TOSHIBA Diodes for Protecting against ESD

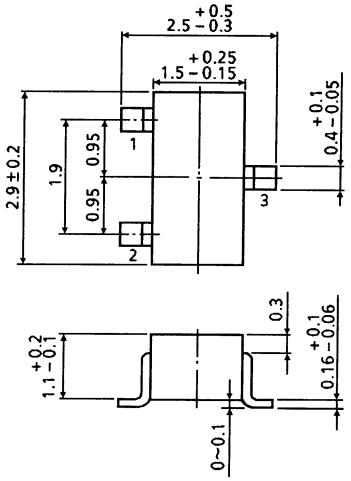
DF3A5.6F

Unit: mm

Product for Use Only as Protection against Electrostatic Discharge (ESD)

*This product is for protection against electrostatic discharge (ESD) only and is not intended for any other usage, including without limitation, the constant voltage diode application.

- The mounting of two devices on an ultra-compact package allows the number of parts and the mounting cost to be reduced.



1. Cathode1
2. Cathode2
3. Anode

S-MINI

JEDEC	TO-236MOD
JEITA	SC-59
TOSHIBA	1-3G1E

Weight : 12 mg (typ.)

Abusolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Power dissipation	P	150	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 150	°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).

Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Zener voltage	V_Z	I_Z = 5 mA	5.3	5.6	6.0	V
Dynamic impedance	Z_Z	I_Z = 5 mA	—	—	40	Ω
Reverse current	I_R	V_R =2.5 V	—	—	1.0	μA
Terminal capacitance (between Cathode and Anode)	C_T	V_R = 0 V, f = 1 MHz	—	65	—	pF

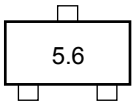
Guaranteed Level of ESD Immunity

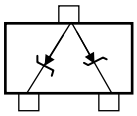
Test Condition	ESD Immunity Level
IEC61000-4-2 (Contact discharge)	± 30 kV

Criterion: No damage to device elements

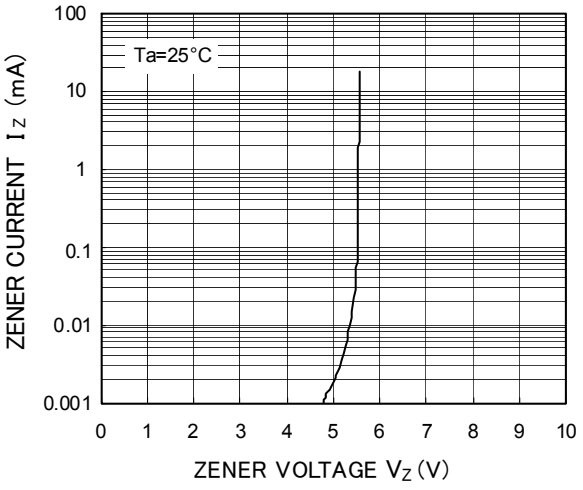
Start of commercial production
2005-12

Marking **Equivalent Circuit (Top View)**

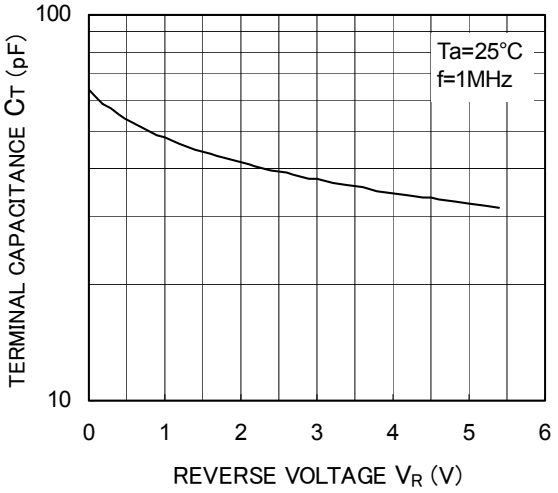




$I_Z - V_Z$


Ta=25°C
ZENER CURRENT Iz (mA)
100
10
1
0.1
0.01
0.001
0 1 2 3 4 5 6 7 8 9 10
ZENER VOLTAGE VZ (V)

$C_T - V_R$


Ta=25°C
f=1MHz
TERMINAL CAPACITANCE CT (pF)
100
10
0 1 2 3 4 5 6
REVERSE VOLTAGE VR (V)

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