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TOSHIBA Diode Silicon Epitaxial Planar Type

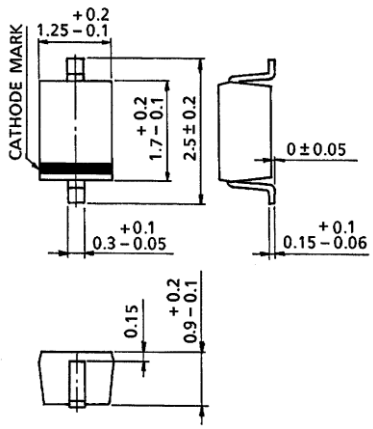
1SS403

Unit: mm

High Voltage Switching Applications

- AEC-Q101 Qualified (Note1)
- Two-pin small packages are suitable for higher mounting densities.
- Excellent in forward current and forward voltage characteristics : $V_{F\ (2)}$ = 0.90V (typ.)
- Fast reverse recovery time : t_{rr} = 60ns (max)
- Small total capacitance : C_T = 1.5pF (typ.)

Note1: For detail information, please contact to our sales.



JEDEC	—
JEITA	—
TOSHIBA	1-1E1A

Weight: 0.0045g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Maximum (peak) reverse voltage	V_{RM}	250	V
Reverse voltage	V_R	200	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 range	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).

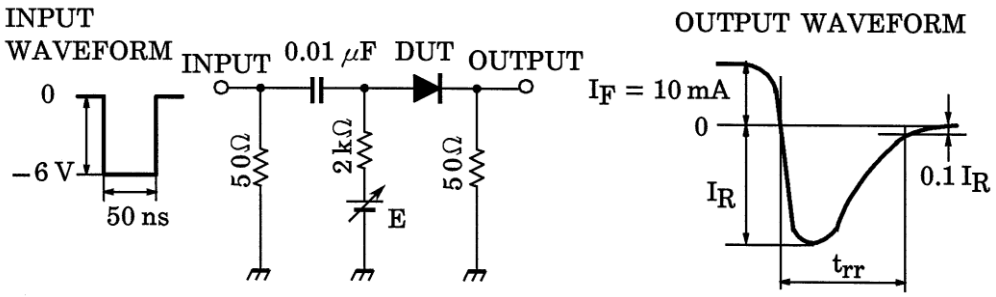
*: When mounted on a glass epoxy board PCB: 20 mm × 20 mm, with copper pad 4 mm × 4 mm.

Electrical Characteristics (Ta = 25°C)

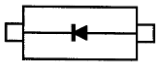
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_{F\ (1)}$	—	I_F = 10mA	—	0.72	1.0	V
	$V_{F\ (2)}$	—	I_F = 100mA	—	0.90	1.2	
Reverse current	$I_{R\ (1)}$	—	V_R = 50V	—	—	0.1	μA
	$I_{R\ (2)}$	—	V_R = 200V	—	—	1.0	
Total capacitance	C_T	—	V_R = 0, f = 1MHz	—	1.5	3.0	pF
Reverse recovery time	t_{rr}	—	I_F = 10mA (Fig. 1)	—	10	60	ns

Start of commercial production
1998-10

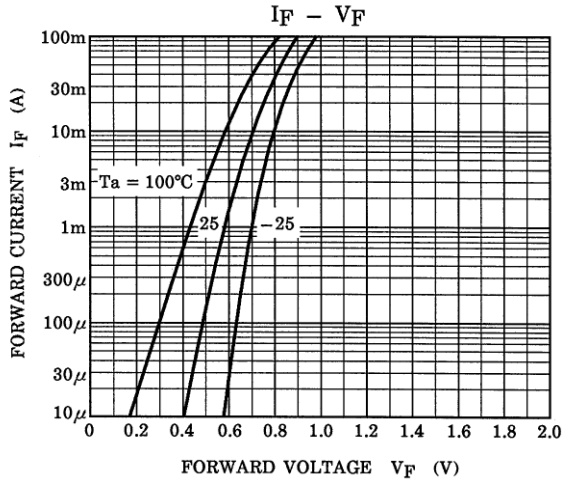
Fig.1 Reverse Recovery Time (t_{rr}) Test Circuit

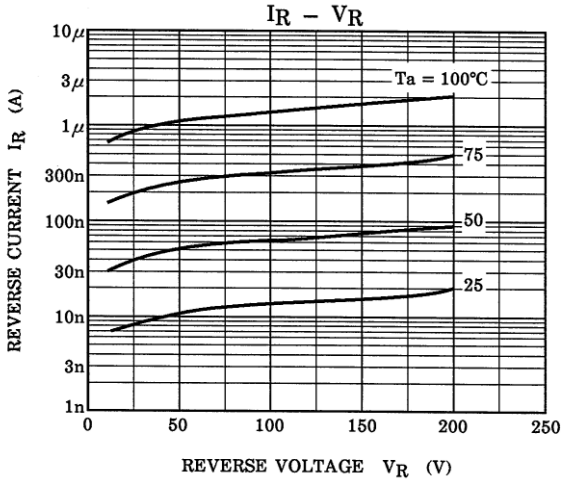


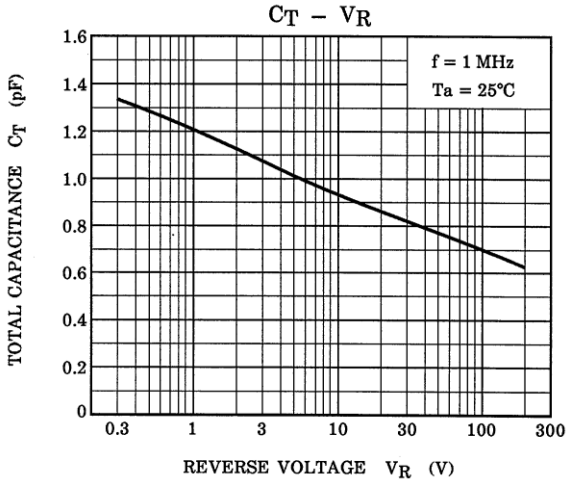
Equivalent Circuit (Top View)

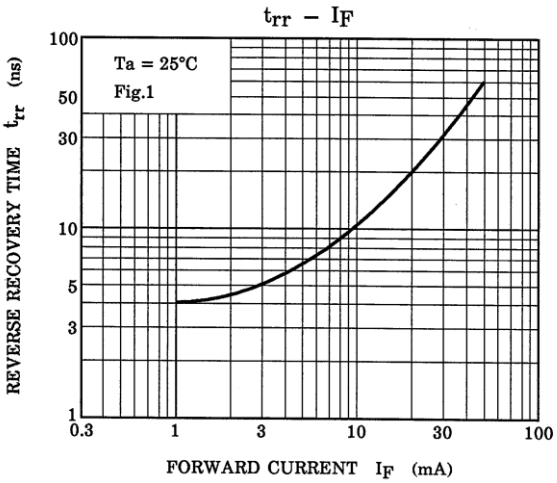


Marking


$I_F - V_F$
FORWARD CURRENT I_F (A)
100m
30m
10m
3m
1m
300μ
100μ
30μ
10μ
Ta = 100°C
25
−25
0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0
FORWARD VOLTAGE V_F (V)


$I_R - V_R$
REVERSE CURRENT I_R (A)
10μ
3μ
1μ
300n
100n
30n
10n
3n
1n
Ta = 100°C
75
50
25
0 50 100 150 200 250
REVERSE VOLTAGE V_R (V)


$C_T - V_R$
TOTAL CAPACITANCE C_T (pF)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
f = 1 MHz
Ta = 25°C
0.3 1 3 10 30 100 300
REVERSE VOLTAGE V_R (V)


$t_{rr} - I_F$
REVERSE RECOVERY TIME t_{rr} (ns)
100
50
30
10
5
3
1
Ta = 25°C
Fig.1
0.3 1 3 10 30 100
FORWARD CURRENT I_F (mA)

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