



























































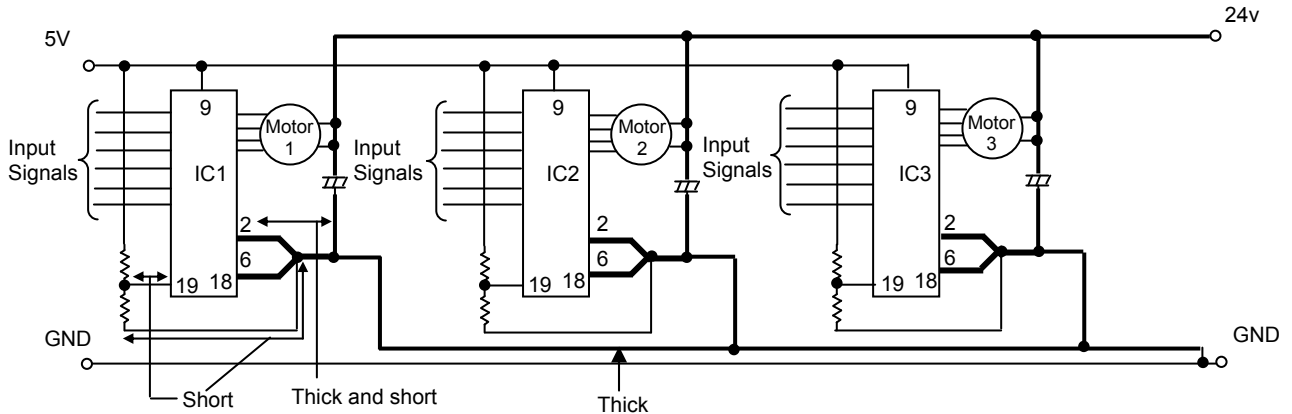






(5) When mounting multiple drivers on a single board

When mounting multiple drivers on a single board, the GND design should mount a  $V_{CC}$  decoupling capacitor, C1, for each driver to stabilize the GND potential of the other drivers. The key wiring points are as follows.



(6)  $V_{CC}$  operating limit

When the output (for example F1) of a 2-phase stepper motor driver is turned OFF, the AB phase back electromotive force eab produced by current flowing to the paired F2 parasitic diode is induced in the F1 side, causing the output voltage  $V_{FB}$  to become twice or more the  $V_{CC}$  voltage. This is expressed by the following formula.

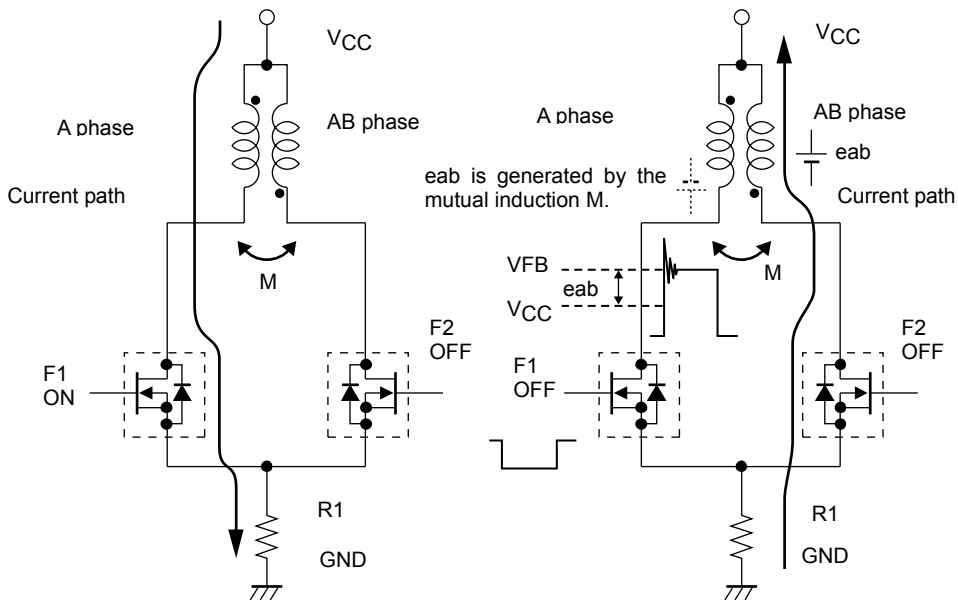
$$V_{FB} = V_{CC} + e_{ab}$$

$$= V_{CC} + V_{CC} + I_{OH} \times R_M + V_{df} (1.6V)$$

$V_{CC}$ : Motor supply voltage,  $I_{OH}$ : Motor current set by  $V_{ref}$

$V_{df}$ : Voltage drop due to F2 parasitic diode and current detection resistor R1,  $R_M$ : Motor winding resistance value

Using the above formula, make sure that  $V_{FB}$  is always less than the MOSFET withstand voltage of 100V. This is because there is a possibility that operating limit of  $V_{CC}$  falls below the allowable operating range of 46V, due to the  $R_M$  and  $I_{OH}$  specifications.



The oscillating voltage in excess of  $V_{FB}$  is caused by LCRM (inductance, capacitor, resistor, mutual inductance) oscillation that includes micro capacitors C, not present in the circuit. Since M is affected by the motor characteristics, there is some difference in oscillating voltage according to the motor specifications. In addition, constant voltage drive without constant current drive enables motor rotation at  $V_{CC} \geq 0V$ .

**ORDERING INFORMATION**

Device	Package	Shipping (Qty / Packing)
STK672-630CN-E	SIP-19 (Pb-Free)	15 / Tube

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