REPORT ON IC-CD4033

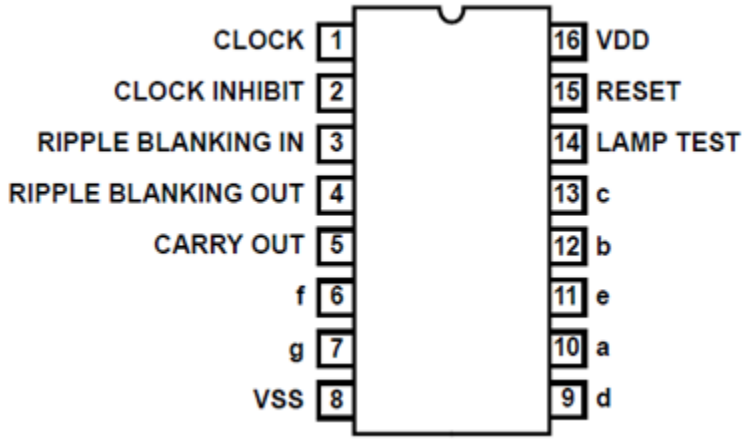
-- SHASHWAT PRATAP

DESCRIPTION

CD4033BMS consists of a 5 stage Johnson decade counter and an output decoder which converts the Johnson code to a 7 segment decoded output for driving one stage in a numerical display. This device is particularly advantageous in display applications where low power dissipation and/or low package count is important.

This IC can be used in display circuits and also in clocks, timers and so on. . While using the IC make sure that you use it alternatively, as it is highly sensitive to static change, and a small touch at the input terminal would be more than enough to start the counter circuit.

PIN DIAGRAM



Pin1 – **Clock In** – Receives clock signals from Oscillator
Pin 2- Clock Inhibit – Inhibits clocking
Pin 3 RB In – Ripple blanking Input. Receives Ripple blanking signal from preceding Chip
Pin 4 RB Out – Ripple blanking output. Sends Ripple blanking signal to

succeeding Chip
Pin 5 – Carry out – Used in Cascading more ICs
Pin 6- F output
Pin7 – G Output
Pin 8 – Ground
Pin 9 – D Output
Pin 10 – A Output
Pin 11 – E Output
Pin 12 – B Output
Pin 13 – C Output
Pin 14 – Lamp test input (Strobe)
Pin 15- Reset pin
Pin 18 – Vcc – 5-15 volt DC

WORKING

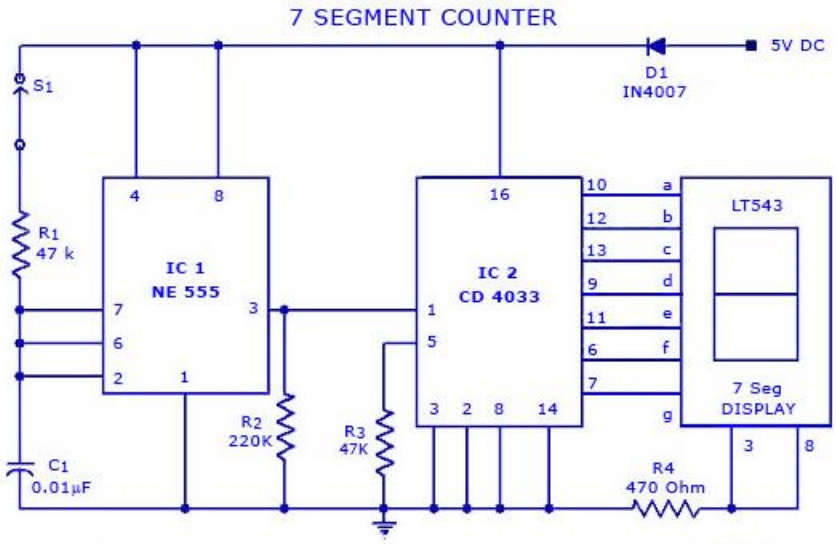
- Pins **2**, **3**, **8** & **14** are grounded.
- Pin **2** is the Clock Inhibit pin and should be grounded while the counter is incremented by one value for each pulse.
- Pins **3** & **4** are the ripple blanking input & output pins. They are used to improve the readability of the digits.
- Pin **8** is the GND pin. Pin 14 is the Lamp Test pin and is used to check if all the seven segments are properly working.
- Pin **16** is the Power pin and should be connected to the 5V DC supply.
- Pin **5** is the Carry Out pin and as the name says it carries out a 10 clock input cycle (0 to 9). It can be used to cascade more IC's to display more digits.

- Pin **6**, **7**, **9**, **10**, **11**, **12** & **13** – These 7 pins are the 7 decoded outputs from a to g and produces the output digits (0 to 9) on the display.

- Pin **15** is the Reset pin and must be kept LOW to reset the counter from 9 to 0.

- Switch **S1** is used to initiate the counting. As soon as the switch S1 is pressed, the clock input pin receives the pulse and increments the counter by 1. After counting till 9 the display again shows 0.

- Diode **D1** prevents the risk of accidental polarity reversal.



❖ **The CD4033BMS has provisions for automatic blanking of the non-significant zeros in a multi-digit decimal number which results in an easily readable display consistent with normal writing practice.**

➢ ***For example*, the number 0031.0800 in an eight digit display would be displayed as 31.08. Zero suppression on the integer side is obtained by connecting the RBI terminal of the CD4033BMS associated with the most significant digit in the display to a low-level voltage and connecting the RBO terminal of that stage to the RBI terminal of the CD4033BMS in the next-lower significant position in the display. This procedure is continued for each succeeding CD4033BMS on the interger side of the display.**

- **On the fraction side of the display the RBI of the CD4033BMS associated with the least significant bit is connected to a low-level voltage and the RBO of that CD4033BMS is connected to the RBI terminal of the CD4033BMS in the next more-significant-bit position. Again, this procedure is continued for all CD4033BMS's on the fraction side of the display.**

FEATURES

- ***Decoded 7 Segment Display Outputs and Ripple Blanking***
- ***Counter and 7 Segment Decoding in One Package***
- ***Easily Interfaced with 7 Segment Display Types •***
- ***Ideal for Low-Power Displays • "Ripple Blanking" and Lamp Test***
- ***100% Tested for Quiescent Current at 20V***

APPLICATIONS

- ***Decade Counting 7 Segment Decimal Display***
- ***Frequency Division 7 Segment Decimal Displays***
- ***Clocks, Watches, Timers (e.g. ÷ 60, ÷ 60, ÷12 Counter/ Display***
- ***Counter/Display Driver For Meter Applications***