# AN6663S, AN6663SP

## **Bridge Drivers**

#### Overview

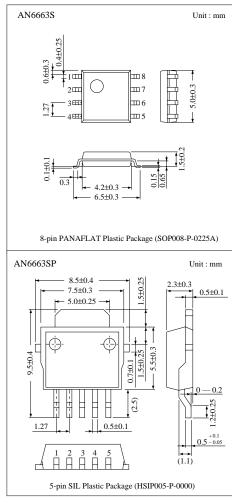
The AN6663S and AN6663SP are the forward/reverse drive ICs for small DC motors. They provide 4 Kinds of outputs such as foward rotation, reverse rotation, brake, and stop by the 2bit input and are optimum as the drivers for the small motors of 100 to 150mA.

#### ■ Features

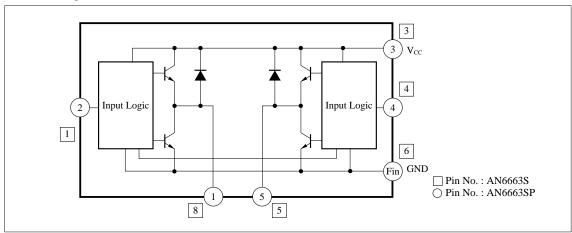
- Wide range of operating supply voltage
  - :  $V_{CC \text{ (opr)}} = 3 \text{ to } 16V$
- Large power dissipation

(AN6663SP:  $P_D = 1.45W$  when mounted)

- Built-in low saturation voltage type output transistor
- Built-in counter electromotive voltage suction diode
- • Input voltage at the TTL level :  $V_{IL}$  = 0.8V or less,  $V_{IH}$  = 2V or more



### ■ Block Diagram



### ■ Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit	
Supply voltage		V <sub>CC</sub>	18	V	
Supply current	Supply current		200	mA	
D 4!!	AN6663S		361	***	
Power dissipation	AN6663SP	$P_{D}$	500	mW	
0.4.4.1	AN6663S	,	±150		
Output peak current AN6663SP		$I_{\mathrm{OP}}$	±200	mA	
Operating ambient temperature		$T_{ m opr}$	-20 to +75	°C	
Storage temperature		$T_{stg}$	-55 to +125	°C	

### ■ Recommended Operating Range (Ta=25°C)

Parameter		Symbol	Range	
Operating supply voltage range		V <sub>CC</sub>	3V to 16V	
AN6663S		$I_{O}$	0mA to ±50mA	
Output current	AN6663SP	$I_{O}$	0mA to ±100mA	
L input voltage		V <sub>IL</sub>	0V to 0.8V	
H input voltage		V <sub>IH</sub>	2V to V <sub>CC</sub>	

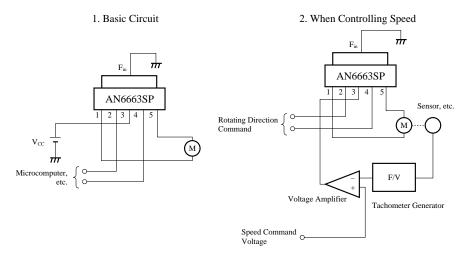
## ■ Electrical Characteristics (V<sub>CC</sub>=12V, Ta=25°C)

Parameter	Symbol	Condition	min	typ	max	Unit
Standby supply current	$I_{CCSb}$ $V_{I1}=V_{I2}=0.8V$		0.3	0.8	1.3	mA
Supply current	$I_{CC}$	$V_{I1} = V_{I2} = 0.8V$	4	8	12	mA
H output voltage	V <sub>OH</sub>	I <sub>OH</sub> =-100mA Note)	10	10.8		V
L output voltage	$V_{OL}$	I <sub>OL</sub> =100mA Note)		0.3	0.5	V
Input impedance	Z <sub>in</sub>	$V_{I}=2V\rightarrow 3V$	7	10	13	kΩ

Note) AN6663SP is  $I_{OH}$ =-150mA,  $I_{OL}$ =150mA

## ■ Application Circuit

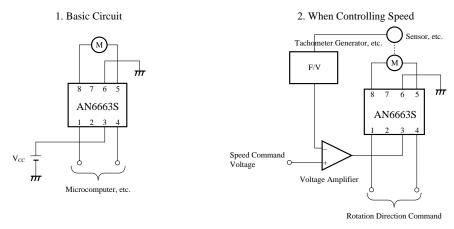
## • AN6663SP



## **Panasonic**

## ■ Application Circuit(Cont.)

### • AN6663S



■ Pin Descriptions

Pin No. Pin name			Description	I/O immodonos	Equivalent ainsuit
AN6663SP	AN6663S	Pin name	Description	I/O impedance	Equivalent circuit
1	8	Output pin 1 $V_{\rm OI}$	Pin to connect the motor coil		1 8*
2	1	Input pin 1 $V_{11}$	Input pin to determine the motor rotating direction	Approx. 10kΩ	2 1* \$10kΩ \$ 50μA
3	3	Supply voltage V <sub>CC</sub>	Pin to input the supply voltage		
4	4	Input pin 2 V <sub>12</sub>	Input pin to determine the motor rotating direction	Approx. 10kΩ	4 4* \$10kΩ \$ 50μΑ
5	5	Output pin 2 V <sub>O2</sub>	Pin to connect the motor coil	_	5 5*

The numbers marked with \* are the AN6663S

## **Panasonic**

### ■ Pin Descriptions (Cont.)

Pin No.		Pin name	Description	I/O impedance	Equivalent circuit	
AN6663SP	AN6663S	1 III Haine	Description	1/ O Impedance	Equivalent eneut	
FIN	6	Ground pin GND	Ground pin			
	2, 7	NC	NC for the AN6663S			

## ■ Supplementary Explanation

## • Precautions on Use

1 Truth table

$V_{Ii}$	$V_{I2}$	$V_{O1}$	$V_{O2}$	Motor operation
L	L	HiZ	HiZ	Motor stop
Н	L	L	Н	Forward rotation
L	Н	Н	L	Reverse rotation
Н	Н	L	L	Brake

<sup>2</sup> The input voltage of the input pins  $V_{11}$  and  $V_{12}$  can be applied up to twice larger than  $V_{CC}$  (it should not exceed 18V).

# Request for your special attention and precautions in using the technical information and semiconductors described in this material

- (1) An export permit needs to be obtained from the competent authorities of the Japanese Government if any of the products or technologies described in this material and controlled under the "Foreign Exchange and Foreign Trade Law" is to be exported or taken out of Japan.
- (2) The technical information described in this material is limited to showing representative characteristics and applied circuit examples of the products. It does not constitute the warranting of industrial property, the granting of relative rights, or the granting of any license.
- (3) The products described in this material are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
  - Consult our sales staff in advance for information on the following applications:
  - Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
  - Any applications other than the standard applications intended.
- (4) The products and product specifications described in this material are subject to change without notice for reasons of modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.
- (5) When designing your equipment, comply with the guaranteed values, in particular those of maximum rating, the range of operating power supply voltage and heat radiation characteristics. Otherwise, we will not be liable for any defect which may arise later in your equipment.
  Even when the products are used within the guaranteed values, redundant design is recommended, so that such equipment may not violate relevant laws or regulations because of the function of our products.
- (6) When using products for which dry packing is required, observe the conditions (including shelf life and after-unpacking standby time) agreed upon when specification sheets are individually exchanged.
- (7) No part of this material may be reprinted or reproduced by any means without written permission from our company.

### Please read the following notes before using the datasheets

- A. These materials are intended as a reference to assist customers with the selection of Panasonic semiconductor products best suited to their applications.
  - Due to modification or other reasons, any information contained in this material, such as available product types, technical data, and so on, is subject to change without notice.
  - Customers are advised to contact our semiconductor sales office and obtain the latest information before starting precise technical research and/or purchasing activities.
- B. Panasonic is endeavoring to continually improve the quality and reliability of these materials but there is always the possibility that further rectifications will be required in the future. Therefore, Panasonic will not assume any liability for any damages arising from any errors etc. that may appear in this material.
- C. These materials are solely intended for a customer's individual use.

  Therefore, without the prior written approval of Panasonic, any other use such as reproducing, selling, or distributing this material to a third party, via the Internet or in any other way, is prohibited.