

TOSHIBA VARIABLE CAPACITANCE DIODE SILICON EPITAXIAL PLANAR TYPE

**1SV277**

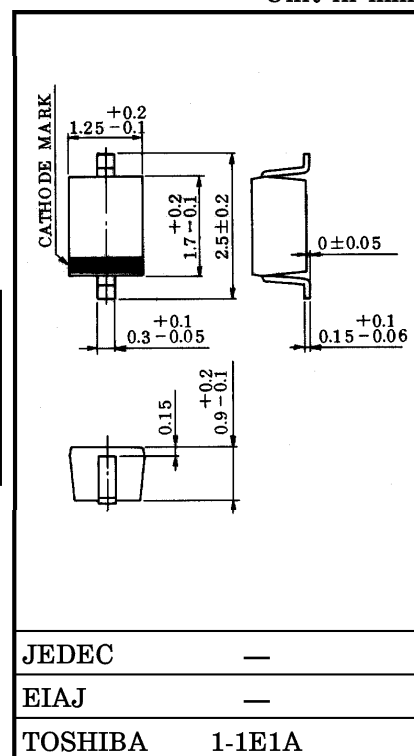
VCO FOR UHF BAND RADIO

Unit in mm

- High Capacitance Ratio :  $C_{1V}/C_{4V}=2.3$  (Typ.)
- Low Series Resistance :  $r_s=0.42\Omega$  (Typ.)
- Small Package

MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Reverse Voltage	$V_R$	10	V
Junction Temperature	$T_j$	125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-55\sim 125$	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

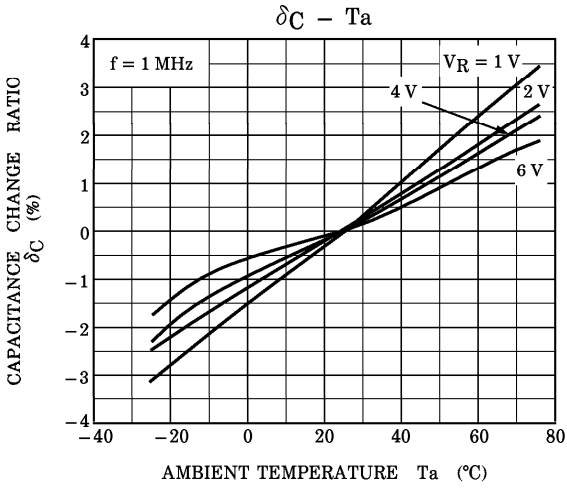
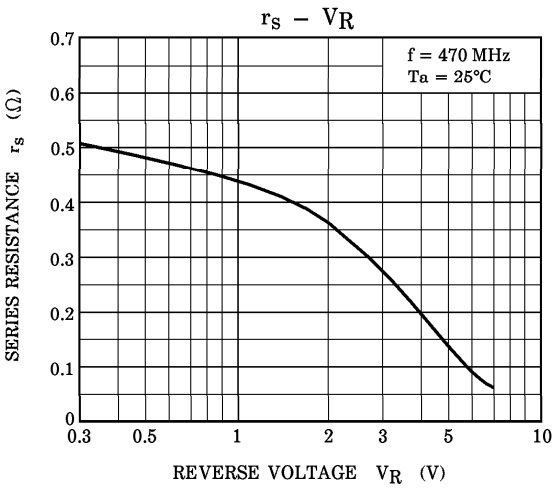
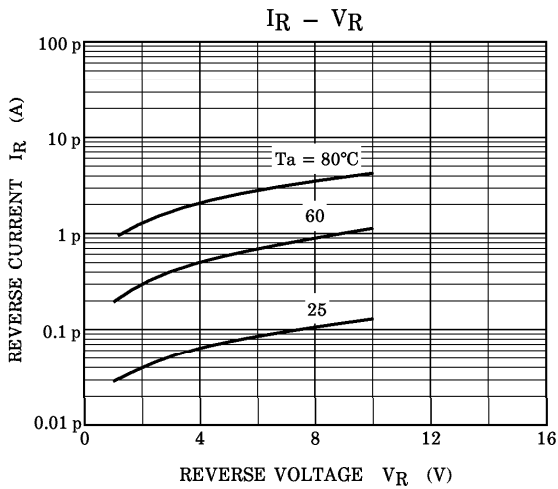
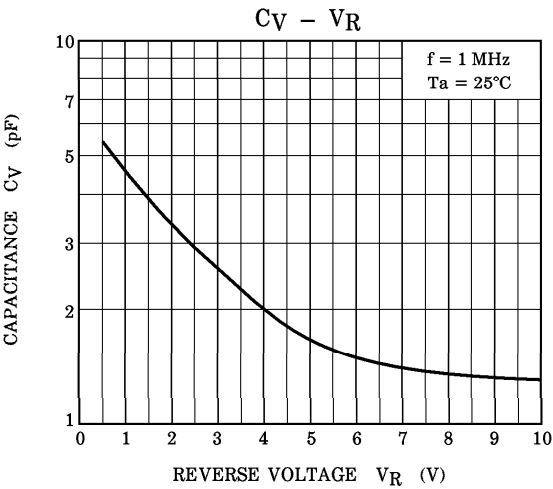
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Reverse Voltage	$V_R$	$I_R = 1\mu\text{A}$	10	—	—	V
Reverse Current	$I_R$	$V_R = 10\text{V}$	—	—	3	nA
Capacitance	$C_{1V}$	$V_R = 1\text{V}, f = 1\text{MHz}$	4.0	4.5	4.9	pF
Capacitance	$C_{4V}$	$V_R = 4\text{V}, f = 1\text{MHz}$	1.85	2.0	2.35	pF
Capacitance Ratio	$C_{1V}/C_{4V}$	—	2.0	2.3	—	—
Series Resistance	$r_s$	$V_R = 1\text{V}, f = 470\text{MHz}$	—	0.42	0.55	$\Omega$

MARKING



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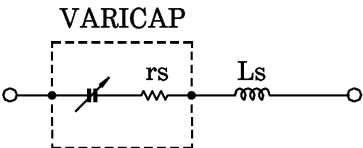


SPICE PARAMETER

SPICE MODEL : BERKLEY SPICE.2G.6 DIODE MODEL  
DATA FORMAT : MODEL FORMAT  
SPICE SYMBOL :  $I_S$  (A),  $R_S$  ( $\Omega$ ),  $N$  (-),  $C_{J0}$  (F),  $V_J$  (V),  $M$  (-),  $B_V$  (V),  $I_{BV}$  (A)  
FREQUENCY RANGE :  $f = 0.1 \sim 3$  GHz  
REVERSE VOLTAGE RANGE :  $V_R = 1 \sim 4$  V

PARAMETER

$I_S = 4.174E - 16$   
 $N = 1.037$   
 $B_V = 10$   
 $I_{BV} = 1.00E - 04$   
 $R_S = 0.42$   
 $C_{J0} = 6.900E - 12$   
 $V_J = 2.6$   
 $M = 1.3$   
-----  
 $L_s = 1.00E - 09$



- (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.