

SERIAL I/O REAL TIME CLOCK

■ GENERAL DESCRIPTION

The NJU6355 is a serial I/O Real Time Clock suitable for 4 bit microprocessors.

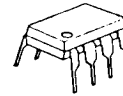
It contains a quartz crystal oscillator, counter, shift register, voltage regulator, voltage detector, and interface controller.

Only 4 lines are required for serial time, calendar and alarm data transfer between NJU6355 and microprocessor, and the microprocessor can receive their data any time when the microprocessor is required.

The operating voltage is as wide as 1.2V to 5.0V, consequently, the NJU6355 can count accurate time data even if the back up period.

Furthermore, the long time back up is available because of the current consumption during the back up period is less than 1uA.

■ PACKAGE OUTLINE



NJU6355D

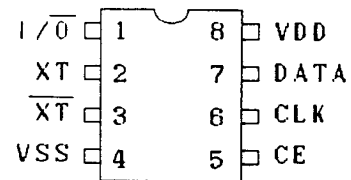


NJU6355M

■ FEATURES

- Operating Voltage : 1.2 ~ 5.5V
- Low operating current : 1uA typ. at 1.2V  
30uA typ. at 5.0V
- BCD Counts of, Seconds, Minutes, Hours, Date, Days of Week, Month and Year
- Only 4 lines (DATA, CLK, CE and I/O) required
- Low Voltage Detector (Low voltage alarm signal output)
- Automatic Leap Year Compensation
- Package Outline --- DIP8/DMP8
- C-MOS Technology

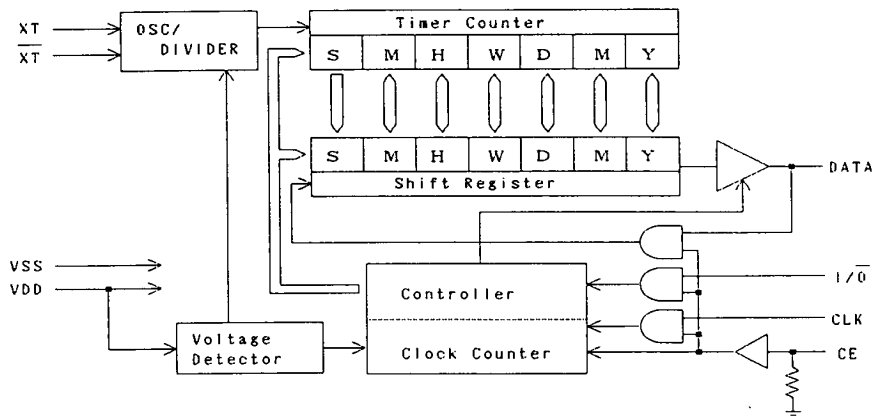
■ PIN CONFIGURATION



■ LINE UP

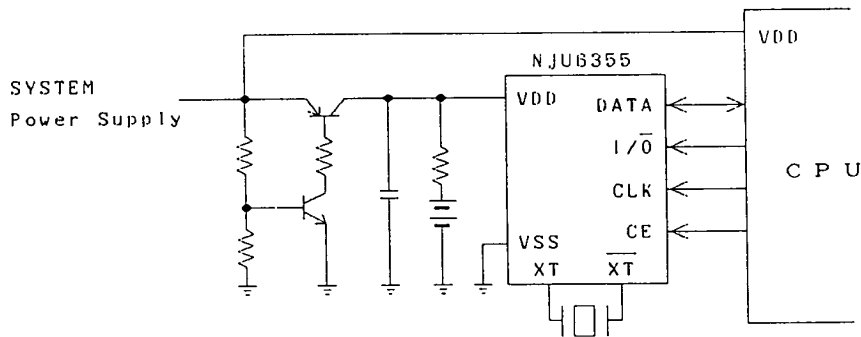
| Version | Output DATA  | OSC. Capacitor                         |
|---------|--|--|
| 6355 A  | Seconds, Minutes, Hours, Date, Days of Week, Month, Year | C <sub>o</sub> /C <sub>d</sub> on chip |
| B       | Date, Days of Week, Month, Year                          | C <sub>o</sub> /C <sub>d</sub> on chip |
| C       | Seconds, Minutes, Hours, Date, Days of Week, Month, Year | Only C <sub>o</sub>                    |
| D       | Date, Days of Week, Month, Year                          | Only C <sub>o</sub>                    |

■ BLOCK DIAGRAM



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■ APPLICATION CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

( Ta=25°C )

| PARAMETER             | SYMBOL           | RATINGS                                     | UNIT |
|-----------------------|------------------|---|------|
| Supply Voltage        | V <sub>DD</sub>  | - 0.3 ~ + 6.0                               | V    |
| Input Voltage         | V <sub>IN</sub>  | V <sub>SS</sub> -0.3 ~ V <sub>DD</sub> +0.3 | V    |
| Power Dissipation     | P <sub>D</sub>   | DIP-250 DMP-200                             | mW   |
| Operating Temperature | T <sub>opr</sub> | 0 ~ 70                                      | °C   |
| Storage Temperature   | T <sub>stg</sub> | - 55 ~ +150                                 | °C   |

■ ELECTRICAL CHARACTERISTICS

( V<sub>DD</sub>=1.2V±10%, Ta=0 ~ 70°C )

| PARAMETER         | SYMBOL           | CONDITIONS                       | MIN             | TYP | MAX             | UNIT |
|-------------------|------------------|----------------------------------|-----------------|-----|-----------------|------|
| Operating Current | I <sub>DD</sub>  | XT=32.768kHz, CE=V <sub>IL</sub> |                 |     | 1.0             | μA   |
| Input Voltage     | V <sub>IH</sub>  | I/O, CE, CLK, DATA               | 0.96            |     | V <sub>DD</sub> | V    |
|                   | V <sub>IL</sub>  | I/O, CE, CLK, DATA               | V <sub>SS</sub> |     | 0.24            |      |
| Detection Voltage | V <sub>DET</sub> | V <sub>DD</sub> =1.2V, Ta=25°C   | 0.7             |     | 0.9             | V    |

( V<sub>DD</sub>=5.0V±10%, Ta=0 ~ 70°C )

| PARAMETER             | SYMBOL           | CONDITIONS                       | MIN                  | TYP | MAX                  | UNIT |
|-----------------------|------------------|----------------------------------|----------------------|-----|----------------------|------|
| Operating Voltage     | V <sub>DD</sub>  |                                  | 4.5                  |     | 5.5                  | V    |
| Operating Current     | I <sub>DD</sub>  | XT=32.768kHz, CE=V <sub>IL</sub> |                      |     | 30                   | μA   |
| 3-st Leakage Current  | I <sub>TSL</sub> | DATA(CE=V <sub>IL</sub> )        | -2.0                 |     | 2.0                  | μA   |
| Input Leakage Current | I <sub>IL</sub>  | I/O, CE, CLK                     | -1.0                 |     | 1.0                  | μA   |
| Input Voltage         | V <sub>IH</sub>  | I/O, CE, CLK, DATA               | V <sub>DD</sub> ×0.8 |     | V <sub>DD</sub>      | V    |
|                       | V <sub>IL</sub>  | I/O, CE, CLK, DATA               | V <sub>SS</sub>      |     | V <sub>SS</sub> ×0.2 |      |
| Output Voltage        | V <sub>OH</sub>  | DATA(I <sub>OH</sub> =-0.4mA)    | 4.1                  |     |                      | V    |
|                       | V <sub>OL</sub>  | DATA(I <sub>OL</sub> =1.0mA)     |                      |     | 0.4                  |      |

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