TOSHIBA Diode Silicon Epitaxial Planar Type

HN1D03F

Ultra High Speed Switching Application

- Built in anode common and cathode common.

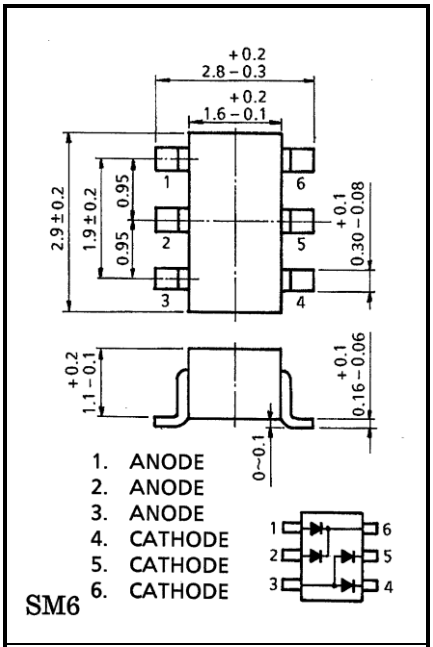
Unit 1

- Low forward voltage Q1, Q2: $V_{F\ (3)}$ = 0.90 V (typ.)
- Fast reverse recovery time Q1, Q2: t_{rr} = 1.6 ns (typ.)
- Small total capacitance Q1, Q2: C_T = 0.9 pF (typ.)

Unit 2

- Low forward voltage Q3, Q4: $V_{F\ (3)}$ = 0.92 V (typ.)
- Fast reverse recovery time Q3, Q4: t_{rr} = 1.6 ns (typ.)
- Small total capacitance Q3, Q4: C_T = 2.2 pF (typ.)

Unit: mm



JEDEC	—
JEITA	SC-74
TOSHIBA	1–2T1D

Weight: 15 mg (typ.)

Unit 1, Unit 2 Common Absolute Maximum Ratings (Ta = 25°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_D (Note 3)	300	mW
Junction temperature	T_j (Note 1)	150	°C
	T_j (Note 2)	125	
Storage temperature	T_{stg} (Note 1)	−55 to 150	°C
	T_{stg} (Note 2)	−55 to 125	

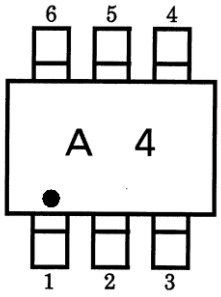
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

Note 1: For devices with the ordering part number ending in LF(T.
Note 2: For devices with the ordering part number in other than LF(T.
Note 3: Total rating.

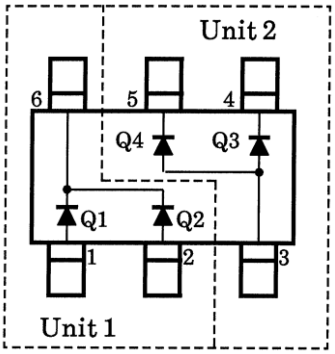
(*) These are the Absolute Maximum Ratings for a single diode (Q1 or Q2 or Q3 or Q4). If Unit 1 and Unit 2 are used independently or simultaneously, the Absolute Maximum Ratings per diode are 75% of those of a single diode.

Start of commercial production
1992-05

Marking



Pin Assignment (Top View)



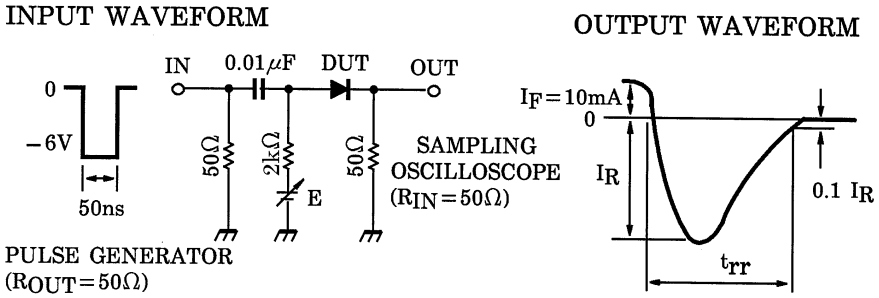


Fig.1 Reverse Recovery Time (t_{rr}) Test Circuit

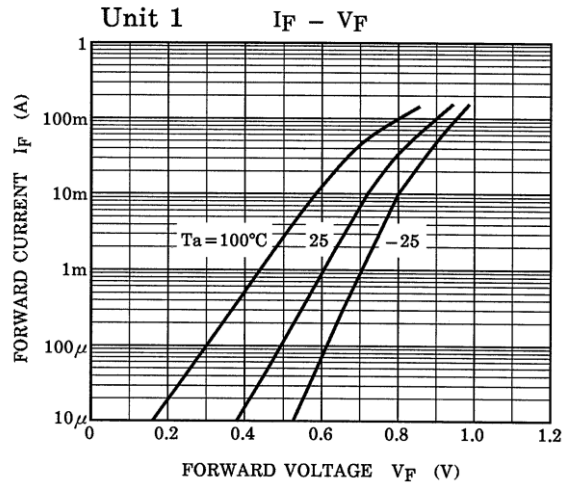
Unit 1 Electrical Characteristics (Q1, Q2 Common) (Ta = 25°C)

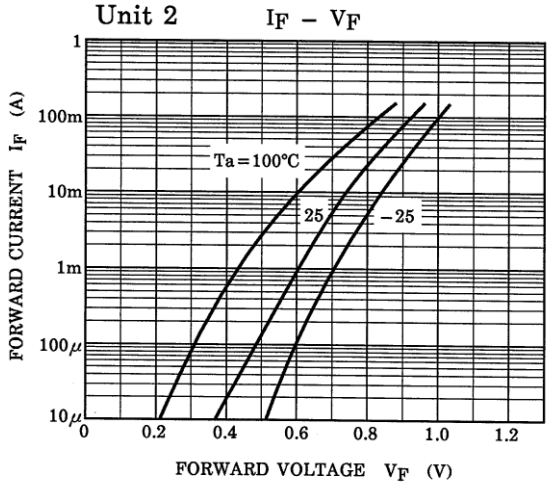
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_{F\ (1)}$	—	I_F = 1 mA	—	0.60	—	V
	$V_{F\ (2)}$	—	I_F = 10 mA	—	0.72	—	
	$V_{F\ (3)}$	—	I_F = 100 mA	—	0.90	1.20	
Reverse current	$I_{R\ (1)}$	—	V_R = 30 V	—	—	0.1	μA
	$I_{R\ (2)}$	—	V_R = 80 V	—	—	0.5	
Total capacitance	C_T	—	V_R = 0 V, f = 1 MHz	—	0.9	3.0	pF
Reverse recovery time	t_{rr}	—	I_F = 10 mA (fig.1)	—	1.6	4.0	ns

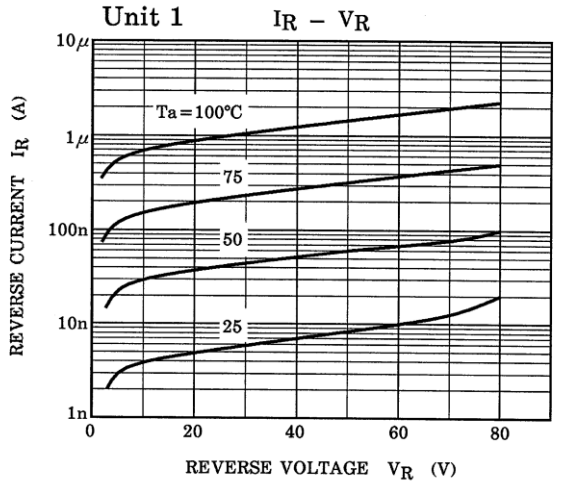
Unit 2 Electrical Characteristics (Q3, Q4 Common) (Ta = 25°C)

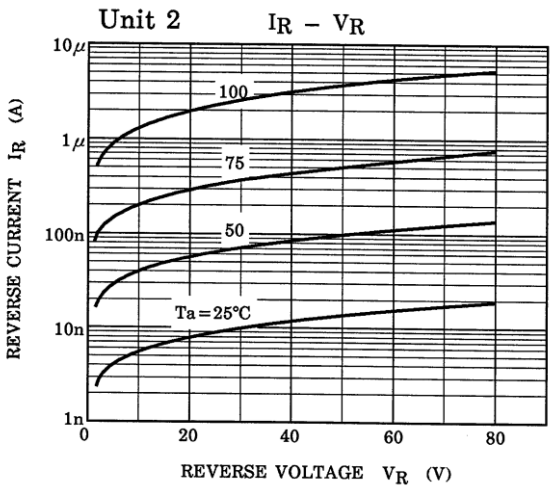
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_{F\ (1)}$	—	I_F = 1 mA	—	0.61	—	V
	$V_{F\ (2)}$	—	I_F = 10 mA	—	0.74	—	
	$V_{F\ (3)}$	—	I_F = 100 mA	—	0.92	1.20	
Reverse current	$I_{R\ (1)}$	—	V_R = 30 V	—	—	0.1	μA
	$I_{R\ (2)}$	—	V_R = 80 V	—	—	0.5	
Total capacitance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

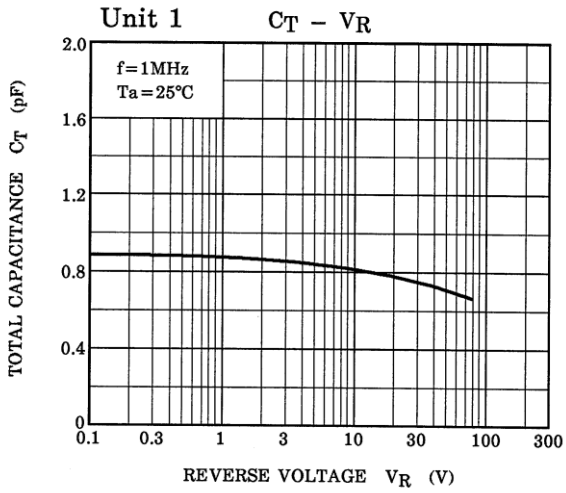
Characteristics Curves

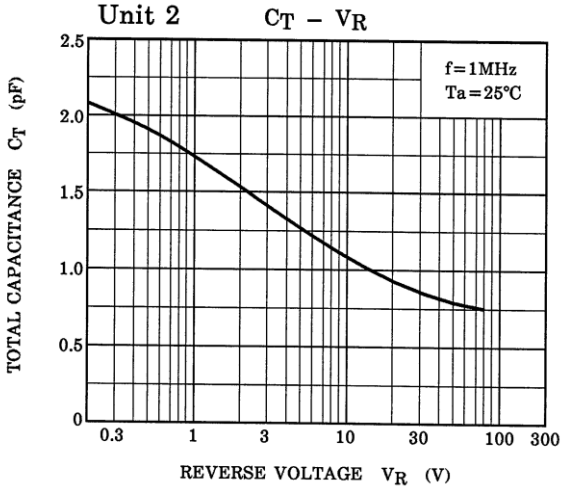












The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

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