

# HN1D01F

## Ultra-High-Speed Switching Applications

Unit: mm

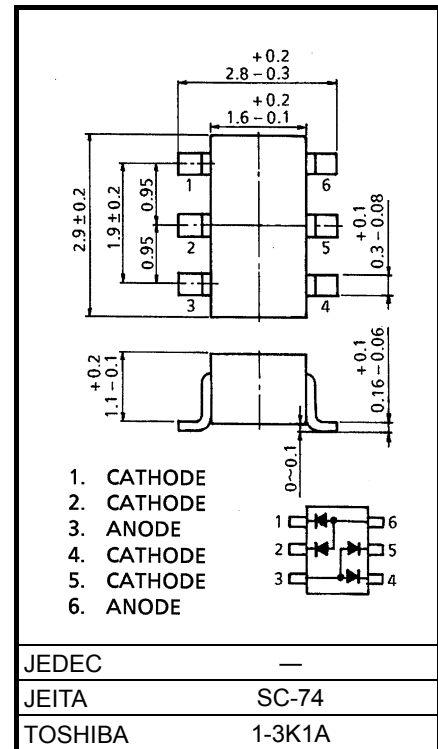
- Small package
- Low forward voltage :  $V_F(3) = 0.92 \text{ V (typ.)}$
- Fast reverse recovery time:  $t_{rr} = 1.6 \text{ ns (typ.)}$
- Small total capacitance :  $C_T = 2.2 \text{ pF (typ.)}$

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristic	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 (10 ms)	$I_{FSM}$	2 (*)	A
Power dissipation	P	300 (*)	mW
Junction temperature	$T_j$	125	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to 125	$^\circ\text{C}$

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).

(\*) These are the Absolute Maximum Ratings for a single diode (Q1 or Q2 or Q3 or Q4). If Unit 1 and Unit 2 are used independently or simultaneously, the Absolute Maximum Ratings per diode are 75% of those of a single diode.

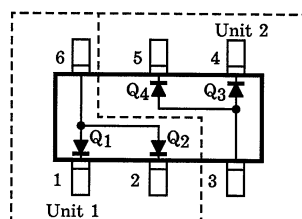


### Electrical Characteristics ( $Q_1, Q_2, Q_3, Q_4$ Common, $T_a = 25^\circ\text{C}$ )

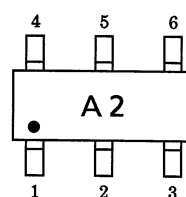
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_F(1)$	—	$I_F = 1 \text{ mA}$	—	0.61	—	V
	$V_F(2)$	—	$I_F = 10 \text{ mA}$	—	0.74	—	
	$V_F(3)$	—	$I_F = 100 \text{ mA}$	—	0.92	1.20	
Reverse current	$I_R(1)$	—	$V_R = 30 \text{ V}$	—	—	0.1	$\mu\text{A}$
	$I_R(2)$	—	$V_R = 80 \text{ V}$	—	—	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

Start of commercial production  
1992-05

## Pin Assignment (Top View)

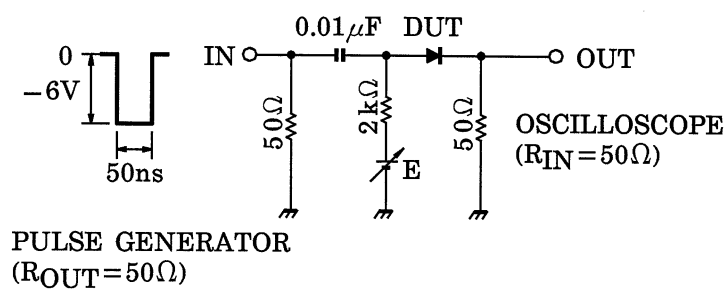


## Marking

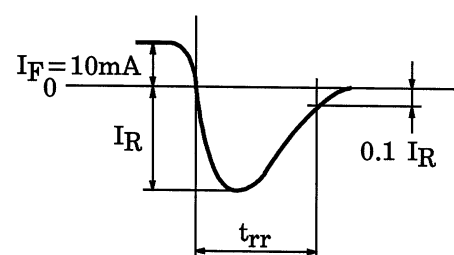


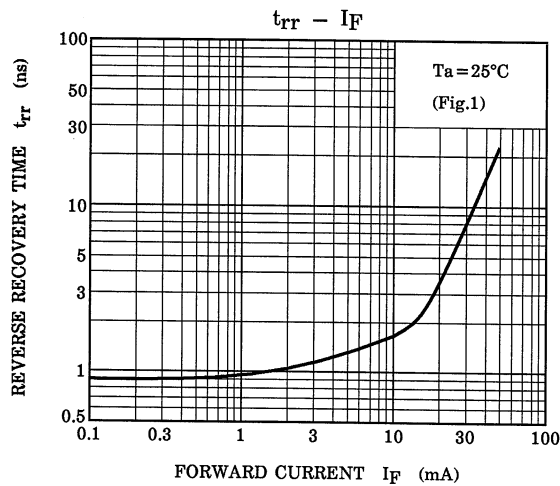
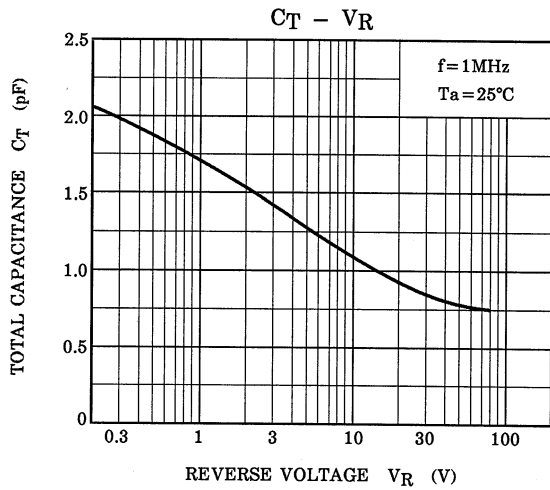
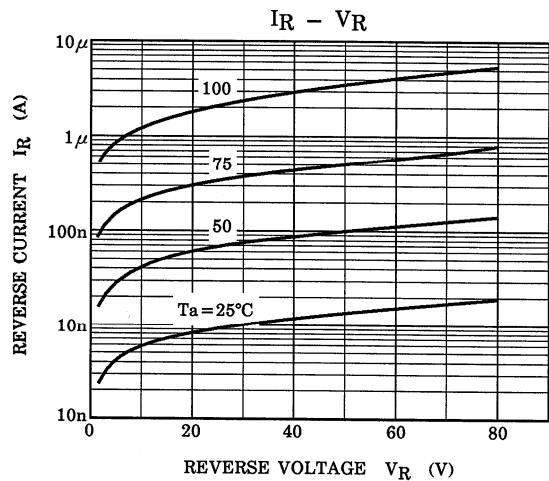
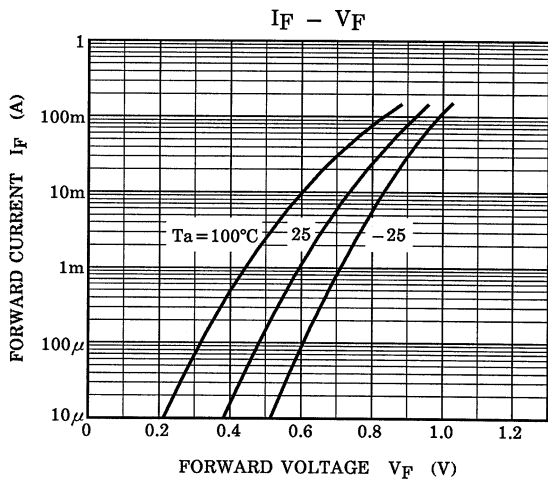
**Fig. 1. Reverse Recovery Time ( $t_{rr}$ ) Test Circuit**

### INPUT WAVEFORM



### OUTPUT WAVEFORM





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