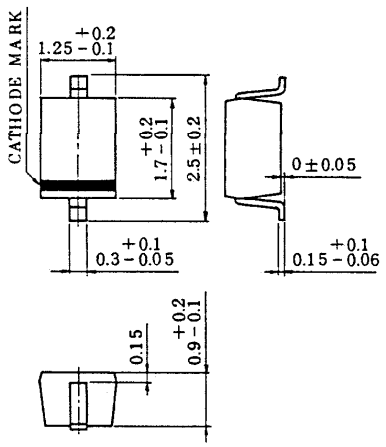
TOSHIBA VARIABLE CAPACITANCE DIODE SILICON EPITAXIAL PLANAR TYPE

1SV239

VCO FOR UHF RADIO

- Ultra Low Series Resistance : $r_s = 0.44\Omega$ (Typ.)
- Useful for Small Size Set

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	1-1E1A

Weight : 0.004g

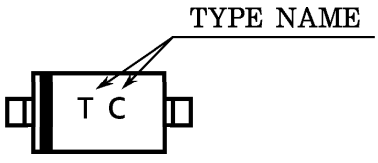
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Reverse Voltage	V_R	15	V
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	−55~125	°C

ELECTRICAL CHARACTERISTIC (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Reverse Voltage	VR	$I_R = 1\mu A$	15	—	—	V
Reverse Current	I_R	$V_R = 15V$	—	—	3	nA
Capacitance	C2V	$V_R = 2V$, f = 1MHz	3.8	4.25	4.7	pF
Capacitance	C10V	$V_R = 10V$, f = 1MHz	1.5	1.75	2.0	pF
Capacitance Ratio	C2V / C10V	—	2.0	2.4	—	
Series Resistance	r_s	$V_R = 1V$, f = 470MHz	—	0.44	0.6	Ω

Marking



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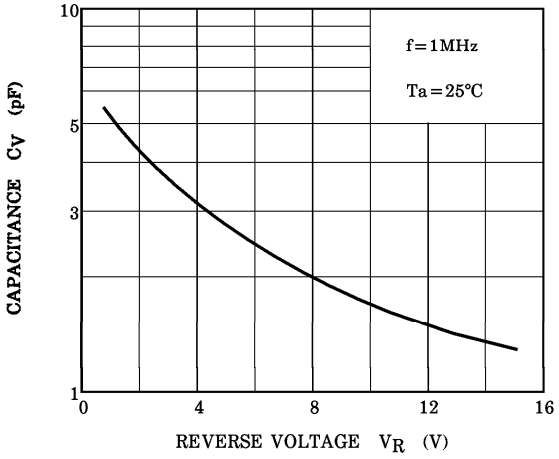
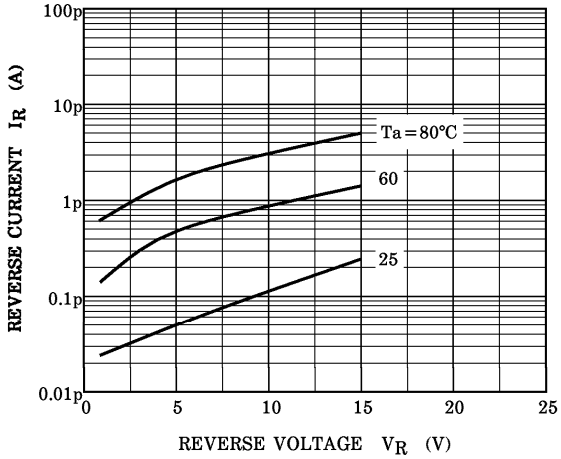
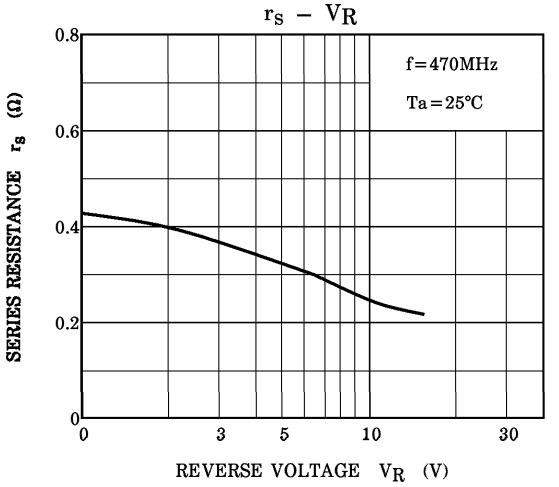
$C_V - V_R$



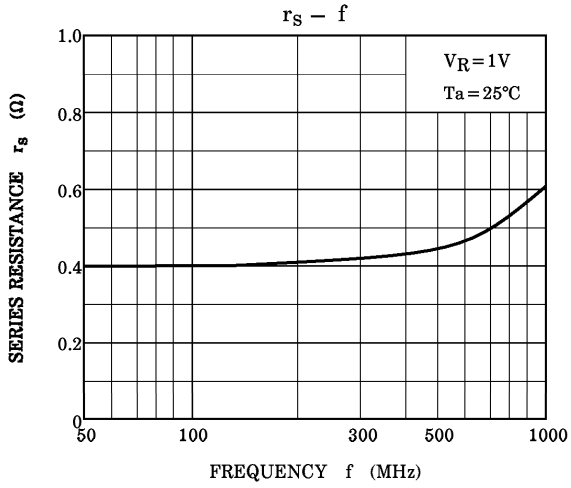
$I_R - V_R$



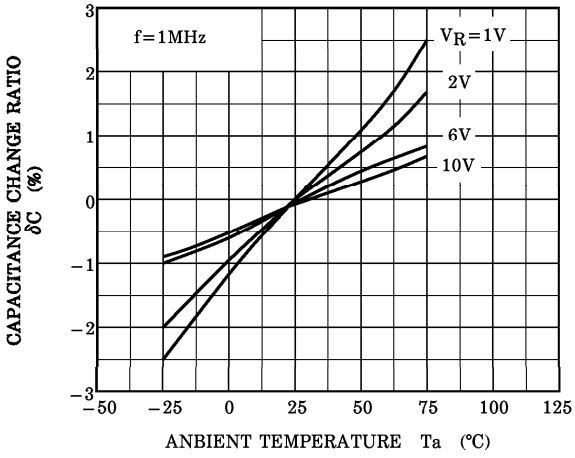
$r_S - V_R$



$r_S - f$



$\delta C - Ta$



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

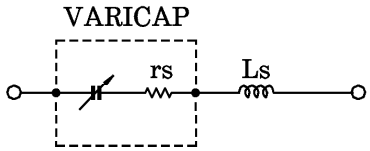
SPICE SYMBOL : I_S (A), R_S (Ω), N (−), CJ0 (F), V_J (V), M (−), B_V (V), I_{BV} (A)

FREQUENCY RANGE : f = 0.1~3 GHz

REVERSE VOLTAGE RANGE : V_R = 2~10 V

PARAMETER

I_S	=	5.381E − 16
N	=	1.037
B_V	=	15
I_{BV}	=	1.00E − 06
R_S	=	0.44
CJ0	=	6.890E − 12
V_J	=	3.272
M	=	0.9812
− − − − − − − − − −		
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 = 1 V and f = 470 MHz.
If another value is needed, please refer to R_S – V_R curve in this data sheets.