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瑞萨电子公司

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# 低电压CMOS逻辑 HD74ALVC系列

## 概要

### 1. HD74ALVC系列的概要

近几年随着低电压高速高性能CPU和存储器的出现，要求外围IC具有低电压高速高性能。为了满足这种需求，本公司使用0.5 $\mu$ m CMOS工艺，批量生产HD74ALVC<sup>注1</sup>系列（在电源电压为3.3V时能以2ns(typ)的传播延迟时间进行高速运行）。本产品系列最适合于使用需要高速同步运行的同步DRAM的PC电路板和DIMM等。

#### 1.1 实现低电压高速高驱动功能

为了能对应3V工作电源电压的CPU和存储器以及对应高速运行，实现了150MHz的最大工作频率，而且保证了2.3~3.6V的工作电源电压以对应新一代的 $V_{CC} = 2.5V$ 低电压。另外，因为高驱动能力为 $\pm 24mA$ （当 $V_{CC} = 3.0V$ 并且输出引脚没有内置电阻时），所以实现了低电压和高驱动的功能。

#### 1.2 采用总线保持电路（HD74ALVCH<sup>注2</sup>16\*\*\*、HD74ALVCH162\*\*\*）

输入部采用总线保持电路的系列非常齐全。总线保持电路是1种锁存电路。通常，在对CMOS器件的输入进行未使用引脚的处理时或者在处理三态输出时需要外接电阻，而总线保持电路不需要外接电阻，并且能将不定状态的数据输入引脚保持在适当的逻辑电平。其结果是在提高输入数据可靠性的同时，能减少外接电阻的部件数。

#### 1.3 输出部内置阻尼电阻（HD74ALVC162\*\*\*、HD74ALVCH162\*\*\*）

随着系统的高速运行，噪声对策越来越难。通常，在防止反射噪声时需要给输出引脚外接电阻，而ALVC系列中有在输出引脚内置了相当于26 $\Omega$ 电阻的系列，所以不需要外接阻尼电阻。此内置电阻不仅能降低反射噪声，而且能降低输出的正尖峰和负尖峰，所以电路板的设计变得容易。另外，即使是内置输出电阻的产品，也能保证 $\pm 12mA$ （ $V_{CC} = 3.0V$ ）的驱动电流。

#### 1.4 最适用于存储器外围电路的功能丰富的产品阵容

ALVC的功能阵容从传统的16位驱动器/收发器到能对应时钟沿运行的带锁存功能的产品，其品种丰富齐全。而且，还有用于存储器的单输入多输出的驱动器、以及容易进行（用选择器控制）存储体转换的驱动器/收发器等产品，能简化CPU和存储器外围的电路板布局。

- 【注】 1. ALVC: Advanced Low Voltage CMOS  
2. ALVCH: Advanced Low Voltage CMOS with bus Hold circuit

修订记录

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