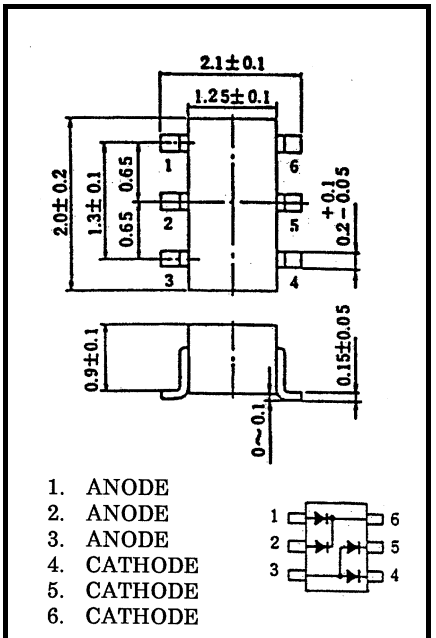
TOSHIBA Diode Silicon Epitaxial Planar Type

HN1D03FU

Ultra High Speed Switching Application

Unit: mm



1. ANODE
2. ANODE
3. ANODE
4. CATHODE
5. CATHODE
6. CATHODE

JEDEC	—
EIAJ	—
TOSHIBA	1-2T1D

Weight: 6.2mg

- 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.)

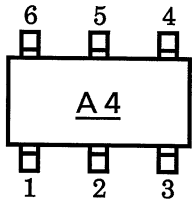
Unit 1, Unit 2 Common Absolute Maximum Ratings (Ta = 25°C)

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	80*	mA
Surge current (10ms)	I_{FSM}	2*	A
Power dissipation	P	200	mW
Junction temperature	T_j	125	°C
Storage temperature	T_{stg}	−55~125	°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 or Q2 or 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.

Marking



Pin Assignment (Top View)

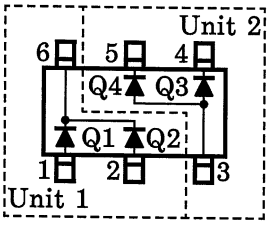
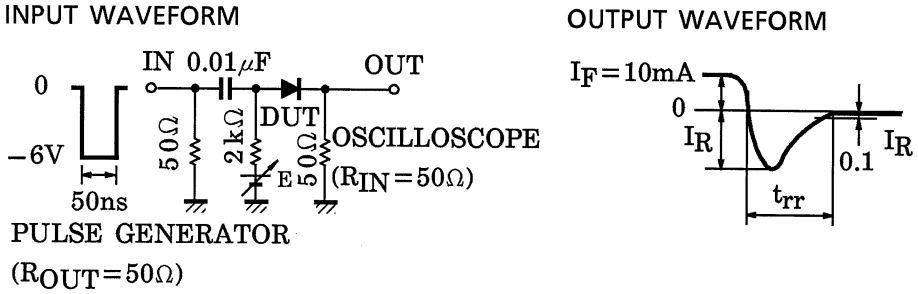


Fig.1 Reverse Recovery Time (t_{rr}) Test Circuit



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

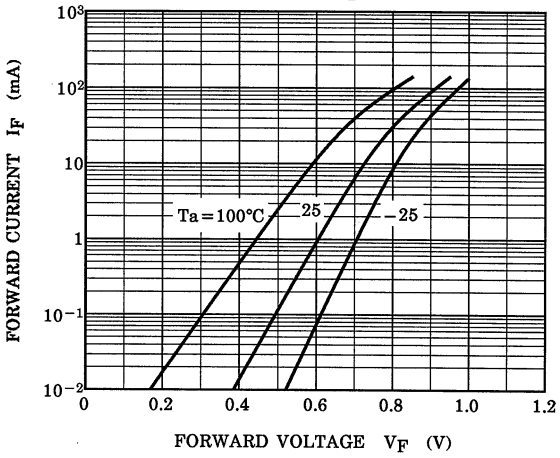
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_{F\ (1)}$	—	I_F = 1mA	—	0.60	—	V
	$V_{F\ (2)}$	—	I_F = 10mA	—	0.72	—	
	$V_{F\ (3)}$	—	I_F = 100mA	—	0.90	1.20	
Reverse current	$I_{R\ (1)}$	—	V_R = 30V	—	—	0.10	μA
	$I_{R\ (2)}$	—	V_R = 80V	—	—	0.50	
Total capacitance	C_T	—	V_R = 0, f = 1MHz	—	0.9	3.0	pF
Reverse recovery time	t_{rr}	—	I_F =10mA (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 = 1mA	—	0.61	—	V
	$V_{F\ (2)}$	—	I_F = 10mA	—	0.74	—	
	$V_{F\ (3)}$	—	I_F = 100mA	—	0.92	1.20	
Reverse current	$I_{R\ (1)}$	—	V_R = 30V	—	—	0.10	μA
	$I_{R\ (2)}$	—	V_R = 80V	—	—	0.50	
Total capacitance	C_T	—	V_R = 0, f = 1MHz	—	2.20	4.0	pF
Reverse recovery time	t_{rr}	—	I_F =10mA (fig.1)	—	1.60	4.0	ns

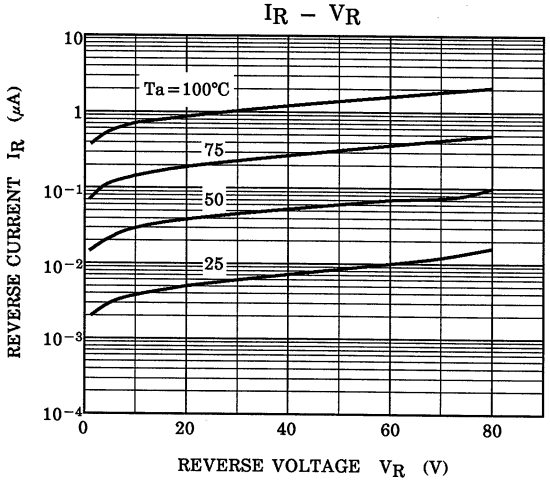
Unit 1 (Q1, Q2 COMMON)

$I_F - V_F$



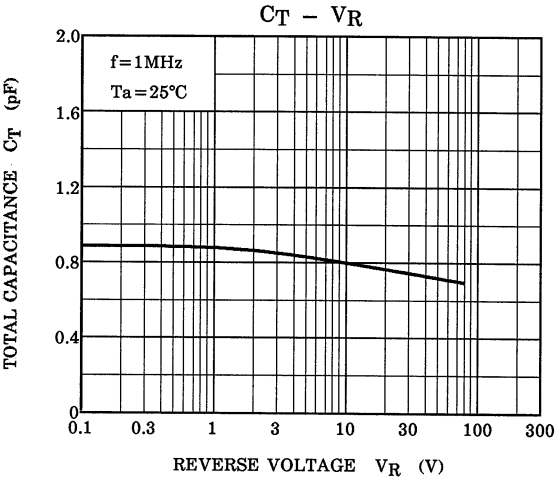
Unit 1 (Q1, Q2 COMMON)

$I_R - V_R$



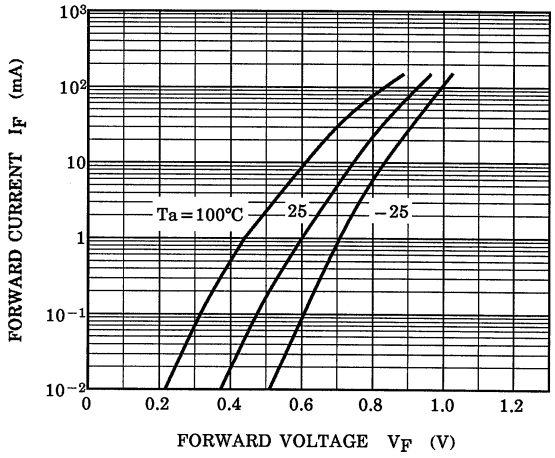
Unit 1 (Q1, Q2 COMMON)

$C_T - V_R$



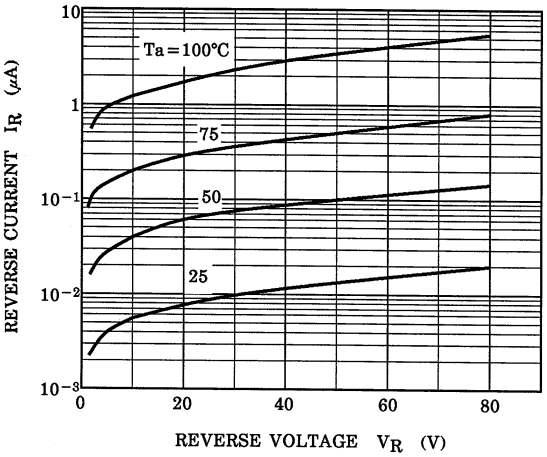
Unit 2 (Q3, Q4 COMMON)

$I_F - V_F$



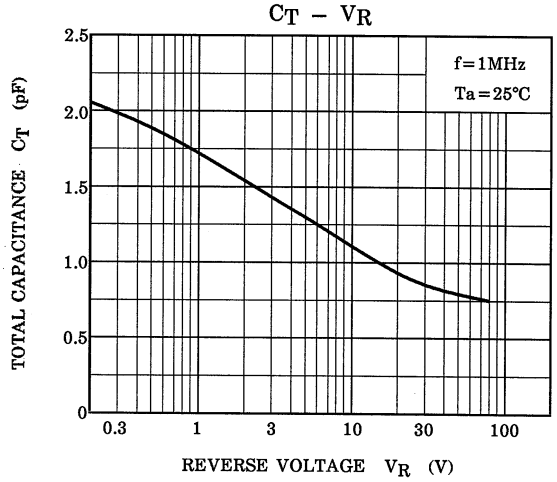
Unit 2 (Q3, Q4 COMMON)

$I_R - V_R$



Unit 2 (Q3, Q4 COMMON)

$C_T - V_R$



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20070701-EN GENERAL

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