

STRUCTURE                      Silicon Monolithic Integrated Circuit

TYPE                              **BU2098F**

FUNCTION                      8bit Serial IN / Parallel Out Driver

FEATURES                      1) Compatible with I<sup>2</sup>C BUS  
2) Nch open drain, capable of driving a maximum of 25mA  
3) 18V high voltage output can be used.

● ABSOLUTE MAXIMUM RATINGS    (Ta=25°C)

| Parameter                   | Symbol           | Limit                         | Unit |
|-----------------------------|------------------|-------------------------------|------|
| Power Supply Voltage        | V <sub>DD</sub>  | 7.0*                          | V    |
| Power Dissipation           | P <sub>d</sub>   | 300                           | mW   |
| Operating Temperature Range | T <sub>opr</sub> | -40~+85                       | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -55~+125                      | °C   |
| Input Voltage               | V <sub>IN</sub>  | -0.5~<br>V <sub>DD</sub> +0.5 | V    |

\* Output (Q0~Q7) are 18V (Max.)

• Status of this document

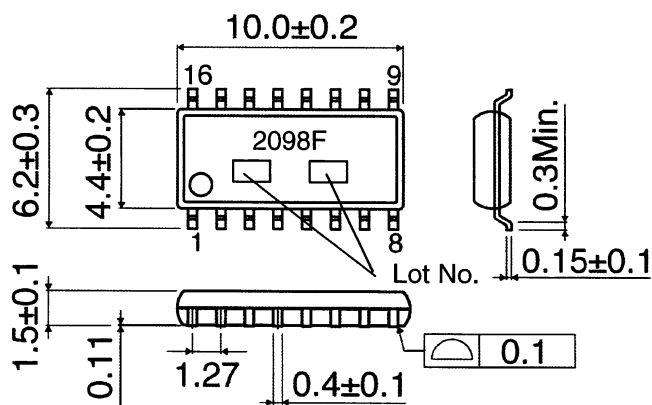
The Japanese version of this document is the formal specification. A customer may use this translation version only for a reference to help reading the formal version. If there are any difference in translation version of this document, formal version takes priority.

● ELECTRICAL CHARACTERISTICS (unless otherwise noted, Ta=25°C, VDD=5.0V)

| Parameter                                      | Symbol           | Standard Value |     |      | Unit | Condition             |
|------------------------------------------------|------------------|----------------|-----|------|------|-----------------------|
|                                                |                  | MIN            | TYP | MAX  |      |                       |
| Power Supply Voltage range                     | V <sub>DD</sub>  | 2.7            | -   | 5.5  | V    | VDD pin               |
| Output Voltage range                           | V <sub>o</sub>   | 0              | -   | 15.0 | V    |                       |
| Supply current                                 | I <sub>cc1</sub> | -              | -   | 2.0  | μA   | Static supply current |
| Input "H" voltage                              | V <sub>IH</sub>  | 0.7            | -   | -    | V/V  | Ratio against VDD     |
| Input "L" voltage                              | V <sub>IL</sub>  | -              | -   | 0.3  | V/V  | Ratio against VDD     |
| Output "L" voltage                             | V <sub>OL</sub>  | -              | -   | 0.4  | V    |                       |
| Input "L" current                              | I <sub>IL</sub>  | -              | -   | 2.0  | μA   | Vin=0                 |
| Input "L" current                              | I <sub>IH</sub>  | -              | -   | -2.0 | μA   | Vin=VDD               |
| Output Leakage current                         | I <sub>L</sub>   | -              | -   | ±5.0 | μA   | Output=OPEN, Vout=VDD |
| Data Minimum set up time                       | t <sub>1</sub>   | 100            | -   | -    | nS   | High speed mode       |
| Data hold time                                 | t <sub>2</sub>   | -              | -   | 900  | nS   | High speed mode       |
| Minimum shift pulse width<br>(High speed mode) | t <sub>31</sub>  | 0              | -   | 400  | KHz  |                       |
| Minimum shift pulse width<br>(normal mode)     | t <sub>32</sub>  | 0              | -   | 100  | KHz  |                       |

This product is not assessed whether to be strategic materials in foreign exchange and trade law or not, so please confirm at trading. This product is not deigned against radioactive ray.

● PHYSICAL DIMENSIONS

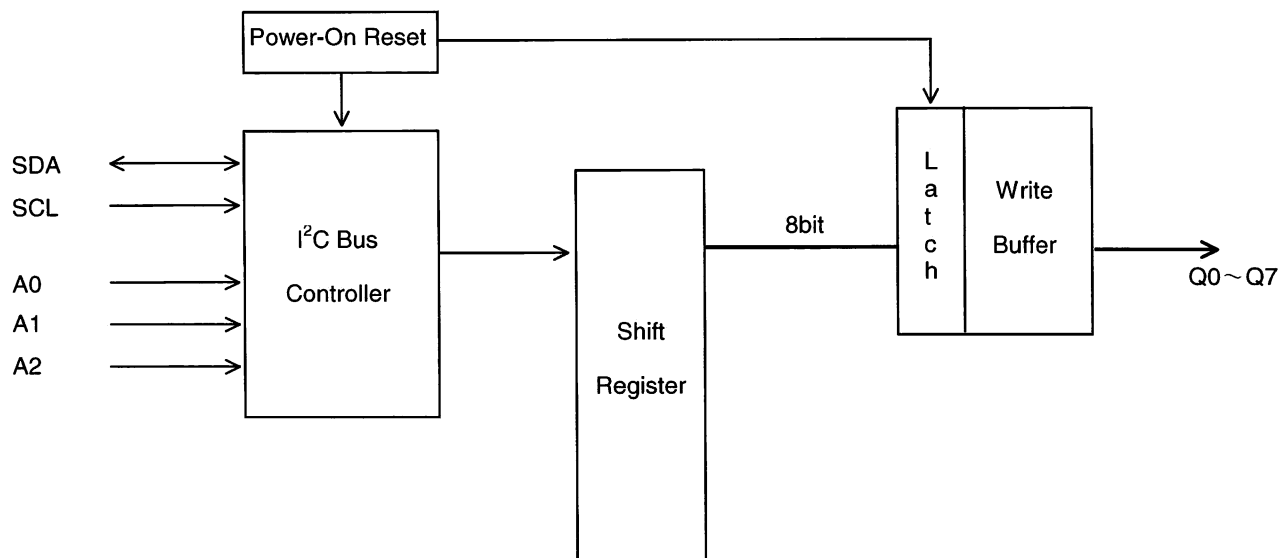


SOP16 (UNIT : mm)

## ● Pin Description

| Pin. No | Terminal | Symbol         | Function                                                                 |
|---------|----------|----------------|--------------------------------------------------------------------------|
| 14      | SCL      | C              | Shift pulse for shift register                                           |
| 15      | SDA      | S <sub>I</sub> | Data input for shift register, data is set at rising edge of shift pulse |
| 1       | A0       | A <sub>0</sub> | Address input 0                                                          |
| 2       | A1       | A <sub>1</sub> | Address input 1                                                          |
| 3       | A2       | A <sub>2</sub> | Address input 2                                                          |
| 4       | Q0       | O <sub>0</sub> | 1st bit output, it becomes "1" when data in register is "1"              |
| 5       | Q1       | O <sub>1</sub> | 2nd bit output, it becomes "1" when data in register is "1"              |
| 6       | Q2       | O <sub>2</sub> | 3rd bit output, it becomes "1" when data in register is "1"              |
| 7       | Q3       | O <sub>3</sub> | 4th bit output, it becomes "1" when data in register is "1"              |
| 9       | Q4       | O <sub>4</sub> | 5th bit output, it becomes "1" when data in register is "1"              |
| 10      | Q5       | O <sub>5</sub> | 6th bit output, it becomes "1" when data in register is "1"              |
| 11      | Q6       | O <sub>6</sub> | 7th bit output, it becomes "1" when data in register is "1"              |
| 12      | Q7       | O <sub>7</sub> | 8th bit output, it becomes "1" when data in register is "1"              |
| 13      | NC       | NC             | NC pin                                                                   |
| 8       | VSS      | GND            | GND                                                                      |
| 16      | VDD      | VDD            | Power supply                                                             |

## ● BLOCK DIAGRAM



## ● NOTES FOR USE

### (1) Absolute maximum ratings

Exceeding the absolute maximum ratings, including applied voltage and operating temperature range, may damage or destroy the IC. Since the cause of the damage cannot be conclusively identified (as, for example, a short or open mode), be sure to take appropriate physical safety measures, such as incorporating fuses, whenever a special mode anticipated to exceed absolute maximum ratings is employed.

### (2) Ground Potential

Make sure the potential for the GND pin is always kept lower than the potentials of all other pins, regardless of the operating mode.

### (3) Thermal design

Provide sufficient margin in the thermal design to account for the allowable power dissipation (Pd) expected in actual use.

### (4) Electromagnetic fields

Use in strong electromagnetic fields may cause malfunctions. Be careful operating in electromagnetic fields.

### (5) Ground wiring pattern

When both a small-signal GND and high current GND are present, single-point grounding (at the set standard point) is recommended, in order to separate the small-signal and high current patterns, and to be sure the voltage change stemming from the wiring resistance and high current does not cause any voltage change in the small-signal GND. In the same way, care must be taken to avoid wiring pattern fluctuations in any connected external component GND.

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