

# AN6660, AN6660K

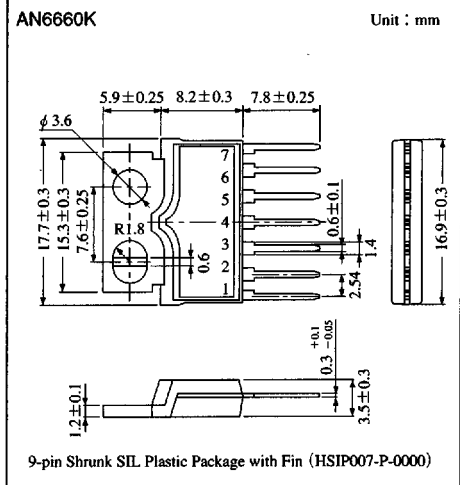
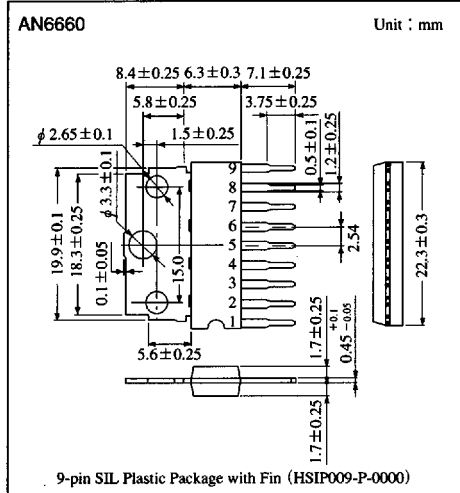
## Forward/Reverse Motor Drivers

### Overview

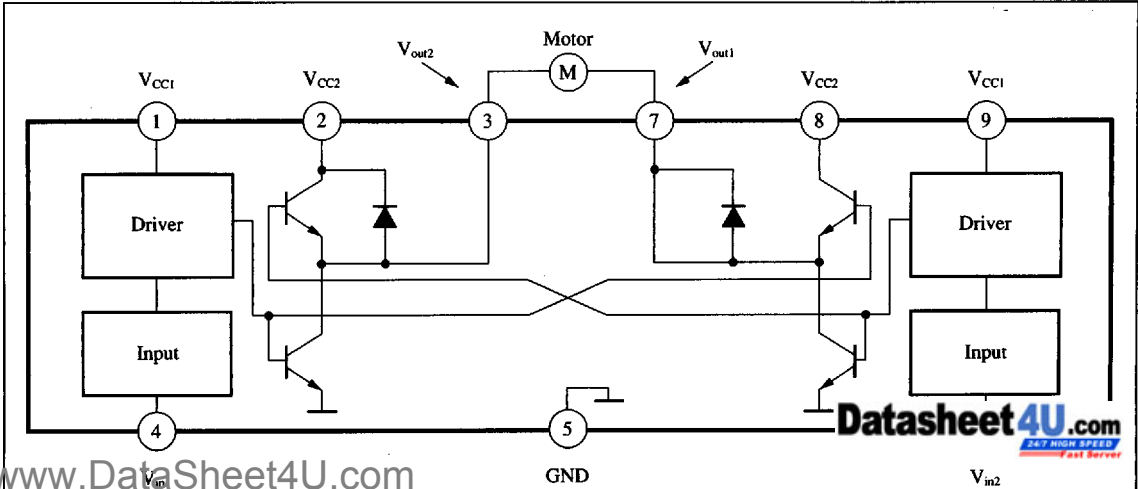
The AN6660 and the AN6660K are the integrated circuits designed for forward/reverse direction select driver for a motor with brush. It also assures four types of outputs ; forward, reverse, brake and stop due to input logic and is suitable for VCR loading, reel and cylinder, or a reel driver for tape deck. Since individual power supplies for motor drive and IC are provided, servo can be applied.

### Features

- Wide range of operating supply voltage  
:  $V_{CC(opr)} = 4V$  to  $20V$
- Independent power supplies can be used for IC and motor drive, respectively
- Low  $V_{CC}$  saturation type output transistor built-in
- Diode to absorb counter EMF built-in



### Block Diagram



## Pin Descriptions

Pin No.	Pin name
1	Supply voltage
2	Output supply voltage
3	Output (2)
4	Input (1)
5	GND
6	Input (2)
7	Output (1)
8	Output supply voltage
9	Supply voltage

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage (1)	V <sub>CC1</sub>	-0.5 to +16	V
Supply voltage (2) *1	V <sub>CC2</sub>	-0.5 to +20	V
Supply current	I <sub>CC</sub>	650	mA
Output supply voltage	V <sub>CC</sub>	-0.5 to V <sub>CC</sub>	V
Input voltage	V <sub>I</sub>	0 to V <sub>CC</sub>	V
Motor rush allowable current *2	I <sub>OP</sub>	2.0	A
Motor ordinary current (1)	I <sub>O(1)</sub>	-330 to +330	mA
Motor ordinary current (2) *1	I <sub>O(2)</sub>	-600 to +600	mA
Power dissipation	AN6660	P <sub>D</sub>	10 *3
	AN6660K		15 *3
Operating ambient temperature	T <sub>opr</sub>	-20 to +75	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

\*1 When a heat sink is in use

\*2  $t_{op} = 10 \mu s$ , cycle time > 5s, V<sub>CC</sub> < 12V

\*3 When an infinite heat sink is in use

## Recommended Operating Conditions (Ta=25°C)

Parameter	Symbol	min	typ	max	Unit
Supply voltage	V <sub>CC</sub>	4	—	15	V
Output current	I <sub>O</sub>	—	—	±300	mA
High level input voltage	V <sub>IH</sub>	2	—	V <sub>CC</sub>	V
Low level input voltage	V <sub>IL</sub>	—	—	0.5	V
Forward-to-reverse inhibiting time	t <sub>OFF</sub>	10	—	—	μs

## Truth Table

Input		Output		Note
1	2	1	2	
0	0	OFF State	OFF State	IC not operating
1	0	1	0	Motor forward
0	1	0	1	Motor reverse
1	1	0	0	Brake

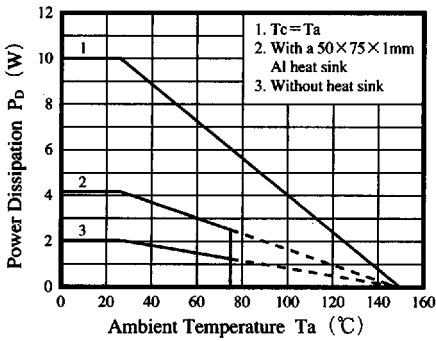
"0" = "L"  
"1" = "H"

■ Electrical Characteristics (Ta=25°C)

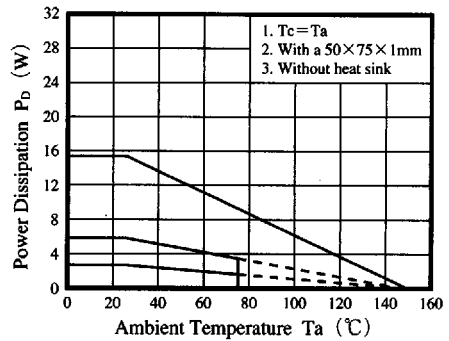
Parameter	Symbol	Condition	min	typ	max	Unit
Supply current	$I_{CC1}$	$V_{CC}=V_{CC}'=16V, V_{I1}=3V, V_{I2}=0V$	—	—	40	mA
	$I_{CC2}$	$V_{CC}=V_{CC}'=16V, V_{I1}=V_{I2}=3V$	—	—	50	
Output leak current	$I_{O(Leak)}$	$V_{CC}=V_{CC}'=20V, V_O=20V$	—	—	100	$\mu A$
	$-I_{O(Leak)}$	$V_{CC}=V_{CC}'=20V, V_O=0V$	—	—	100	
High level output voltage	$V_{OH}$	$V_{CC}=V_{CC}'=12V, I_{OH}=-300mA$	10.8	—	—	V
		$V_{CC}=V_{CC}'=12V, I_{OL}=-500mA$	10.7	—	—	
Low level output voltage	$V_{OL}$	$V_{CC}=V_{CC}'=12V, I_{OH}=300mA$	—	—	0.4	V
		$V_{CC}=V_{CC}'=12V, I_{OL}=500mA$	—	—	0.65	
Output (1) - (2) Voltage	$V_{O1}-V_{O2}$	$V_{CC}=V_{CC}'=12V, I_O=\pm 300mA$	10.3	—	—	V
High level output voltage	$V_{OH}$	$V_{CC}=12V, V_{CC}'=5V, I_{OH}=-300mA$	4.6	—	—	V
Input impedance	$Z_i$	$V_{CC}=16V, V_I=2V \rightarrow 3V$	10	—	20	k $\Omega$

■ Characteristics Curve

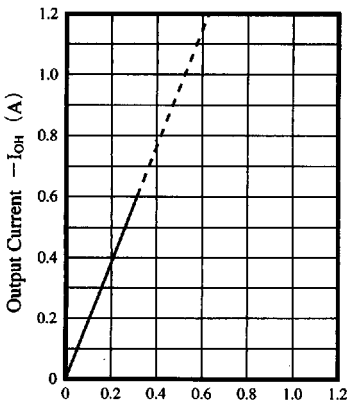
$P_D - T_a$  (AN6660)



$P_D - T_a$  (AN6660K)

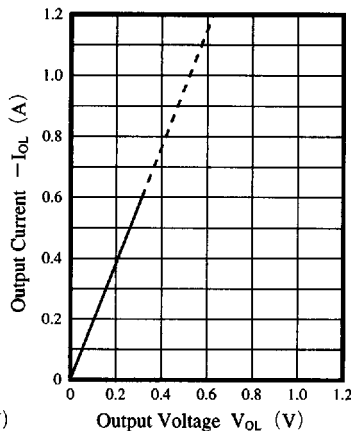


$-I_{OH} - (V_{CC} - V_{OH})$

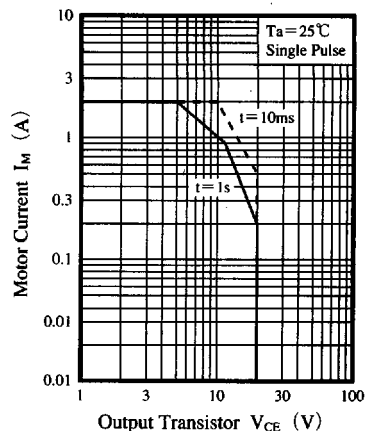


Supply Voltage - Output Voltage ( $V_{CC} - V_{OH}$ ) (V)  
 (Power supply for motor drive)  
 on condition of ( $V_{CC1} \leq V_{CC2} + 0.7$ )

$I_{OL} - V_{OL}$  (typ.)

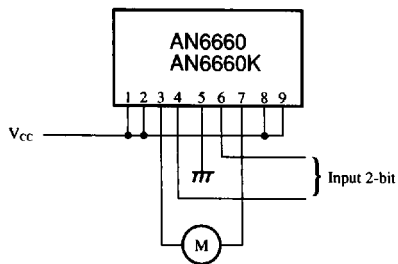


Safety Operation Area

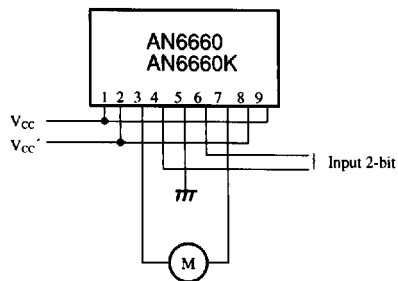


## Basic Circuits

- With single power supply



- With 2 power supplies for IC and Motor drive



$V_{CC}$  : ICs power supply

$V_{CC}'$  : Power supply for motor drive