

TOSHIBA DIODE SILICON EPITAXIAL PLANAR TYPE

# HN1D03F

ULTRA HIGH SPEED SWITCHING APPLICATION.

Unit in mm

- Built in Anode Common and Cathode Common.

**Unit 1**

- Low Forward Voltage      Q1, Q2 :  $V_F(3) = 0.90V$  (Typ.)
- Fast Reverse Recovery Time      Q1, Q2 :  $t_{rr} = 1.6ns$  (Typ.)
- Small Total Capacitance      Q1, Q2 :  $C_T = 0.9pF$  (Typ.)

**Unit 2**

- Low Forward Voltage      Q3, Q4 :  $V_F(3) = 0.92V$  (Typ.)
- Fast Reverse Recovery Time      Q3, Q4 :  $t_{rr} = 1.6ns$  (Typ.)
- Small Total Capacitance      Q3, Q4 :  $C_T = 2.2pF$  (Typ.)

Unit 1, Unit 2 COMMON MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

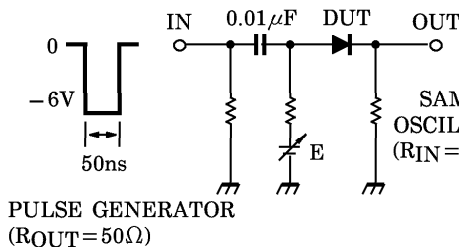
CHARACTERISTIC	SYMBOL	RATING	UNIT
Maximum (Peak) Reverse Voltage	$V_{RM}$	85	V
Reverse Voltage	$V_R$	80	V
Maximum (Peak) Forward Current	$I_{FM}$	300 (*)	mA
Average Forward Current	$I_O$	100 (*)	mA
Surge Current (10ms)	$I_{FSM}$	2 (*)	A
Power Dissipation	P	300	mW
Junction Temperature	$T_j$	125	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55~125	$^\circ C$

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

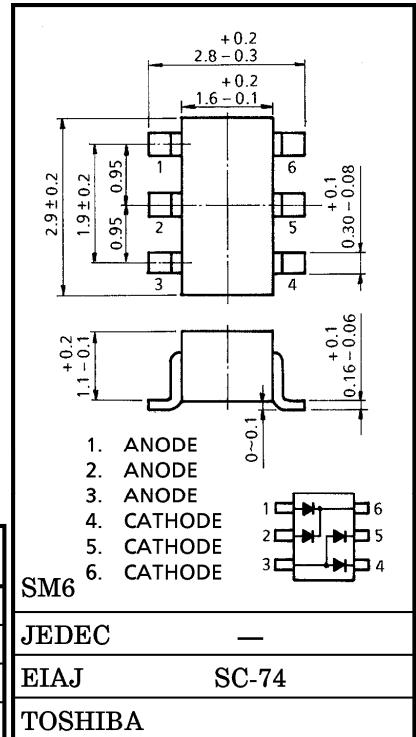
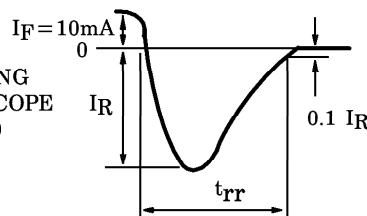
In the case of using Unit 1 and Unit 2 independently or simultaneously, the Maximum Ratings per diode is 75% of the single diode one.

Fig.1 REVERSE RECOVERY TIME ( $t_{rr}$ ) TEST CIRCUIT

INPUT WAVEFORM



OUTPUT WAVEFORM



SM6

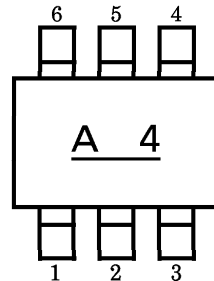
JEDEC

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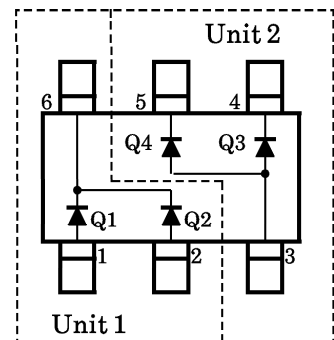
TOSHIBA

Weight : 0.015g

Marking



PIN ASSIGNMENT (TOP VIEW)



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## Unit 1 ELECTRICAL CHARACTERISTICS (Q1, Q2 COMMON) (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Forward Voltage	V <sub>F</sub> (1)	I <sub>F</sub> = 1mA	—	0.60	—	V
	V <sub>F</sub> (2)	I <sub>F</sub> = 10mA	—	0.72	—	
	V <sub>F</sub> (3)	I <sub>F</sub> = 100mA	—	0.90	1.20	
Reverse Current	I <sub>R</sub> (1)	V <sub>R</sub> = 30V	—	—	0.1	μA
	I <sub>R</sub> (2)	V <sub>R</sub> = 80V	—	—	0.5	
Total Capacitance	C <sub>T</sub>	V <sub>R</sub> = 0, f = 1MHz	—	0.9	3.0	pF
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 10mA (Fig.1)	—	1.6	4.0	ns

## Unit 2 ELECTRICAL CHARACTERISTICS (Q3, Q4 COMMON) (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Forward Voltage	V <sub>F</sub> (1)	I <sub>F</sub> = 1mA	—	0.61	—	V
	V <sub>F</sub> (2)	I <sub>F</sub> = 10mA	—	0.74	—	
	V <sub>F</sub> (3)	I <sub>F</sub> = 100mA	—	0.92	1.20	
Reverse Current	I <sub>R</sub> (1)	V <sub>R</sub> = 30V	—	—	0.1	μA
	I <sub>R</sub> (2)	V <sub>R</sub> = 80V	—	—	0.5	
Total Capacitance	C <sub>T</sub>	V <sub>R</sub> = 0, f = 1MHz	—	2.2	4.0	pF
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 10mA (Fig.1)	—	1.6	4.0	ns

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