

TOSHIBA VARIABLE CAPACITANCE DIODE SILICON EPITAXIAL PLANAR TYPE

1SV231

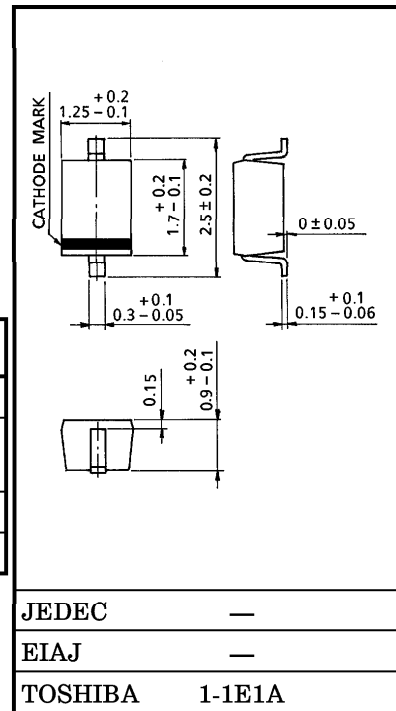
CATV TUNING

Unit in mm

- High Capacitance Ratio : $C_{2V} / C_{25V} = 15$ (Typ.)
- Excellent C-V Characteristics, and Small Tracking Error.
- Useful for Small Size Tuner.

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



Weight : 0.004g

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}	$V_R = 2V, f = 1MHz$	41.0	45.0	49.5	pF
Capacitance	C_{25V}	$V_R = 25V, f = 1MHz$	2.7	3.0	3.4	pF
Capacitance Ratio	C_{2V} / C_{25V}	—	14	15	—	—
Series Resistance	r_s	$V_R = 5V, f = 470MHz$	—	1.05	1.25	Ω

(Note 1) : Available in matched group for capacitance to 2.5%.

MARKING

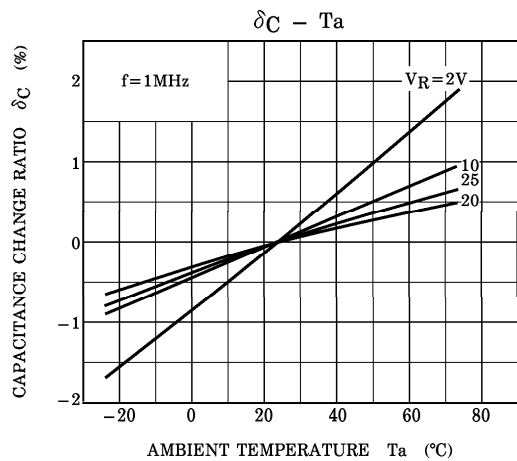
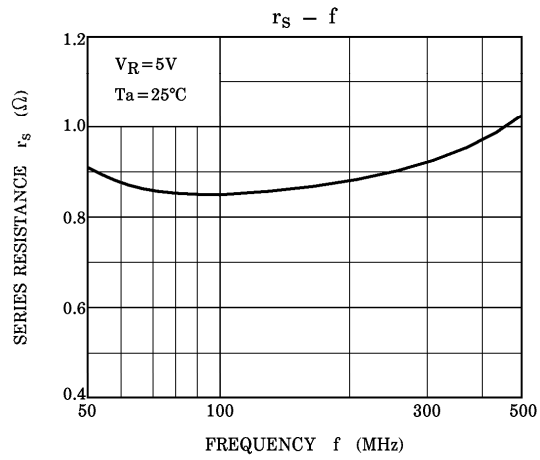
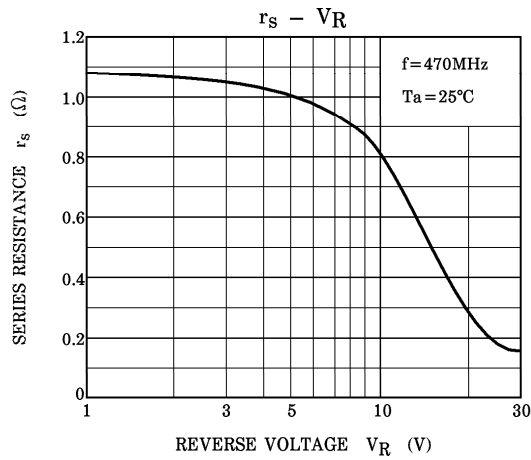
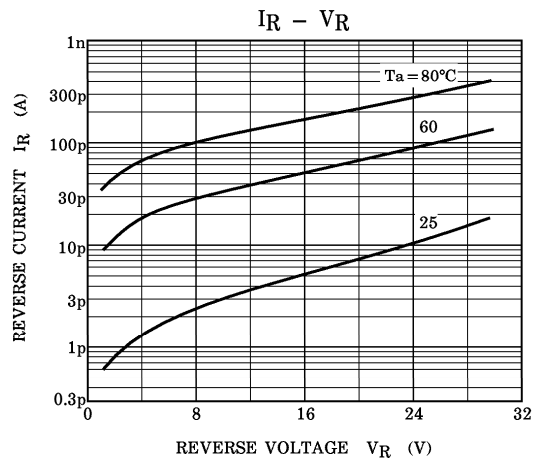
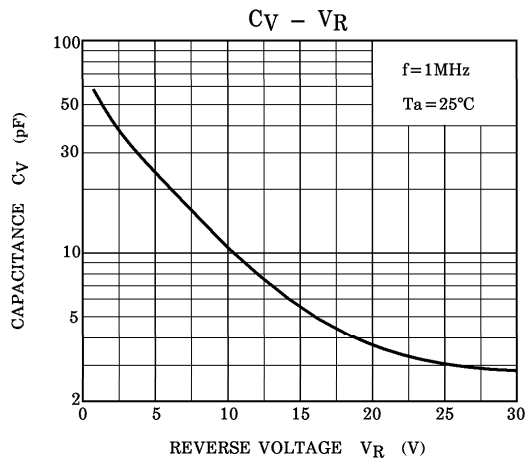
$$\frac{C(\text{Max.}) - C(\text{Min.})}{C(\text{Min.})} \leq 0.025$$

($V_R = 2 \sim 25V$)



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

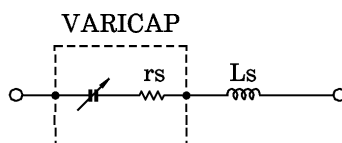
SPICE PARAMETER

SPICE MODEL : BERKLEY SPICE.2G.6 DIODE MODEL
 DATA FORMAT : MODEL FORMAT
 SPICE SYMBOL : I_S (A), R_S (Ω), 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
 AMBIENT TEMPERATURE : $T_a = 27^\circ\text{C}$

PARAMETER

$I_S = 1.195\text{E} - 14$
 $N = 1.072$
 $B_V = 30$
 $I_{BV} = 1.00\text{E} - 04$
 $R_S = 1.05$
 $CJ0 = 9.127\text{E} - 11$
 $V_J = 5.096$
 $M = 2.031$

 $L_s = 1.00\text{E} - 09$



- (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 $V_R = 5$ V and $f = 470$ MHz.
 If another value is needed, please refer to $R_S - V_R$ curve in this data sheets.