

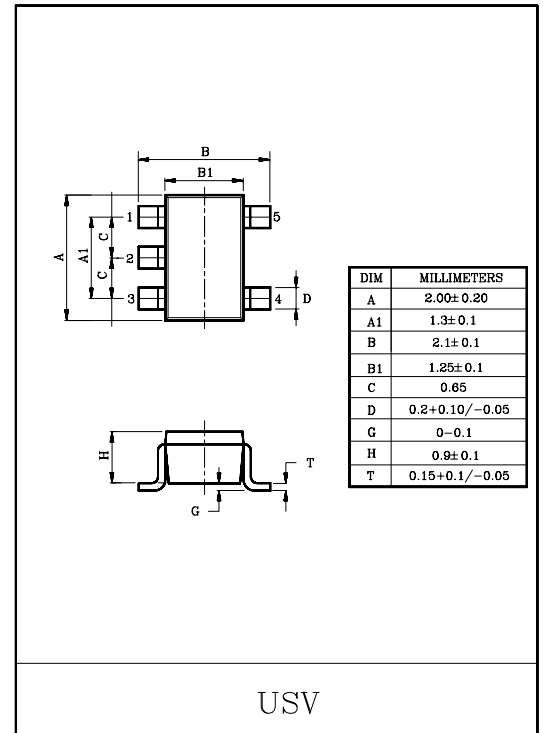
### 2 INPUT AND GATE

#### FEATURES

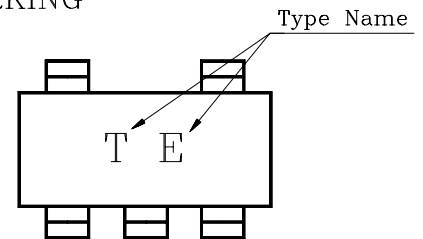
- High Output Drive :  $\pm 24\text{mA}$  (Typ.)  
@ $V_{CC}=3\text{V}$
- Super High Speed Operation :  $t_{PD}=2.7\text{ns}$ (Typ.)  
@ $V_{CC}=5\text{V}$ , 50pF
- Operation Voltage Range :  $V_{CC(\text{opr})}=1.8\sim 5.5\text{V}$ .
- Supply Voltage Data Retention :  $V_{CC}=1.5\sim 5.5\text{V}$ .
- 5V Tolerant Function

#### MAXIMUM RATINGS

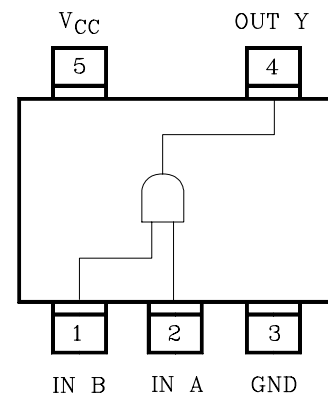
| CHARACTERISTIC              | SYMBOL    | RATING   | UNIT               |
|-----------------------------|-----------|----------|--------------------|
| Supply Voltage Range        | $V_{CC}$  | -0.5~6   | V                  |
| DC Input Voltage            | $V_{IN}$  | -0.5~6   | V                  |
| DC Output Voltage           | $V_{OUT}$ | -0.5~6   | V                  |
| Input Diode Current         | $I_{IK}$  | $\pm 20$ | mA                 |
| Output Diode Current        | $I_{OK}$  | $\pm 20$ | mA                 |
| DC Output Current           | $I_{OUT}$ | $\pm 50$ | mA                 |
| DC $V_{CC}$ /Ground Current | $I_{CC}$  | $\pm 50$ | mA                 |
| Power Dissipation           | $P_D$     | 200      | mW                 |
| Storage Temperature         | $T_{stg}$ | -65~150  | $^{\circ}\text{C}$ |
| Lead Temperature (10s)      | $T_L$     | 260      | $^{\circ}\text{C}$ |



#### MARKING

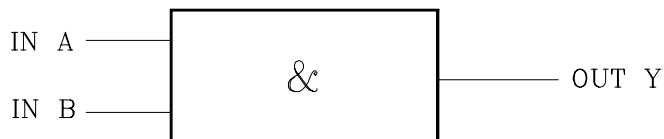


#### PIN CONNECTION(TOP VIEW)



# KIC7SZ08FU

## LOGIC DIAGRAM



## DC ELECTRICAL CHARACTERISTICS

| CHARACTERISTIC            | SYMBOL           | TEST CONDITION   | V <sub>CC</sub><br>(V)  | Ta=25°C                  |      |                          | Ta=-40~85°C              |                          | UNIT |   |
|---------------------------|------------------|--|-------------------------|--------------------------|------|--------------------------|--------------------------|--------------------------|------|---|
|                           |                  |  |                         | MIN.                     | TYP. | MAX.                     | MIN.                     | MAX.                     |      |   |
| High-Level Input Voltage  | V <sub>IH</sub>  | -  | 1.8                     | 0.88<br>×V <sub>CC</sub> | -    | -                        | 0.88<br>×V <sub>CC</sub> | -                        | V    |   |
|                           |                  |  | 2.3 ~<br>5.5            | 0.75<br>×V <sub>CC</sub> | -    | -                        | 0.75<br>×V <sub>CC</sub> | -                        |      |   |
| Low-Level Input Voltage   | V <sub>IL</sub>  | -  | 1.8                     | -                        | -    | 0.12<br>×V <sub>CC</sub> | -                        | 0.12<br>×V <sub>CC</sub> | V    |   |
|                           |                  |  | 2.3 ~<br>5.5            | -                        | -    | 0.25<br>×V <sub>CC</sub> | -                        | 0.25<br>×V <sub>CC</sub> |      |   |
| High-Level Output Voltage | V <sub>OH</sub>  | V <sub>IN</sub> =V <sub>IH</sub>                       | I <sub>OH</sub> =-100μA | 1.8                      | 1.7  | 1.8                      | -                        | 1.7                      | -    | V |
|                           |                  |  |                         | 2.3                      | 2.2  | 2.3                      | -                        | 2.2                      | -    |   |
|                           |                  |  |                         | 3.0                      | 2.9  | 3.0                      | -                        | 2.9                      | -    |   |
|                           |                  |  |                         | 4.5                      | 4.4  | 4.5                      | -                        | 4.4                      | -    |   |
|                           |                  |  | I <sub>OH</sub> =-8mA   | 2.3                      | 1.9  | 2.15                     | -                        | 1.9                      | -    |   |
|                           |                  |  | I <sub>OH</sub> =-16mA  | 3.0                      | 2.4  | 2.8                      | -                        | 2.4                      | -    |   |
|                           |                  |  | I <sub>OH</sub> =-24mA  | 3.0                      | 2.3  | 2.68                     | -                        | 2.3                      | -    |   |
| I <sub>OH</sub> =-32mA    | 4.5              | 3.8  | 4.2                     | -                        | 3.8  | -                        |                          |                          |      |   |
| Low-Level Output Voltage  | V <sub>OL</sub>  | V <sub>IN</sub> =V <sub>IH</sub><br>or V <sub>IL</sub> | I <sub>OL</sub> =100μA  | 1.8                      | -    | 0                        | 0.1                      | -                        | 0.1  | V |
|                           |                  |  |                         | 2.3                      | -    | 0                        | 0.1                      | -                        | 0.1  |   |
|                           |                  |  |                         | 3.0                      | -    | 0                        | 0.1                      | -                        | 0.1  |   |
|                           |                  |  |                         | 4.5                      | -    | 0                        | 0.1                      | -                        | 0.1  |   |
|                           |                  |  | I <sub>OL</sub> =8mA    | 2.3                      | -    | 0.1                      | 0.3                      | -                        | 0.3  |   |
|                           |                  |  | I <sub>OL</sub> =16mA   | 3.0                      | -    | 0.15                     | 0.4                      | -                        | 0.4  |   |
|                           |                  |  | I <sub>OL</sub> =24mA   | 3.0                      | -    | 0.22                     | 0.55                     | -                        | 0.55 |   |
|                           |                  |  | I <sub>OL</sub> =32mA   | 4.5                      | -    | 0.22                     | 0.55                     | -                        | 0.55 |   |
| Input Leakage Current     | I <sub>IN</sub>  | V <sub>IN</sub> =5.5V or GND                           | 0 ~<br>5.5              | -                        | -    | ±1                       | -                        | ±10                      | μA   |   |
| Power Off Leakage Current | I <sub>OFF</sub> | V <sub>IN</sub> or V <sub>OUT</sub> =5.5V              | 0.0                     | -                        | -    | 1                        | -                        | 10                       |      |   |
| Quiescent Supply Current  | I <sub>CC</sub>  | V <sub>IN</sub> =V <sub>CC</sub> or GND                | 5.5                     | -                        | -    | 2                        | -                        | 20                       |      |   |

# KIC7SZ08FU

## AC ELECTRICAL CHARACTERISTICS (Input $t_r=t_f=3ns$ )

| CHARACTERISTIC                | SYMBOL                               | TEST CONDITION                                | Ta=25°C             |      |      | Ta=-40~85°C |      | UNIT |      |
|-------------------------------|--------------------------------------|---|---------------------|------|------|-------------|------|------|------|
|                               |                                      |   | V <sub>CC</sub> (V) | MIN. | TYP. | MAX.        | MIN. |      | MAX. |
| Propagation Delay Time        | t <sub>PLH</sub><br>t <sub>PHL</sub> | C <sub>L</sub> =15pF,<br>R <sub>L</sub> =1MΩ  | 1.8                 | 2.0  | 5.2  | 10.0        | 2.0  | 10.5 | ns   |
|                               |                                      |   | 2.5±0.2             | 0.8  | 3.4  | 7.0         | 0.8  | 7.5  |      |
|                               |                                      |   | 3.3±0.3             | 0.5  | 2.6  | 4.7         | 0.5  | 5.0  |      |
|                               |                                      |   | 5.0±0.5             | 0.5  | 2.2  | 4.1         | 0.5  | 4.4  |      |
|                               |                                      | C <sub>L</sub> =50pF,<br>R <sub>L</sub> =500Ω | 3.3±0.3             | 1.5  | 3.3  | 5.2         | 1.5  | 5.5  |      |
|                               |                                      |   | 5.0±0.5             | 0.8  | 2.7  | 4.5         | 0.8  | 4.8  |      |
| Input Capacitance             | C <sub>IN</sub>                      | -   | 0~5.5               | -    | 4    | -           | -    | pF   |      |
| Power Dissipation Capacitance | C <sub>PD</sub>                      | (Note1)                                       | 3.3                 | -    | 20   | -           | -    |      |      |
|                               |                                      |   | 5.5                 | -    | 25   | -           | -    |      |      |

Note 1 : C<sub>PD</sub> defined as the value of internal equivalent capacitance of IC which is calculated from the operating current consumption without load (refer to Test Circuit.)

Average operating current can be obtained by the equation hereunder.

$$I_{CC(oper)} = C_{PD} \cdot V_{CC} \cdot f_{IN} + I_{CC}$$