

TOSHIBA Diode Silicon Epitaxial Planar Type

# HN1D01FU

## Ultra High Speed Switching Application

- Small package
- Low forward voltage:  $V_F(3) = 0.92 \text{ V (typ.)}$
- Fast reverse recovery time:  $t_{rr} = 1.6 \text{ ns (typ.)}$
- Small total capacitance:  $C_T = 2.2 \text{ pF (typ.)}$

### Absolute Maximum Ratings (Ta = 25°C)

| Characteristics                | Symbol    | Rating     | Unit |
|--------------------------------|-----------|------------|------|
| Maximum (peak) reverse voltage | $V_{RM}$  | 85         | V    |
| Reverse voltage                | $V_R$     | 80         | V    |
| Maximum (peak) forward current | $I_{FM}$  | 300*       | mA   |
| Average forward current        | $I_O$     | 100*       | mA   |
| Surge current (10ms)           | $I_{FSM}$ | 2*         | A    |
| Power dissipation              | P         | 200        | mW   |
| Junction temperature           | $T_j$     | 125        | °C   |
| Storage temperature            | $T_{stg}$ | -55 to 125 | °C   |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

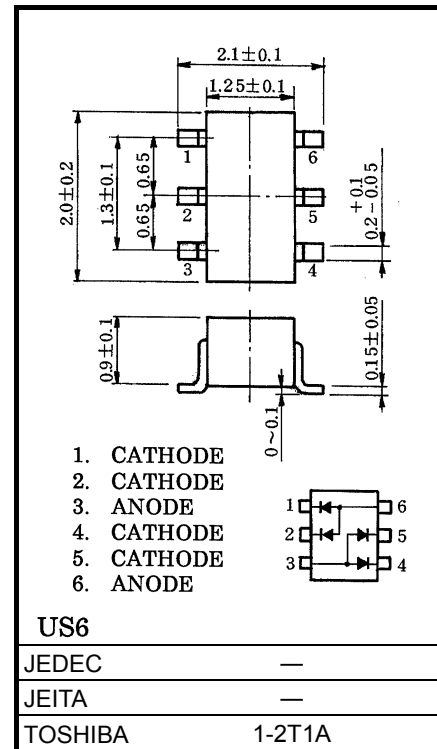
\*: This is the Absolute Maximum Ratings of single diode (Q1, Q2, Q3 or Q4).

In the case of using Unit 1 and Unit 2 independently or simultaneously, the Absolute Maximum Ratings per diode is 75% of the single diode one.

### Electrical Characteristics (Q1, Q2, Q3, Q4 Common, Ta = 25°C)

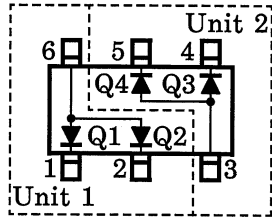
| Characteristics       | Symbol   | Test Circuit | Test Condition                | Min | Typ. | Max  | Unit |
|-----------------------|----------|--------------|-------------------------------|-----|------|------|------|
| Forward voltage       | $V_F(1)$ | —            | $I_F = 1 \text{ mA}$          | —   | 0.61 | —    | V    |
|                       | $V_F(2)$ | —            | $I_F = 10 \text{ mA}$         | —   | 0.74 | —    |      |
|                       | $V_F(3)$ | —            | $I_F = 100 \text{ mA}$        | —   | 0.92 | 1.20 |      |
| Reverse current       | $I_R(1)$ | —            | $V_R = 30 \text{ V}$          | —   | —    | 0.1  | μA   |
|                       | $I_R(2)$ | —            | $V_R = 80 \text{ V}$          | —   | —    | 0.5  |      |
| Total capacitance     | $C_T$    | —            | $V_R = 0, f = 1 \text{ MHz}$  | —   | 2.2  | 4.0  | pF   |
| Reverse recovery time | $t_{rr}$ | —            | $I_F = 10 \text{ mA (fig.1)}$ | —   | 1.6  | 4.0  | ns   |

Unit: mm

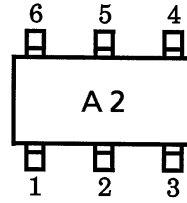


Start of commercial production  
1992-05

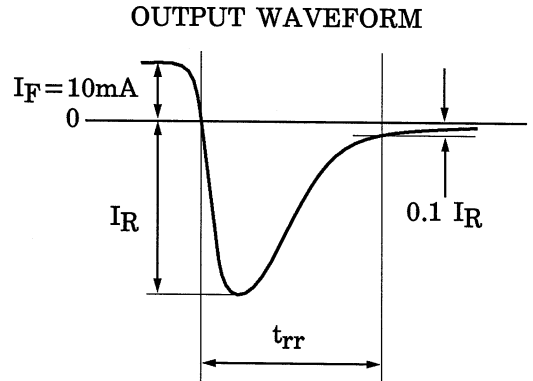
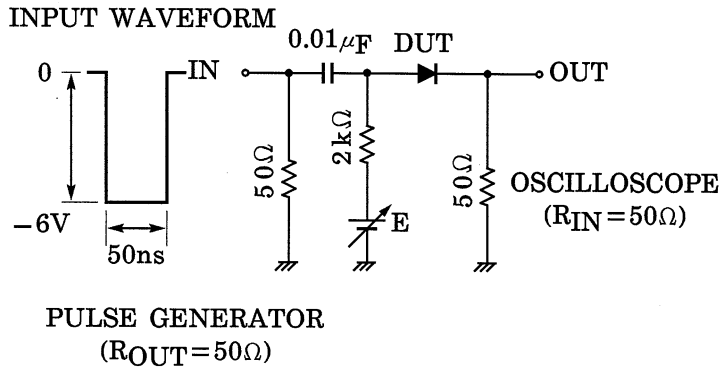
**Pin Assignment (Top View)**



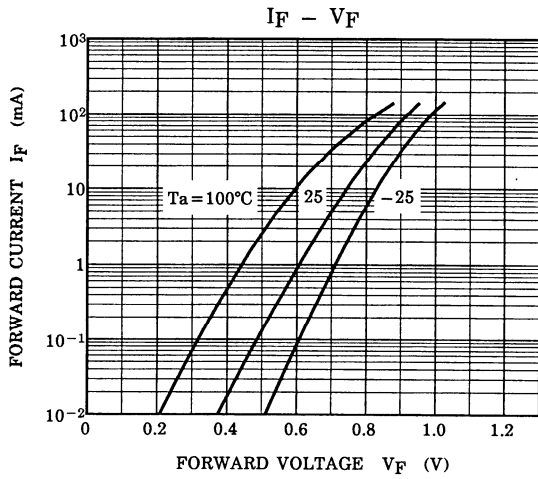
**Marking**



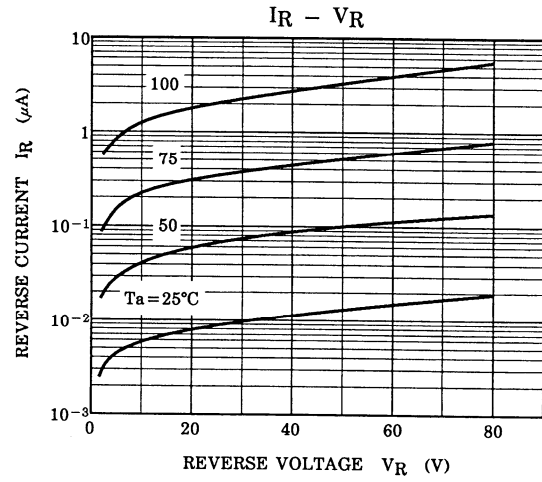
**Fig.1 Reverse Recovery Time ( $t_{rr}$ ) Test Circuit**



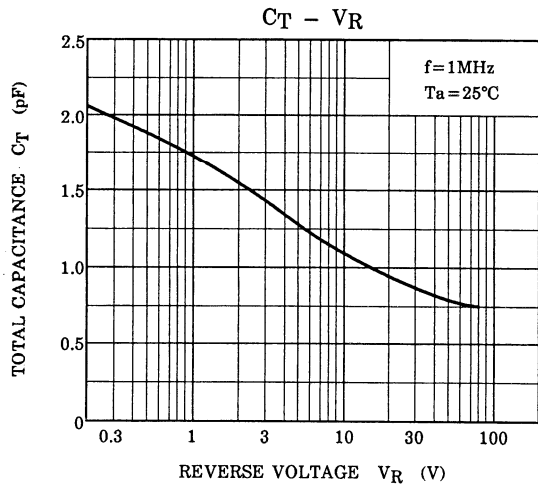
**Q1, Q2, Q3, Q4 Common**



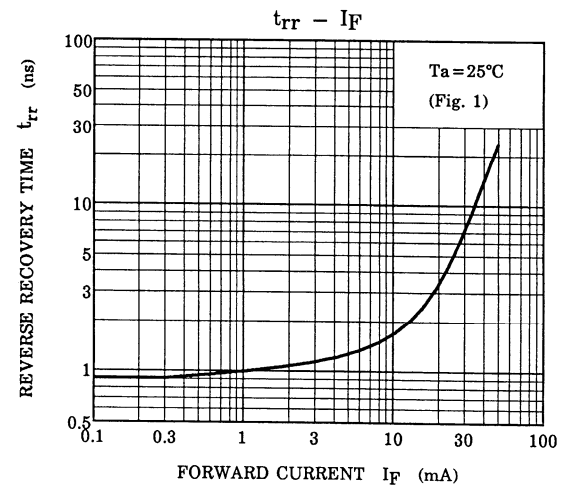
**Q1, Q2, Q3, Q4 Common**



**Q1, Q2, Q3, Q4 Common**



**Q1, Q2, Q3, Q4 Common**



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