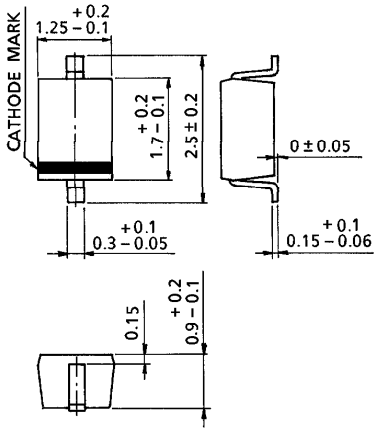
TOSHIBA VARIABLE CAPACITANCE DIODE SILICON EPITAXIAL PLANAR TYPE

1SV231

CATV TUNING

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	1-1E1A

Weight : 0.004g

- 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

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%.

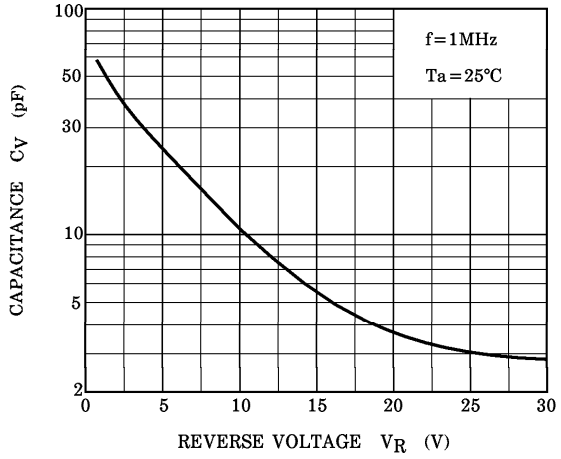
$$\frac{C\,(\text{Max.}) - C\,(\text{Min.})}{C\,(\text{Min.})} \leqq 0.025$$

($V_R = 2 \sim 25V$)

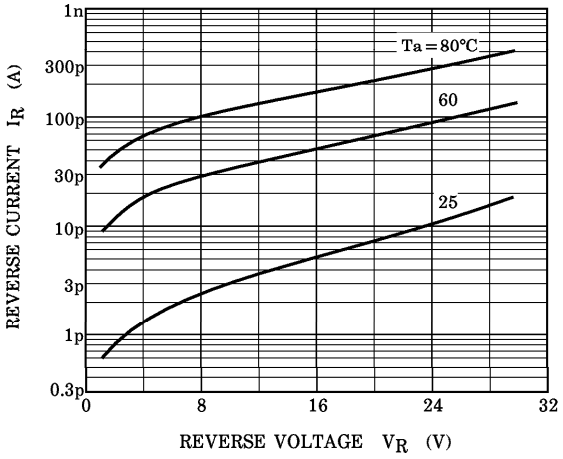
MARKING

000707EAA2

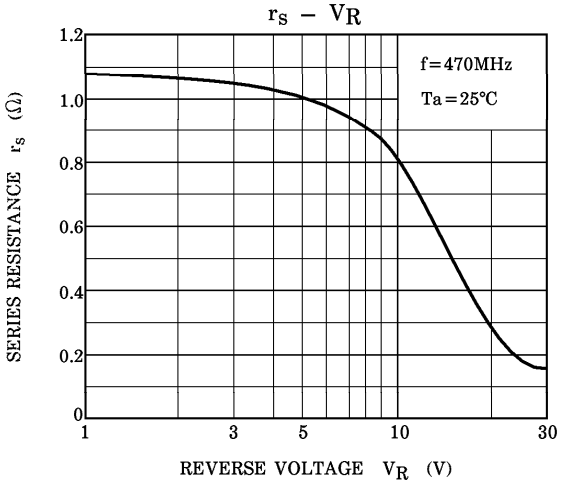
$C_V - V_R$



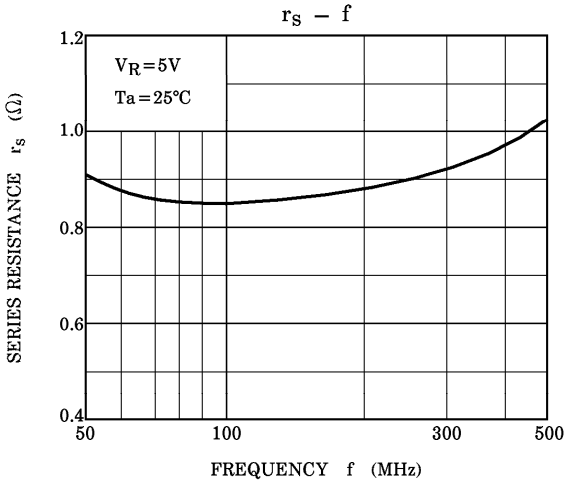
$I_R - V_R$



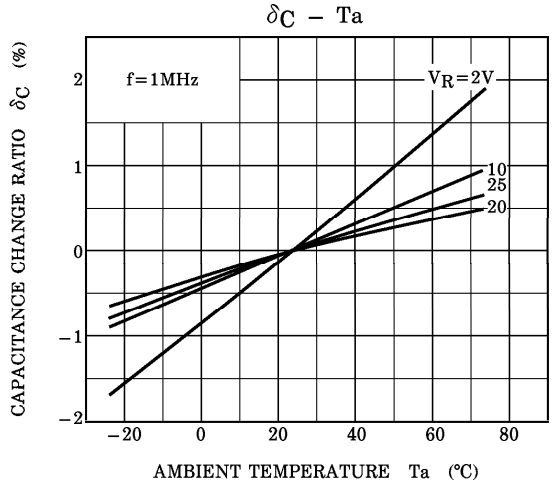
$r_S - V_R$



$r_S - f$



$\delta_C - Ta$



NOTE : $\delta_C(\%) = \dfrac{C(Ta) - C(25)}{C(25)} \times 100$

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)

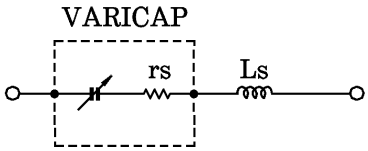
FREQUENCY RANGE : f = 0.1~3 GHz

REVERSE VOLTAGE RANGE : V_R = 2~25 V

AMBIENT TEMPERATURE : Ta = 27°C

PARAMETER

I_S	=	1.195E – 14
N	=	1.072
B_V	=	30
I_{BV}	=	1.00E – 04
R_S	=	1.05
CJ0	=	9.127E – 11
V_J	=	5.096
M	=	2.031
Ls	=	1.00E – 09



(Note 1) : These parameters from I_S to M mean die characteristic.
Actually device has lead inductance so Ls 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.