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April 1st, 2010
Renesas Electronics Corporation

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Low-Voltage CMOS Logic HD74LV_A/LVC Series

Outline

The HD74LV-A/LVC/LVC-A Series provides high-speed operation in low supply voltage in addition to the CMOS's advantage of low power dissipation.

Recent OA equipments are required to be small, light and handy battery-drivable ones.

Fueled by those demands, standard logic ICs are also preferably;

1. High-speed operation in low supply voltage
2. Assisting battery's long life span
3. Assisting multi-bits of equipments
4. High density surface-mount available

To meet those market needs, Renesas developed low-voltage and high-speed CMOS series taking the CMOS's merit of low power dissipation to extend battery life.

1.1 Features

Adopting the HD74LV-A/LVC/LVC-A series can extend the battery life in small, fast and handy equipments like a note-size personal computer. Power dissipation reduced to a half of conventional high-speed CMOS (FACT) series can further save the power of the system.

In conventional devices, current flow into the power supply via input pins at cutting the equipment's power, wastes a battery. To avoid the current flow above, the HD74LV-A/LVC/LVC-A series are designed so that the input pins are high impedance at turning power off.

As still against the conventional CMOS-structured inputs, current does not flow even if voltage over supply voltage is applied at power on, which protects a device from latch-up phenomena.

Thus, level conversion from a 5 V to a 3 V systems is easily done.

1.2 Basic Circuit Construction

Figure 1 to 2 shows a basic circuit in the HD74LVC series.

All the internal circuits take CMOS structure for low power dissipation, and the absence of a diode at V_{CC} side of an input prevents current flow via input pins at power off.

Figure 3 to 4 shows a basic circuit in the HD74LV-A/LVC-A version

The HD74LV-A/LVC-A version is input/output 5 V tolerant type.

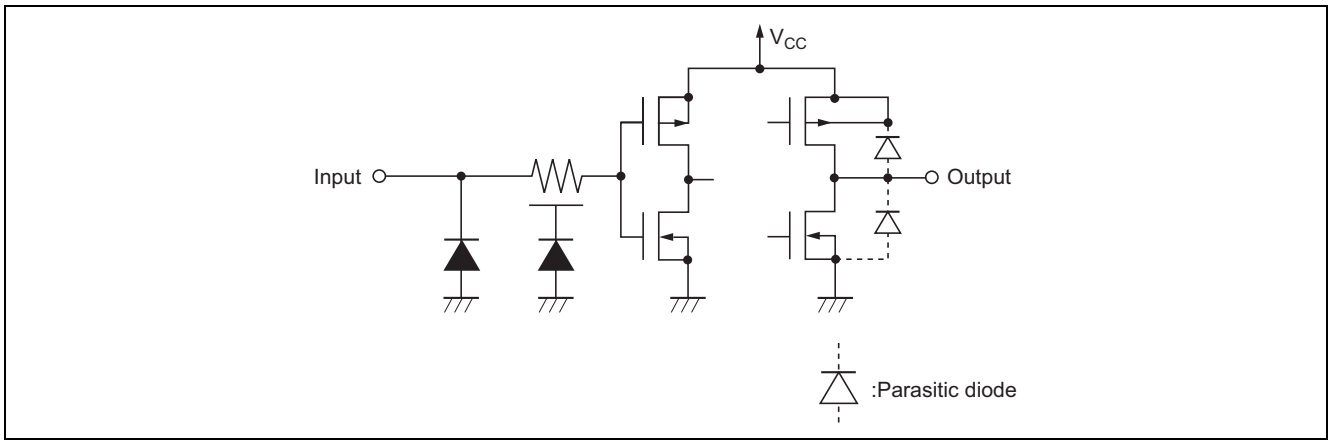

Figure 1 Basic Circuit Construction (HD74LVC Series)

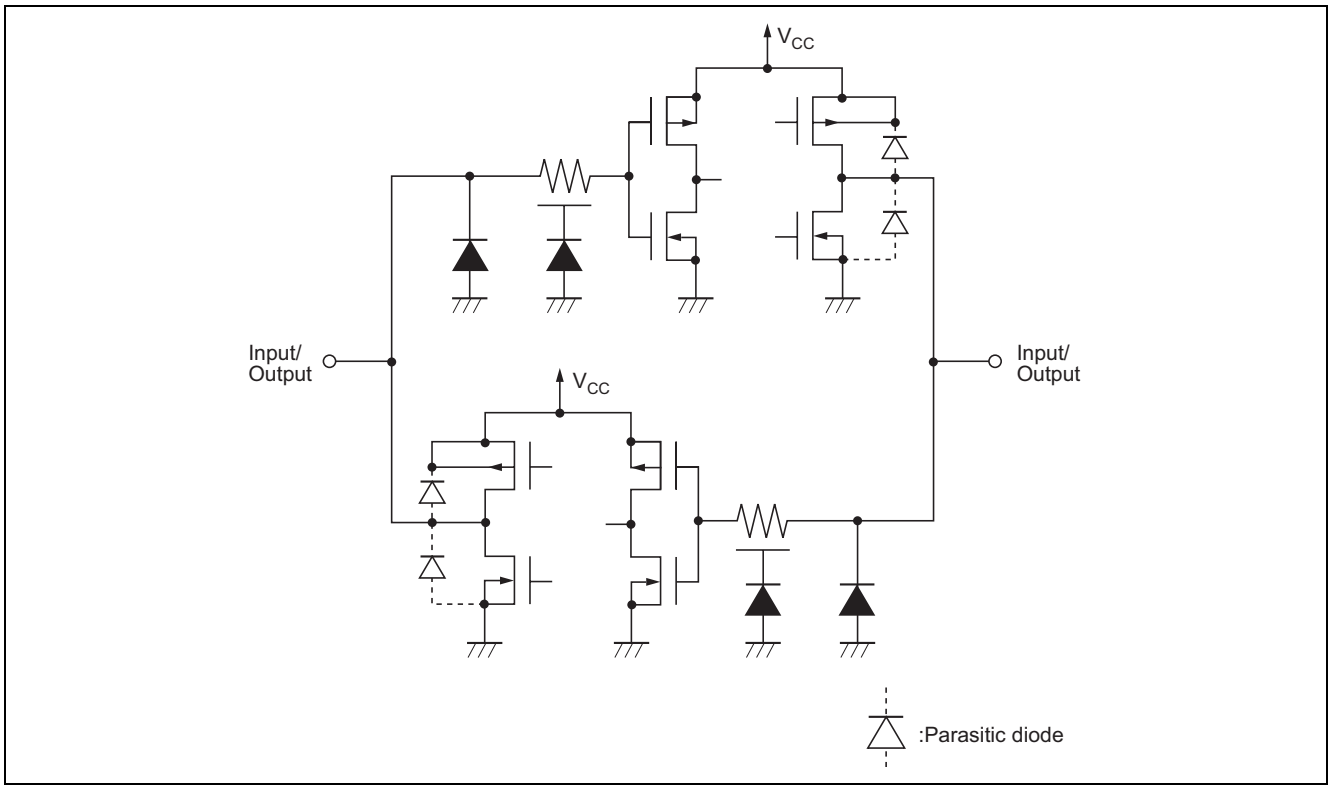

Figure 2 Basic Circuit Construction (HD74LVC Series)

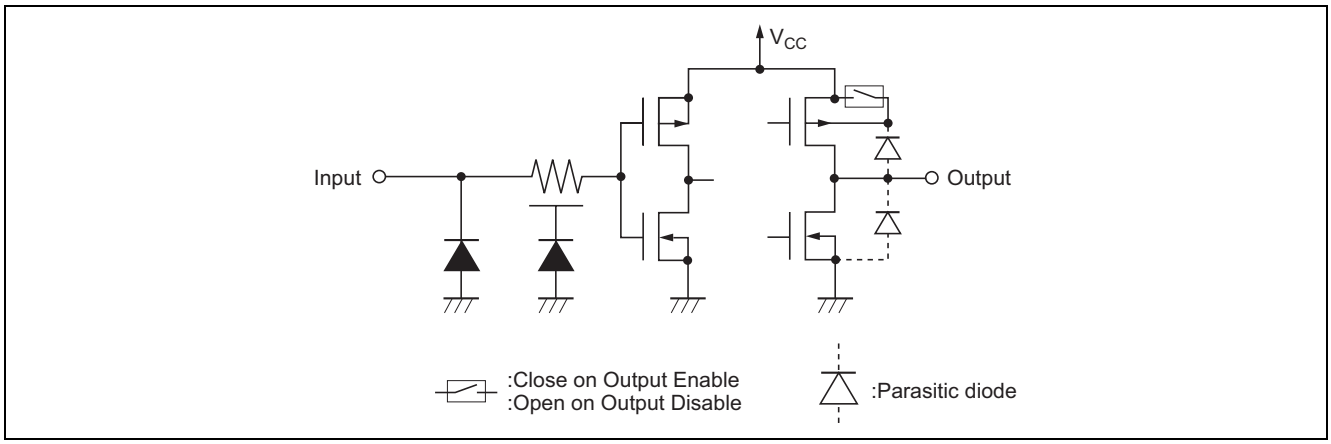

Figure 3 Basic Circuit Construction (Input/Output 5 V Tolerant Type: HD74LV-A/LVC-A Only)

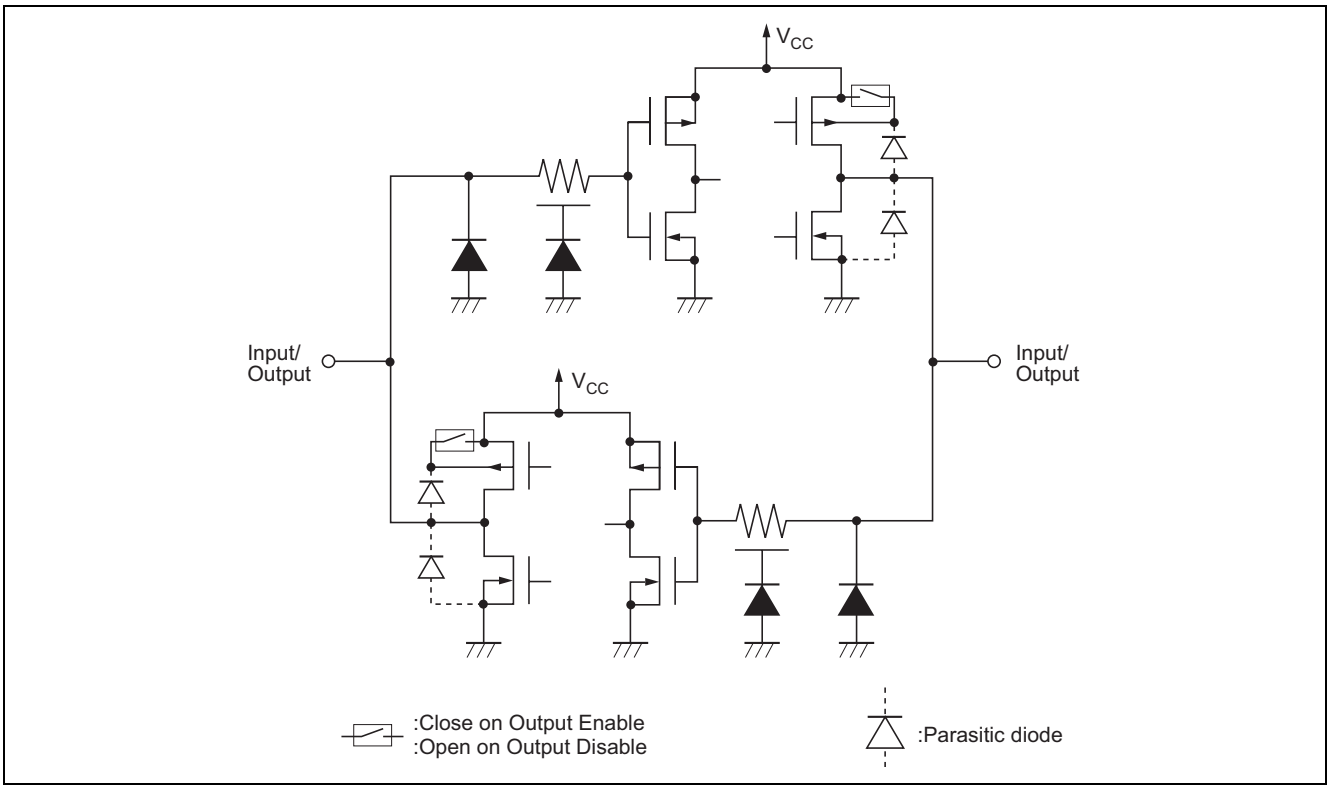

Figure 4 Basic Circuit Construction (Input/Output 5 V Tolerant Type: HD74LV-A/LVC-A Only)

Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Jul.09.04	—	First edition issued

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