

**Activity 1.1.7 Introduction to Datasheets**

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| Introduction  Who fought in the Battle of Hastings in 1066? Who invented Silly Putty? Which of the Wright brothers flew first? All very important questions, but it would simply be impossible to keep all of the answers to such questions in your head. This is why we turn to the available resources like the Internet and textbooks to retrieve such information when necessary.  The same information overload is true when it comes to integrated circuits. What is the function of a MAN6760? How many pins does an LM555 Timer have? What is the maximum supply voltage for a 74LS08? All of this information and more is available in the manufacturer datasheet for each of these components.  In this activity you will learn how to obtain and extract information from the manufacturer datasheet for several components commonly used in digital electronics.  Procedure   1. Throughout this course you will use an ever-increasing list of integrated circuits. You will need to obtain datasheets for these circuits. Since the focus of this unit is the Random Number Generator design, we will obtain the datasheets for each integrated circuit used in this design. Using the Internet, locate the manufacturer datasheet for each of the following integrated circuits. The connection diagram and function table of each IC is needed. Therefore, print only pages 1 and 2 of each data sheet.  * 74LS04 Hex Inverter Gates * 74LS08 Quad 2-Input AND Gates * 74LS32 Quad 2-Input OR Gates * 74LS74 Dual Positive-Edge-Triggered D Flip-Flops with Preset and Clear * LM555 Timer |

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| 1. As a digital designer, you will occasionally need to redesign an existing circuit. In doing so, you will come across part numbers that you are not familiar with. Use the Internet to identify the functionality and manufacturer of each of the part numbers listed below. Note that many parts will have several manufacturers. For the purpose of completing this table, only list one. Also, do not print these datasheets. Simply view them online and extract the necessary information.  |  |  |  | | --- | --- | --- | | Part Number | IC Name / Function | Manufacturer | | DM74LS00 |  |  | | SN74LS02 |  |  | | DM74LS75 |  |  | | SN74LS86 |  |  | | MAN6760 |  |  |  1. When you design a digital logic circuit, you will often need a gate that performs a specific function. You may be unsure of its part number. Use the Internet to identify the 74LS series part number for each of the following five gates. Again, do not print these datasheets. Simply view them online and extract the necessary information.  |  |  |  | | --- | --- | --- | | Gate Symbol | Gate Name / Function | 74LS Series Part Number | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |

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| 1. The world of electronics is filled with TLAs (Three Letter Acronyms). Use the Internet to identify the following IC package styles and download a sample picture of each type.  |  |  |  | | --- | --- | --- | | IC Package Style | Full Name | Picture (copy and paste) | | DIP |  |  | | SOIC |  |  | | QFP |  |  | | PLCC |  |  | | BGA |  |  |   **Conclusion**   1. Using the datasheet obtained for the 74LS04 Hex Inverter Gates as a reference, answer the following questions:  * What is the nominal Supply Voltage (Vcc)? * What is the maximum Free Air Operating Temperature (TA)? * What is the typical LOW-to-HIGH Propagation Delay (TPLH)? * What is the typical distance between two adjacent pins on a 14-Pin Dual-In-Line IC Package?  1. Who is Jack Kilby? What was his contribution to the field of digital electronics? 2. In the purpose section, you were asked (i) Who fought in the Battle of Hastings in 1066, (ii) Who invented Silly Putty, and (iii) Which of the Wright brothers flew first.   We can’t leave these questions unanswered, can we? The answers are:  (i) England and France, (ii) James Wright, and (iii) Orville.   1. Likewise, in the purpose section, you were asked; 2. What is the function of a MAN6760? 3. How many pins does an LM555 time have? 4. What is the maximum supply voltage for a 74LS08?   Answer the questions below.   * MAN6760 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * LM555 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * 74LS08 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |