

## 单电源四通道缓冲转换门器件，具有三态CMOS输出的电平转换器

Single Power Supply Quadruple Buffer Translator GATE With 3-State Output CMOS Logic Level Shifter

### ■ FEATURES

- Single-Supply Voltage Translator at 5.0-V, 3.3-V, 2.5-V, and 1.8-V  $V_{CC}$
- Operating Range of 1.8 V to 5.5 V
- Up Translation
  - 1.2 V to 1.8 V at 1.8-V  $V_{CC}$
  - 1.5 V to 2.5 V at 2.5-V  $V_{CC}$
  - 1.8 V to 3.3 V at 3.3-V  $V_{CC}$
  - 3.3 V to 5.0 V at 5.0-V  $V_{CC}$
- Down Translation
  - 3.3 V to 1.8 V at 1.8-V  $V_{CC}$
  - 3.3 V to 2.5 V at 2.5-V  $V_{CC}$
  - 5.0 V to 3.3 V at 3.3-V  $V_{CC}$
- Logic Output is Referenced to  $V_{CC}$
- Characterized up to 50 MHz at 3.3-V  $V_{CC}$
- 5.5 V Tolerance on Input Pins
- -40°C to 125°C Operating Temperature Range
- Pb-Free Packages Available: QFN14L-3.5×3.5
- Latch-Up Performance Exceeds 250 mA Per JESD 17
- ESD Performance Tested Per JESD 22
  - 2000-V Human-Body Model (A114-B, Class II)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)
- Supports Standard Logic Pinouts
- 单电源电压转换
- 1.8V至5.5V 的工作电压范围
- 上行转换模式
  - 1.8V  $V_{CC}$ 时, 1.2V至1.8V
  - 2.5V  $V_{CC}$ 时, 1.5V至2.5V
  - 3.3V  $V_{CC}$ 时, 1.8V 至 3.3V
  - 5.0V  $V_{CC}$ 时, 3.3V 至 5.0V
- 下行转换模式
  - 1.8V  $V_{CC}$ 时, 3.3V至1.8V
  - 2.5V  $V_{CC}$ 时, 3.3V至2.5V
  - 3.3V  $V_{CC}$ 时, 5.0V 至 3.3V
- 逻辑输出以电源 $V_{CC}$ 为基准
- 3.3V  $V_{CC}$ 时, 特有高达50MHz的频率
- 输入端子上的TTL兼容性
- 任一有效 $V_{CC}$ 上的输入可耐受5.5V 电压
- -40°C 至125°C 工作温度范围
- 采用无铅封装: QFN14L-3.5×3.5
- 锁断性能超过250mA, 符合JESD 17 规范
- 静电放电(ESD) 性能测试符合JESD 22 规范
  - 2000V 人体模型 (A114-B, II 类)
  - 200V 机器模型(A115-A)
  - 1000V 充电器件模型(C101)
- 实现标准门功能和插槽替换

### ■ APPLICATIONS

- Tablet
- Smartphone
- 平板电脑
- 智能手机
- Personal Computer
- Industrial Automotive
- 个人计算机
- 工业汽车应用

## DESCRIPTION

HT4125 is a low-voltage CMOS buffer gate that operates at a wider voltage range for portable, telecom, industrial, and automotive applications. The output level is referenced to the supply voltage and is able to support 1.8-V, 2.5-V, 3.3-V, and 5-V CMOS levels.

The input is designed with a lower threshold circuit to match 1.8-V input logic at  $V_{CC} = 3.3\text{ V}$  and can be used in 1.8 V to 3.3 V level-up translation. In addition, the 5-V tolerant input pins enable down translation (for example, 3.3 V to 2.5 V output at  $V_{CC} = 2.5\text{ V}$ ). The wide  $V_{CC}$  range of 1.8 V to 5.5 V allows the generation of desired output levels to connect to controllers or processors.

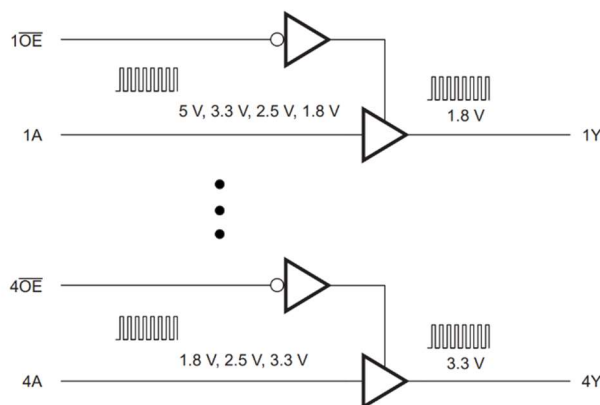
The HT4125 device is designed with current-drive capability of 8 mA to reduce line reflections, overshoot, and undershoot caused by high-drive outputs.

HT4125 是一款低压CMOS 缓冲门器件,可运行在针对便携式和电池设备的更宽电压范围内。

其采用了较低阈值电路来设计此输入,以便匹配 $V_{CC}=3.3\text{V}$  时的1.8V 输入逻辑,并且可被用在1.8V 至3.3V 电平上行转换器功能中。此外,输入端子上的5V 输入耐受可在 $V_{CC} = 2.5\text{V}$  时将芯片配置为3.3V 至2.5V 输出的下行转换。1.8 至5.5V 的宽 $V_{CC}$  范围有可能实现所需的开关输出电平连接至控制器或处理器。

HT4125 被设计成具有8mA 的经优化电流驱动能力,以减少由高驱动输出导致的线路反射、过冲和下冲。

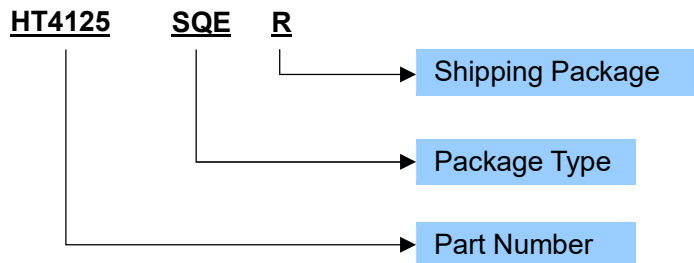
## SIMPLIFIED APPLICATION DIAGRAM



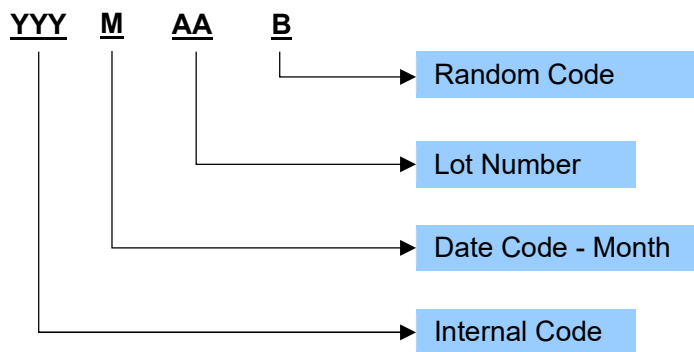
**ORDERING INFORMATION**

Ordering Number	Package Type	Marking	Operating Temperature Range	Shipping Package / MOQ
HT4125SQER	QFN14L-3.5×3.5	HT4125 YYYMAAB <sup>1</sup>	-40℃~125℃	Tape and Reel / 5000pcs

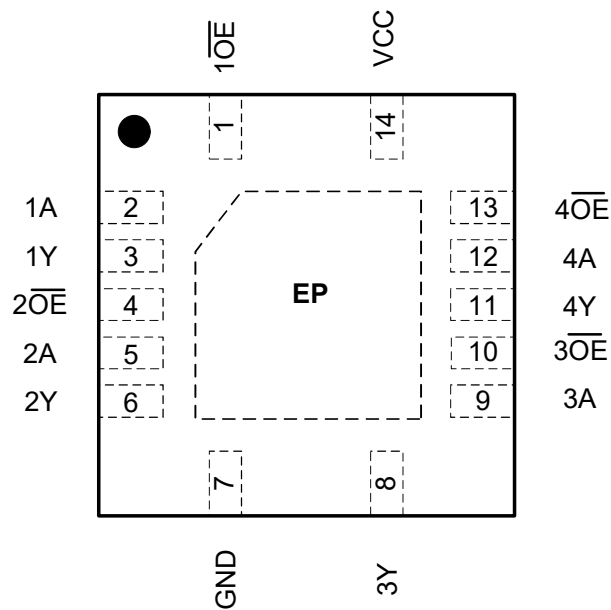
**Ordering Number**



**Production Tracking Code**



<sup>1</sup> YYYMAAB is production tracking code

**■ TERMINAL CONFIGURATION**

**■ TERMINAL FUNCTION**

Terminal No.	Name	I/O	Description
1	1 $\overline{\text{OE}}$	I	Enable 1.
2	1A	I	Input 1.
3	1Y	O	Output 1
4	2 $\overline{\text{OE}}$	I	Enable 2
5	2A	I	Input 2
6	2Y	O	Output 2
7	GND	-	Ground
8	3Y	O	Output 3
9	3A	I	Input 3
10	3 $\overline{\text{OE}}$	I	Enable 3
11	4Y	O	Output 4
12	4A	I	Input 4
13	4 $\overline{\text{OE}}$	I	Enable 4
14	VCC	-	Power in
EP	Exposed Thermal Pad	-	No connection, connect to ground.

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