

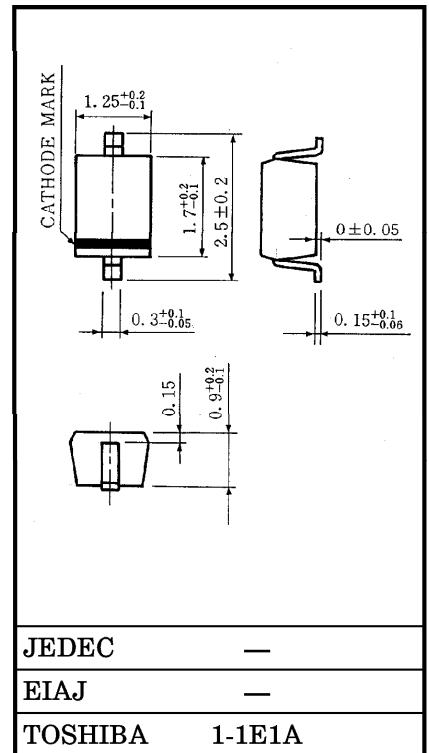
TOSHIBA VARIABLE CAPACITANCE DIODE SILICON EPITAXIAL PLANAR TYPE

# 1SV245

UHF SHF TUNING

Unit in mm

- High Capacitance Ratio :  $C_{2V} / C_{25V} = 5.7$  (Typ.)
- Low Series Resistance :  $r_s = 1.2\Omega$  (Typ.)
- Excellent C - V Characteristics, and Small Tracking Error.



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Reverse Voltage	$V_R$	30	V
Peak Reverse Voltage	$V_{RM}$	35 ( $R_L = 10k\Omega$ )	V
Junction Temperature	$T_j$	125	°C
Storage Temperature Range	$T_{stg}$	-55~125	°C

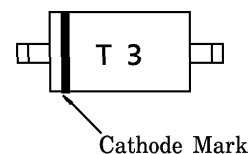
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Reverse Voltage	$V_R$	$I_R = 1\mu A$	30	—	—	V
Reverse Current	$I_R$	$V_R = 28V$	—	—	10	nA
Capacitance	$C_{2V}$	$V_R = 2V, f = 1MHz$	3.31	—	4.55	pF
Capacitance	$C_{25V}$	$V_R = 25V, f = 1MHz$	0.61	—	0.77	pF
Capacitance Ratio	$C_{2V} / C_{25V}$	—	5.0	5.7	6.5	—
Series Resistance	$r_s$	$V_R = 1V, f = 470MHz$	—	1.2	2.0	$\Omega$

Note1: Unites are compounded in one package and are matched to 6.0%.

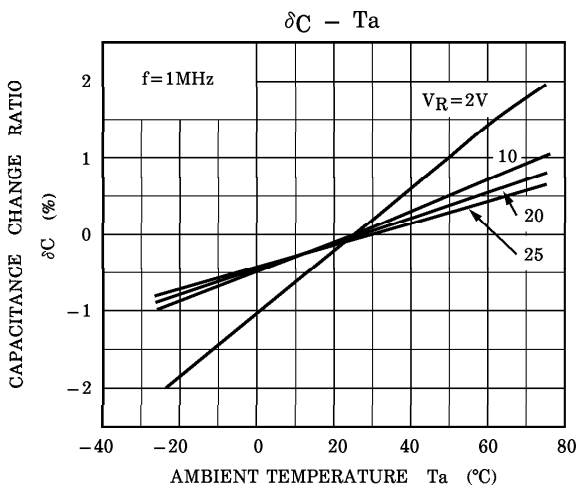
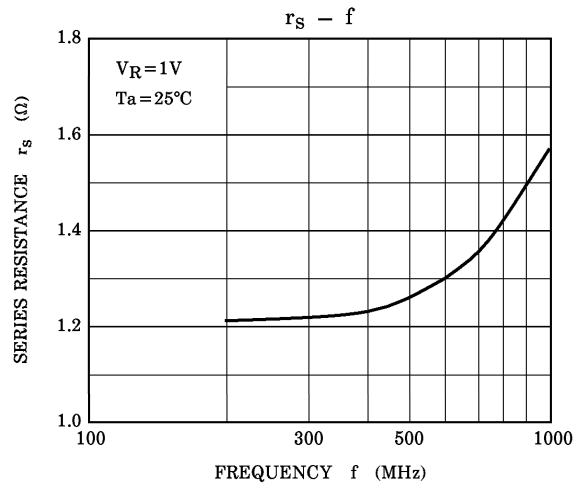
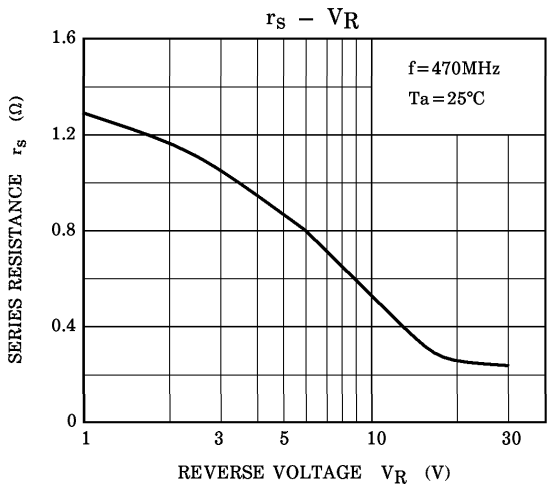
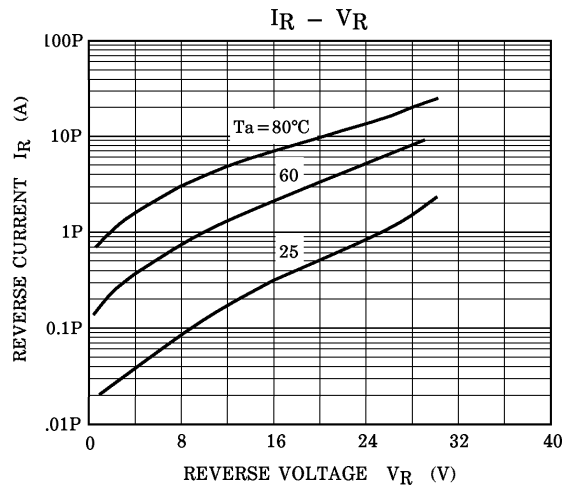
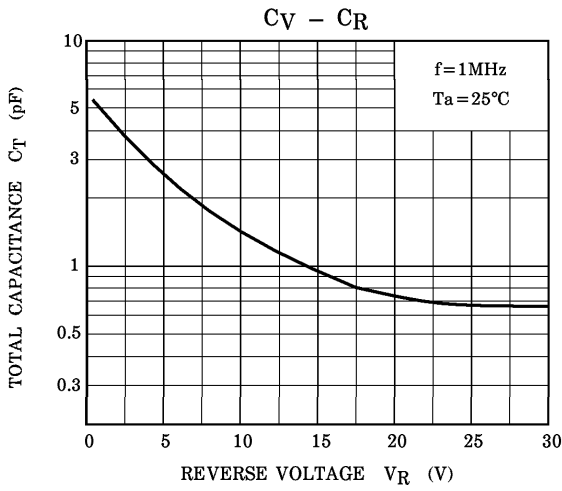
Marking

$$\frac{C(\text{Max.}) - C(\text{Min.})}{C(\text{Min.})} \leq 0.06 \quad (V_R = 2 \sim 25V)$$



961001EAA2

- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.



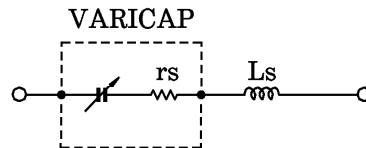
NOTE :  $\Delta C (\%) = \frac{C(T_a) - C(25)}{C(25)} \times 100$

SPICE PARAMETER

SPICE MODEL : BERKLEY SPICE.2G.6 DIODE MODEL  
 DATA FORMAT : MODEL FORMAT  
 SPICE SYMBOL :  $I_S$  (A),  $R_S$  ( $\Omega$ ),  $N$  (-),  $CJ0$  (F),  $V_J$  (V),  $M$  (-),  $B_V$  (V),  $I_{BV}$  (A)  
 FREQUENCY RANGE :  $f = 0.1 \sim 3$  GHz  
 REVERSE VOLTAGE RANGE :  $V_R = 2 \sim 25$  V

PARAMETER

$I_S = 5.020E - 16$   
 $N = 1.041$   
 $B_V = 30$   
 $I_{BV} = 1.00E - 04$   
 $R_S = 1.2$   
 $CJ0 = 5.948E - 12$   
 $V_J = 4.4$   
 $M = 1.185$   
 -----  
 $L_s = 1.00E - 09$



- (Note 1) : These parameters from  $I_S$  to  $M$  mean die characteristic.  
 Actually device has lead inductance so  $L_s$  is necessary for simulation.  
 And please use default value except above parameters.
- (Note 2) :  $R_S$  shows the value at the condition of  $V_R = 1$  V and  $f = 470$  MHz.  
 If another value is needed, please refer to  $R_S - V_R$  curve in this data sheets.