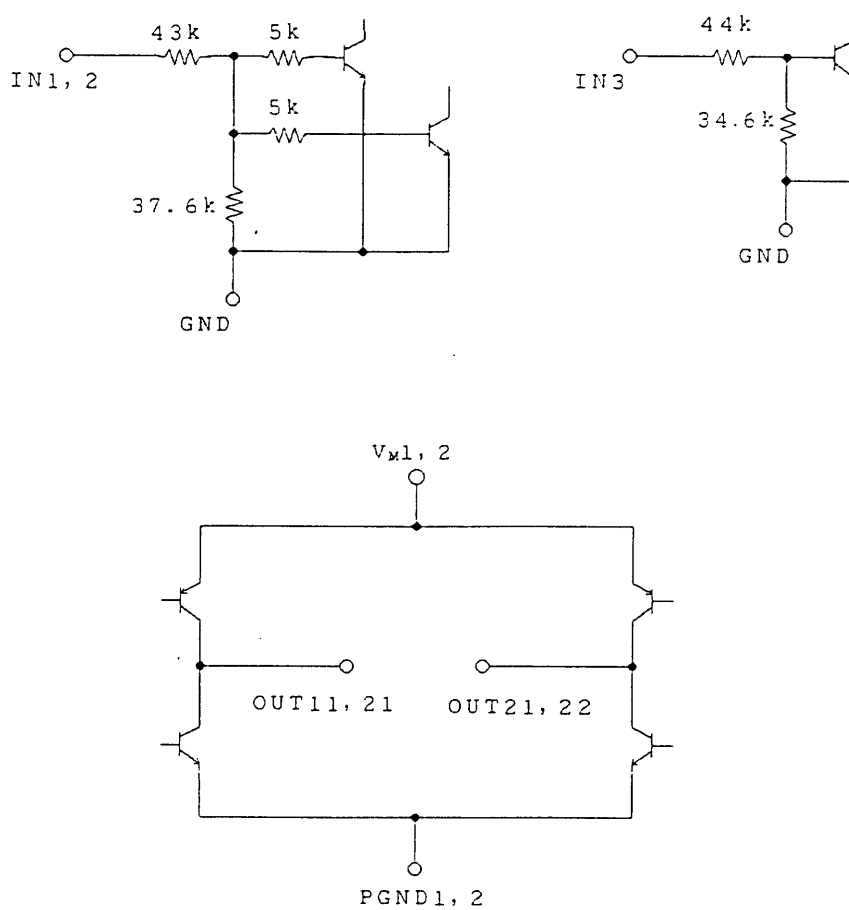
Voltage of Vo11~Vo22 when I<sub>OUT</sub> flows in of the output "L" terminal.

Fig. 5

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Input-Output circuit



(Resistances are typical values.)

Fig. 6 Input-output circuit

The product described in this specification is designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys).

Should you intend to use this product with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

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## PRECAUTIONS FOR USE

## (1) Control Logic

When BA6846FV is not supplied Vcc, please don't supply voltage to control logic(PIN3,5,10). In case of supply Vcc, please don't supply every input voltage over Vcc voltage and under GND.

## (2) The note of pattern design at printed circuit

BA6846FV flows a large current between Power supply for motor division(PIN9,12) and PGND(PIN1,7) at starting motor drive, especially at change rotation mode.

So, it is feared that get undesirable result: malfunction, oscillation and so on, as input lines is affected by large output current. Please consider pattern design at printed circuit ,please don't have common impedance on output large current lines and input lines.

Please consider to keep low impedance of power supply for fear of oscillation from power supply high impedance, also.

## (3) Power dissipation

IC power loss is great changed by supply voltage and output current. Please set supply voltage and output current in consideration of Power dissipation rating.

## (4) Please keep up the voltage of PIN1 PIN4 PIN7 and PIN14 less than the voltage of another terminal surely.

## (5) Thermal shut down (T.S.D.) circuit

T.S.D circuit shut down all circuit at about 175°C(TYP.) with junction temperature. It has the temperature hysteresis of about 20°C(TYP.).

## (6) Input terminals (PIN 3,5,10) have negative temperature characteristic.

Please consider temperature characteristic of input terminal(PIN3,5,10).

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